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C.-T. JAMES HUANG

MODULARITY AND CHINESE A-NOT-A QUESTIONS

1. INTRODUCTION

In theoretical linguistics, a common type of explanation takes the form of a proposal that ties together observed similar phenomena whose relatedness would otherwise be obscured. The generative treatment of passive sentences and their active counterparts is a simple example, according to which the observed similarities between such constructions (with respect to their 'argument structure', etc.) are explained given the idea that they have a common or similar D-structure source. Chomsky's Subjacency is another example, as it ties together a number of Ross' island constraints, thus providing an explanation for their clustering in a way that the individual constraints do not.

In addition to this 'unifying approach', it has been shown in recent years that explanation can also occur in a different form, under a 'modular approach'. According to this approach, what is often perceived as a single phenomenon is torn apart or modularized into two or more subparts each of which is treated under a separate subsystem of rules or principles of grammar. Much of the recent developments in generative linguistic theory has taken this approach to linguistic explanation. As argued in Jaeggli (1981), for example, the traditional treatment of passivization, which takes the form of a single rule of Passive, is less explanatory than an approach that factors the rule into several components that fall separately under Case Theory, Theta Theory, Bounding Theory, Binding Theory, and the simple rule Move α . Although this approach at first appears to go against explanation, often it can be shown (as Jaeggli and others have shown) to result in a simple grammar and a more explanatory over-all system.

In this article I examine the properties of a question form in Chinese, called the A-not-A question, and try to provide an account of its properties within an articulate theory of generative grammar. In contrast to the 'one-rule approach' more familiar from the Chinese linguistic literature, I show that an analysis that treats this type of question as the result of the interaction of a number of rules and/or principles provides a more explanatory account of many of its otherwise peculiar properties. If correct, the proposed analysis then provides important additional evidence for the modular approach to linguistic explanation.

Traditionally, the A-not-A question is considered to include a paradigm like (1):

- (1) a. 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?
- b. 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?
- c. ta xihuan bu xihuan zheben shu?
he like not like this book
 Does he like or doesn't [he] like this book?
- d. ta xihuan zheben shu bu xihuan?
he like this book not like
 Does he like this book or doesn't [he] like [it]?
- e. ta xi-bu-xihuan zheben shu?
he like-not-like this book
 Does he like or not like this book?

Since the early work of Wang (1967), scholars have generally described the paradigm as representing a unitary phenomenon, and accounted for the formation of the sentences in (1b–e) as the result of deletion of identical elements from a full coordinate structure like (1a). (See, for example, Lyu (1985), Li and Thompson (1981) and Lin (1974).) The *A-not-A* question is taken to be a special type of disjunctive question, and the deletion process is usually taken to be an instance of the general process that derives other types of disjunctive questions. Thus, forward deletion of the second subject in (1a) gives (1b). Further deletion of either object in (1b) gives (1c) or (1d), depending on whether deletion has applied backward or forward. In the case of backward deletion, it is also possible to delete an identical subpart of a verb from the first conjunct, giving (1e). Certain conditions are needed to ensure that deletion apply in the correct environments and in the correct direction, but the sentences in the entire paradigm (1) are related by a single rule.

I will argue that this one-rule approach to the formation of *A-not-A* questions should be replaced by a modular approach, which breaks up the paradigm in (1) into three separate sub-paradigms. In particular, I will show that the *A-not-A* question as exemplified by (1b–e) should not be analyzed as being derived from disjunctive questions like (1a) by a process of coordinate deletion. Furthermore, two kinds of *A-not-A* questions should be distinguished, one of which is derived from a simplex sentence with an interrogative INFL constituent that is phonetically realized, in Mandarin, by a rule of reduplication, and the other from a base structure of juxtaposed VPs which may be subject to anaphoric ellipsis. Under this

proposal, the *A-not-A* questions are analyzed in a way that assimilates them, in their syntax, to constituent questions. Although the modular approach appears to involve a more complex grammar than the one-rule approach at first sight, it will be shown that the complexity is only apparent and that it actually results in a much simpler grammar. In section 2, I indicate the problems that arise under the traditional one-rule approach. Sections 3 and 4 present the modular treatment of (1) and show how these problems are solved under this treatment. In section 5, I present four arguments, based on comparative evidence from Chinese dialects, as additional support for the proposed analysis. Section 6 is a brief conclusion.

2. *A-NOT-A* QUESTION AS A DISJUNCTIVE QUESTION

It is generally agreed that the *A-not-A* question is historically derived as a special form of the disjunctive question (see Mei (1978)). A synchronic analysis of the *A-not-A* question on a par with disjunctive questions is, of course, natural and highly plausible, as it at least appears to eliminate the need for a special rule to generate *A-not-A* questions in addition to a general process that generates other disjunctive sentences. However, without contesting the historical claim, there is reason to believe that such a synchronic analysis is not optimal. There are at least five problems to such an analysis.

2.1. *The Directionality Constraint*

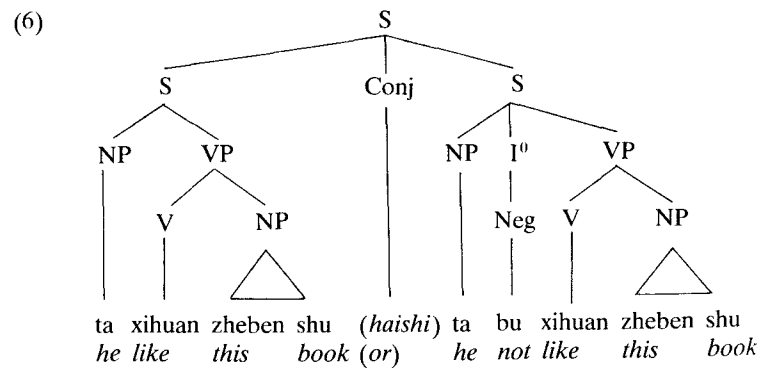
First of all, although it is attractive to derive the paradigm (1b–e) by a single rule of coordinate deletion, the attractiveness disappears once we realize that such a rule is at variance with general principles of grammar and is therefore unmotivated on independent grounds. For example, since Ross (1967) it has been well known that coordinate deletion is subject to a severe Directionality Constraint (DC) to the effect that deletion must go forward if the identical elements in a coordinate structure occur on a left branch of a tree, but backward if they each occur on a right branch. The DC predicts that each (a) sentence below can be turned into (b) but not into (c):

- (2) a. John sang and John danced.
 b. John sang and danced.
 c. *sang and John danced.
- (3) a. John sang and Mary sang.
 b. John and Mary sang.
 c. *John sang and Mary.

In (2a) the identical subjects each occur on a left branch, so deletion goes forward; in (3) the identical predicates occur on a right branch, so deletion goes backward. The DC also applies in Chinese, accounting for (4)–(5) below:

- (4) a. Zhangsan changge, Zhangsan tiaowu.
Zhangsan sing Zhangsan dance
 Zhangsan sang and Zhangsan danced.
- b. Zhangsan changge, tiaowu.
Zhangsan sang and danced.
- c. *changge, Zhangsan tiaowu.
- (5) a. Zhangsan changge, Lisi changge.
Zhangsan sing Lisi sing
 Zhangsan sang and Lisi sang.
- b. Zhangsan gen Lisi (dou) changge.
Zhangsan and Lisi all sing
 Zhangsan and Lisi sang.
- c. *Zhangsan changge, Lisi (ye/dou).

Turning now to *A-not-A* questions, consider (6), the D-structure of (1a):



According to the DC, the second occurrence of *ta* 'he' may be deleted, resulting in (1b). Subsequent deletion of the first occurrence of *zheben shu* 'this book' and the syllable *huan* of *xihuan* 'like', gives (1c) and (1e). The DC also correctly excludes the following:

- (7) *xihuan zheben shu, ta bu xihuan zheben shu?

- (8) *ta xihuan bu xi-zheben shu?
 (9) *ta xihuan zheben shu bu xi-?

However, certain well-formed *A-not-A* questions (e.g. (1d)) clearly do not obey the DC:

- (1d) ta xihuan zheben shu bu xihuan?
he like this book not like
 Does he like this book or doesn't [he] like [it]?

The object 'this book' occurs on a right branch in (6), but (1d) is the result of forward deletion, in violation of the DC. This shows that at least some *A-not-A* questions cannot be derived by coordinate deletion.

2.2. Immediate Dominance Condition

A second problem of the one-rule approach has to do with a restriction on coordinate deletion specific to Chinese grammar first discovered by Tai (1972), which provides that, in Chinese, coordinate deletion can delete only those elements that are immediately dominated by a conjunct node. Tai's Immediate Dominance Condition (ID) correctly accounts for the following facts:

- (10) a. Zhangsan chi fan, Lisi chi mian.
Zhangsan eat rice Lisi eat noodles
 Zhangsan eats rice and Lisi eats noodles.
- b. *Zhangsan chi fan, Lisi mian.
Zhangsan eat rice Lisi noodles
- (11) a. Zhangsan zhu fan, Lisi chi fan.
Zhangsan cook rice Lisi eat rice
 Zhangsan cooked rice and Lisi ate rice.
- b. *Zhangsan zhu, Lisi chi fan.
Zhangsan cook Lisi eat rice

(10b) and (11b) are ill-formed because neither the verb 'eat' in (10a) nor the object 'rice' in (11a) is immediately dominated by a conjunct node (S). By assuming that the ID does not apply in English, Tai also captures an important difference between Chinese and English:

- (12) John ate rice and Bill noodles.
 (13) John cooked and Bill ate rice.

However, there are also sentences that apparently do not obey Tai's ID, including *A-not-A* questions like (14) and (15):

- (14) Zhangsan zhu fan, Lisi chi.
Zhangsan cook rice Lisi eat
 Zhangsan cooks rice and Lisi eats [it].
- (15) ni bi ta mai shu bu bi ta mai?
you force him buy book not force him buy
 Will you force him to buy books or not force him to buy [them]?

Like the DC, there seems to be good reason to believe that Tai's ID captures a valid generalization about Chinese. If so, then the occurrence of sentences like (14) and (15) shows that certain sentences that appear to be derived via coordinate deletion must be derived in a different way.

2.3. *Lexical Integrity*

A further problem with the one-rule approach concerns a fundamental principle that distinguishes syntax from morphology and phonology, namely the Lexical Integrity Hypothesis (LIH):

- (16) LIH: Phrase-level rules belonging to the syntactic component cannot affect a proper sub-part of a lexical category (word).

The LIH clearly also holds in Chinese. It explains why the object of a VP can be topicalized (17), whereas the object of a verb-object compound cannot (18):¹

- (17) a. wo mei mai shu.
I not buy book
 I didn't buy the books.
- b. shu, wo mei mai.
book I not buy
 The books, I didn't buy.
- (18) a. wo mei zhu-yi.
I not pay-attention
 I didn't pay attention.
- b. *yi, wo mei zhu.

Among other things, the LIH also correctly predicts that coordinate deletion cannot delete a subpart of a word:²

- (19) a. wo xihuan huo-che gen qi-che.
I like fire-car and gas-car
 I like trains and automobiles.
- b. *wo xihuan huo-gen qi-che.
- (20) a. I like New York and New Orleans.
- b. *I like New York and Orleans.

The principle also excludes anaphoric ellipsis of the kind represented by (21b):

- (21) Q: ni xihuan ta ma?
you like him Prt
 Do you like him?
- A: a. wo bu xihuan.
I not like
 I don't like him.
- b. *wo bu xi-.

Turning now to *A-not-A* questions, what is interesting is that some *A-not-A* questions seem to be able to violate the LIH, but not all. In particular, sentences of the form (1e) but not those of the form (1d) seem to disobey this principle:

- (22) a. ni xi-bu-xihuan zheben shu?
you li-not-like this book
 Do you like this book?
- b. *ni xihuan zheben shu bu xi-?
you like this book not li-
- (23) a. ni gao-bu-gaoxing?
you hap-not-happy
 Are you happy or not?
- b. *ni gaoxing bu gao-?
you happy not hap-

An analysis that derives the entire paradigm in (1b–e) via one rule has to explain why the derivation of *A-not-A* questions may disobey the LIH, and why only some of such questions may constitute 'exceptions' to this principle. This is clearly a serious weakness of the one-rule approach.

2.4. *Preposition Stranding*

A similar problem arises with respect to the general prohibition against preposition stranding observed in Chinese (and many other languages), which we may express as the filter (24):

(24) *_[pp]P[e]

That Chinese does not permit preposition stranding (as a result of either movement or deletion) is shown in (25)–(26):³

(25) a. wo ba gongke zuo-wan le.
I BA homework finish ASP

I have finished the homework.

b. *gongke, wo ba [e] zuo-wan le.

(26) Q: ni gen Lisi dajia-le ma?
you with Lisi fight-ASP Prt

Did you fight with Lisi?

A: meiyou, wo meiyou gen *(ta) dajia.
no I not with him fight

No, I didn't fight with *(him).

But this prohibition is again contradicted by some (not all) *A-not-A* questions.⁴

(27) a. ni gen bu gen ta shuo hua?
you with not with him say words

Do you talk to him or not?

b. *ni gen ta shuo hua bu gen?

(28) a. ni ba-bu-ba gongke zuo-wan?
you BA-not-BA homework finish

Will you finish the homework or not?

b. *ni ba gongke zuo-wan bu ba?

2.5. *Disjunctive vs A-not-A Questions*

Concerning the LIH and P-stranding, a systematic difference also exists between true disjunctive questions which contain *haishi* 'or' and *A-not-A* questions (which do not contain *haishi*). Thus, unlike some *A-not-A* questions, all *haishi*-questions obey the LIH and disallow preposition stranding:

(29) a. ni xihuan haishi bu xihuan zheben shu?
you like or not like this book

Do you like this book or not?

b. *ni xi-haishi bu xihuan zheben shu?

(30) a. ni gen ta haishi bu gen ta shuo hua?
you with him or not with him say words

Do you talk to him or not?

b. *ni gen haishi bu gen ta shuo hua?

(31) a. ni ba gongke zuo-wan haishi bu ba gongke zuo-wan?
you BA homework finish or not BA homework finish

Will you finish the homework or won't finish the homework?

b. *ni ba haishi bu ba gongke zuo-wan?

2.6. *Island Constraints*

Finally, there is also a systematic difference between *A-not-A* questions and *haishi*-questions with respect to the theory of island constraints. In particular, the distribution and interpretation of the *A-not-A* form within an *A-not-A* question exhibits island effects, whereas the distribution and interpretation of disjunctive questions with *haishi* 'or' does not. Thus, a sequence with *haishi* (of the form [*A haishi* not *A*] or [*A haishi* *B*]) may be properly embedded in a sentential subject (32), but a sequence of the form [*A* not *A*] without *haishi* cannot (33):

(32) a. [wo qu Meiguo haishi bu qu Meiguo] bijiao hao?
I go America or not go America more good

Is it better that I go to America or that I do not go to America?

b. [wo qu Meiguo haishi bu qu] bijiao hao?
I go America or not go more good

c. [wo qu haishi bu qu Meiguo] bijiao hao?
I go or not go America more good

d. [wo haishi ni qu Meiguo] bijiao hao?
I or you go America more good

Is it better for me or for you to go to America?

e. [wo qu Meiguo haishi Yingguo] bijiao hao?
I go America or England more good

Is it better for me to go to America or to England?

- (33) a. *[wo qu Meiguo bu qu Meiguo] bijiao hao?
 b. *[wo qu Meiguo bu qu] bijiao hao?
 c. *[wo qu bu qu Meiguo] bijiao hao?⁵

Similarly, *haishi* may occur within a relative clause, but [A not A] cannot:

- (34) a. ni xihuan [renshi ni haishi bu renshi ni] de ren?
you like know you or not know you DE person
 Do you like people who know you or people who don't know you?
 b. ni xihuan [renshi haishi bu renshi ni] de ren?
you like know or not know you DE person
 c. ni xihuan [renshi ni haishi bu renshi] de ren?
you like know you or not know DE person
- (35) a. *ni xihuan [renshi ni bu renshi ni] de ren?
 b. *ni xihuan [renshi bu renshi ni] de ren?
 c. *ni xihuan [ren-bu renshi ni] de ren?
 d. *ni xihuan [renshi ni bu renshi] de ren?

Needless to say, an analysis that derives all of (1a–e) in the same way has the burden of accounting for the island facts. There is no obvious reason why deletion of the conjunction *haishi* is subject to Subjacency or the CED (Huang 1982). In fact, it is generally agreed that bounding conditions do not apply to deletion processes at all.

3. A-NOT-A QUESTIONS AND CONSTITUENT QUESTIONS

The preceding section has, I think, amply demonstrated the heterogeneous nature of the paradigm in (1). The one-rule approach seems to gain a superficial simplicity, but is overwhelmed with problems concerning the directionality of deletion, Tai's ID Condition, lexical integrity, preposition stranding, and island constraints. I will now present an alternative approach to (1), according to which what is perceived as a single paradigm is modularized into several sub-paradigms. First, questions with *haishi* (as in (1a)) are separated from genuine A-not-A questions (as in (1b–e)). Furthermore, the A-not-A questions are separated into two types: the [A not AB] type and the [AB not A] type. The [A not AB] type refers to examples that are derived, in traditional terms, from [AB not AB] by backward deletion. These include examples like (1c) and (1e), repeated below:

- (36) ni xihuan-bu-xihuan zheben shu? (1c)
you like-not-like this book
- (37) ni xi-bu-xihuan zheben shu? (1e)
you like-not-like this book

The [AB not A] type includes (1d), and those that are derived, in traditional terms, by forward deletion from [AB not AB]:

- (38) ta xihuan zheben shu bu xihuan? (1d)
he like this book not like
 Does he like this book or not?
- (39) ni renshi zhege ren bu renshi?
you know this person not know
 Do you know this person or not?

As for examples like (1b) (=40) and (41) below, these may be analyzed as either type:

- (40) ta xihuan zheben shu bu xihuan zheben shu? (1b)
he like this book not like this book?
 Does he like this book or not like this book?
- (41) ni lai bu lai?
you come not come
 Will you come or not?

Example (41) is of the form [A not A]; it can be analyzed as [A not AB] or [AB not A], where B is null. Similarly, (40) has two possible analyses, if A is taken to include the entire VP *xihuan zheben shu* 'like this book' and B is null. Let us take up each sub-paradigm in turn.

3.1. True Disjunctive Questions

Questions containing *haishi* 'or' are considered true disjunctive questions. The sequence with *haishi* may take the form of [[A] or [not A]], or the form of [A or B]. Following traditional analyses, I assume that these are derived from full bi-sentential sources by coordinate deletion, perhaps applied in the PF component of grammar (cf. Sjöblom (1980)). Thus, the (b) sentences below are derived by (successive application of) coordinate deletion from their (a) counterparts:

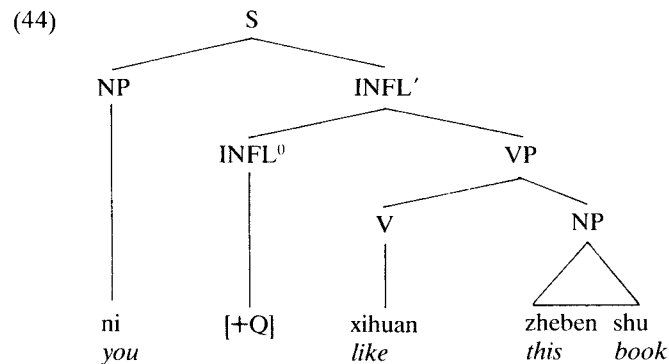
- (42) a. ?ni xihuan Zhangsan haishi ni xihuan Lisi?
you like Zhangsan or you like Lisi
 Do you like Zhangsan or do you like Lisi?

- (42) b. ni xihuan Zhangsan haishi Lisi?
Do you like Zhangsan or Lisi?
- (43) a. ?ni renshi Zhangsan haishi ni bu renshi Zhangsan?
you know Zhangsan or you not know Zhangsan
Do you know Zhangsan or don't you know Zhangsan?
- b. ni renshi haishi bu renshi Zhangsan?
Do you or don't you know Zhangsan?

This kind of deletion may also derive other reduced (non-interrogative) coordinate structures, and is not limited to the derivation of disjunctive questions alone. The process obeys the Directionality Constraint and, in Chinese, also Tai's ID Condition.

3.2. A-not-A Questions: [A not AB] Type

I propose that this type of question is derived from a simplex D-structure with an interrogative INFL⁰ constituent:



Phonetic realization of the INFL with [+Q] may take different forms in different Chinese dialects. In Mandarin, the interrogative INFL is realized by a reduplication rule, which copies a sequence immediately following INFL and inserts the morpheme *bu* 'not' between the original and its copy. Depending on the length of the reduplicated sequence, the result can be *xi-bu-xi*, or *xihuan-bu-xihuan*, or even *xihuan zheben shu bu xihuan zheben shu*. These results correspond to (1e), (1c), and (1b), respectively.⁶

According to the proposed analysis, then, the [A not AB] type of questions is, in its syntax, on a par with constituent questions like (45)–(46):

- (45) shei lai le?
who come ASP
Who came?
- (46) Zhangsan weishenme meiyou lai?
Zhangsan why did-not come
Why didn't Zhangsan come?

In (45) an NP constituent with the feature [+Q] is realized as *shei* 'who', and in (46) an adverbial constituent with [+Q] is realized as *weishenme* 'why'. If an INFL constituent has the feature [+Q], then it is realized, in Mandarin, by a reduplication. In this way, an A-not-A question is derived from a simplex D-structure source, just as a wh-question is. In its syntax, then, the A-not-A question is on a par with wh-questions.⁷

This assimilation of A-not-A questions to constituent questions is, of course, not meant to obscure the fact that the A-not-A question has a semantics akin to that of disjunctive questions. At any rate, the semantics of disjunctive questions is similar to that of wh-questions, since they both may be said to involve existential quantification (in a definite or indefinite domain). There is little semantic difference between the wh-question (47) and the disjunctive question (48):

- (47) Zhangsan he Lisi, ni xihuan na yige?
Zhangsan and Lisi you like which one
(Between) ZS and LS, which one do you like?
- (48) ni xihuan Zhangsan haishi Lisi?
you like Zhangsan or Lisi
Do you like Zhangsan or Lisi?

In fact, in Karttunen's (1977) analysis, the semantics of wh-questions and the semantics of disjunctive questions would be derived from a common source (his 'proto-questions'). So a treatment of A-not-A questions that assimilates them to wh-questions not only does not obscure their semantic similarity to disjunctive questions, but in fact helps to capture their close relationship in syntactic terms.⁸

3.3. A-not-A Question: [AB not A] Type

Questions of this type (as exemplified by (38–39)) cannot be generated by reduplication on a par with the [A not AB] type, since *B* intervenes between *A* and not-*A*. I propose that these questions are derived from D-structures with a base-generated coordinate VP of the form [[AB] [not AB]] which may undergo a process of anaphoric ellipsis that deletes the second occurrence of *B*.⁹ We have independent evidence that sentences

with juxtaposed VPs not connected by *haishi* may be interpreted as an alternative question:

(49) ni chi fan chi mian?
you eat rice eat noodles
Do you eat rice or eat noodles?

(50) ni xihuan Zhangsan xihuan Lisi?
you like Zhangsan like Lisi
Do you like ZS or like LS?

Therefore a sentence like (40) (=1b) need not be derived by reduplication, but can be base-generated with a coordinate VP:

(40) ni xihuan zheben shu bu xihuan zheben shu? (1b)
you like this book not like this book?

If anaphoric ellipsis deletes the second occurrence of *zheben shu* 'this book' in (40), then (38) (=1d), an [AB not A] type of question, results:

(38) ni xihuan zheben shu bu-xihuan? (1d)
you like this book not-like
Do you like this book or not?

Anaphoric ellipsis is a pervasive phenomenon whose occurrence is not restricted to *A-not-A* questions. It can occur in non-coordinate constructions:

(51) ruguo ni bu xihuan zheben shu, jiu bie mai.
if you not like this book then don't buy
If you don't like this book, then don't buy [it].

Or it can occur across a discourse:

(52) Q: Zhangsan piping-le Lisi le ma?
Zhangsan criticize-ASP Lisi ASP Q
Did ZS criticize LS?

A: meiyou, ta meiyou piping.
no he did-not criticize
No, he did not criticize [him].

Therefore, anaphoric ellipsis is not a rule specifically proposed to account for the [AB not A] questions. The process should be distinguished from coordinate deletion, since unlike the latter it does not obey the DC, but applies in a way consistent with general principles of anaphora (involving precedence and/or c-command). In a coordinate structure, ellipsis always

goes forward.¹⁰ Also, the phenomenon does not exhibit effects of Tai's ID Condition:

(53) ta bu xihuan neiben shu, keshi Lisi shuo ni hen xihuan.
he not like this book, but Lisi say you very like
He does not like this book, but Lisi said that you like [it] very much.

Furthermore, although anaphoric ellipsis can occur across independent sentences, coordinate deletion cannot:

(54) a. ni xihuan ta ma? bu xihuan ma?
you like him Prt not like Prt?
Do you like him? Don't you?

b. *ni xihuan ma? bu xihuan ta ma?

Like other deletion processes, anaphoric ellipsis must respect lexical integrity, and cannot strand a preposition:

(55) *ta xihuan Lisi, keshi wo zhidao ni bu xi-
he likes Lisi, but I know you don't li-
(Lit.) *He likes Lisi, but I know you don't li-

(56) ni rende neige ren ma? *wo bu ren-
you know that person Prt I not kn-
(Lit.) Do you know that person? *No, I don't kn-

(57) ni gen ta shuo hua ma? *wo bu gen.
you with him say words Prt I not with
(Lit.) Do you with him speak? *No, I don't with.

(58) *ta cong zheli chu-qu, keshi wo bu cong.
he from here go-out but I not from
(Lit.) He from here went out, but I won't from.

Summarizing, the modular approach treats the paradigm (1) as three distinct sub-paradigms. (1a) is a true disjunctive question which may undergo coordinate deletion, resulting in reduced *haishi*-questions. (1c) and (1e) are [A not AB] questions that derive via reduplication from a simplex D-structure source. (1d) is an [AB not A] question that has a base-generated coordinate VP which undergoes anaphoric ellipsis. And (1b) may be analyzed as an example of either type of *A-not-A* question (but see note 6).

4. PROBLEMS SOLVED

Although the modular approach may appear more complex than the one-rule approach, it is so only by appearance. The hypotheses made in this approach are in fact mostly motivated on independent grounds, and as such do not add to the complexity of our grammar. As we saw, both coordinate deletion and anaphoric ellipsis are observed independently with constructions other than questions. The base-generation of coordinate VPs as disjunctive questions is also motivated independently of *A-not-A* questions of the [*AB not A*] type (see (49)–(50)). The only rule specifically proposed for the *A-not-A* question is the reduplication process. On the other hand, this approach is free from the numerous problems noted above, and provides an explanation for the facts observed.

Consider the problems concerning the Directionality Constraint and the ID Condition. These problems are posed by the occurrence of *A-not-A* questions like (1d) and (15), repeated below:

- (1d) ta xihuan zheben shu bu xihuan?
he like this book not like
 Does he like this book or doesn't [he] like [it]?

- (15) ni bi ta mai shu bu bi ta mai?
you force him buy book not force him buy
 Will you force him to buy books or won't force him to buy [them]?

But notice that these sentences belong to the [*AB not A*] type, which according to our analysis is an instance of anaphoric ellipsis, not of coordinate deletion. We have just seen that anaphoric ellipsis does not obey the DC or the ID. Therefore, the fact that [*AB not A*] questions do not exhibit DC or ID effects is just what we expect.

Consider now the problems concerning lexical integrity and preposition stranding. What we saw above was that some (but not all) *A-not-A* questions seem to disobey the LIH and allow preposition stranding. It should be easy to see now that the problematic examples are those that belong to the [*A not AB*] type, and not those of the [*AB not A*] type. The following examples are repeated for comparison:

- (59) a. ta xi-bu-xihuan zheben shu?
he li-not-like this book
 Does he like this book or not?
 b. *ta xihuan zheben shu bu xi-?

- (60) a. ni cong-bu-cong zheli chu-qu?
you from-not-from here go-out
 Will you go out from here or not?
 b. *ni cong zheli chu-qu bu-cong?

That the (b) sentences are ill-formed follows as no surprise, since these examples, as [*AB not A*] questions, can only be admitted as examples of anaphoric ellipsis. But since ellipsis must obey the LIH and cannot strand a preposition (see (55)–(58)), these sentences are out.

Why are the (a) sentences well-formed? There is good reason to believe that the LIH obtains only as a principle of syntax (and compositional semantics), but does not hold generally in phonology (or morphology). For example, the well-known third tone sandhi rule in Mandarin is obviously unconstrained by the LIH. In the following example, the second syllable *si* in the compound *xiao-si* 'laugh-die' changes from tone 3 to tone 2 in the environment of the following third tone *wo* 'I/me':

- (61) ni [_{v0} xiao-si] wo le.
you laugh-dead me ASP
 You caused me to laugh to death.

This rule must apply at the phrasal level because it refers to the object NP external to the compound verb. But the rule affects only the second syllable of the compound. A phonological rule like tone sandhi must therefore be free from the constraints of the LIH. Now we have proposed that the [*A not AB*] questions are formed by a rule of reduplication. As a phonological rule, it is not expected to obey the LIH, and the well-formedness of (60a) and similar sentences is explained.¹¹

The problem concerning preposition stranding also does not arise, again because [*A not AB*] questions involve no deletion, ellipsis or movement, but reduplication. The reduplication of a preposition does not create an empty category or a configuration disallowed by the filter (24). Therefore apparent cases of preposition stranding are allowed in such questions.

The difference between disjunctive questions and *A-not-A* questions regarding the LIH and P-stranding also follows. This is because disjunctive questions involve coordinate deletion, and like those involving anaphoric ellipsis, they cannot violate the LIH or strand a preposition.

Finally, the facts concerning island constraints have a principled explanation. Recall that an *A-not-A* form cannot occur in a sentential subject or complex NP, but a sequence with *haishi* can:

- (62) a. *[wo qu-bu-qu Meiguo] bijiao hao?
I go-not-go America more good
 Is it better that I go to America or that I don't?
- b. [wo qu haishi bu qu Meiguo] bijiao hao?
(Same as (a).)
- (63) a. *ni xihuan [renshi-bu-renshi ni de] ren?
you like know-not-know you REL person
 Do you like the person who knows you or the person who doesn't know you?
- b. ni xihuan [renshi haishi bu renshi ni de] ren?
(Same as (a).)

Consider first why the *A-not-A* questions are ill-formed. We have analyzed the *A-not-A* questions as simplex sentences with a [+Q] constituent, on a par with other constituent questions. Note that a wh-phrase can occur in a root clause, or it can occur in a complement clause and have scope over the matrix (i.e. be interpreted as a direct question):

- (64) ni weishenme meiyou lai?
you why did-not come
 Why didn't you come?
- (65) ni juede [ta weishenme bu gen wo shuo hua]?
you feel he why not with me speak word
 Why_i do you think [he didn't want to talk to me _{t_i]?}

This property of wh-questions is reminiscent of 'long-distance movement', although there is no overt wh-movement in the language. Our analysis of *A-not-A* questions captures the fact that they also exhibit the same property:

- (66) ni you-mei-you lai?
you have-not-have come
 Did you come or not?
- (67) ni juede [ta hui-bu-hui shengqi]?
you feel he will-not-will angry
 Do you think he will be angry or do you think he won't?

At the same time, note that a direct wh-question with *weishenme* 'why' cannot be formed with the wh-phrase occurring in an island:

- (68) *[ni weishenme mai shu] bijiao hao?
you why buy book more good
 What is the reason *x* such that it is better that you, for reason *x*, buy books?
- (69) *ni xihuan [weishenme piping ni de] ren?
you like why criticize you REL person
 What is the reason *x* such that you like the man who, for reason *x*, criticized you?

If *A-not-A* questions are a kind of wh-question, then the fact that they exhibit island effects is again no surprise. It is possible that whatever principle excludes the wh-phrase *weishenme* 'why' in (68) and (69) would also exclude the *A-not-A* constituent (a wh-phrase in our sense) in (62a) and (63a). In fact, as I have shown in Huang (1982), the island properties of *A-not-A* questions and *why*-questions are readily derivable from a general principle of UG, namely the Empty Category Principle (ECP) (Chomsky 1981). In particular, assume that the question constituents, although they do not wh-move in Syntax, do undergo abstract movement in LF. The traces of both the interrogative adverb *weishenme* 'why' and the interrogative INFL (phonetically the *A-not-A* constituent) will be subject, among other things, to the ECP. According to Chomsky's original formulation of it, the ECP requires a trace to be governed either by a lexical category (e.g. a verb), or by its antecedent (the moved category). A trace can be governed by a verb only if it occurs within the maximal projection of the verb (i.e., in VP). In the cases under consideration, since adjuncts like *weishenme* 'why' and the INFL constituent do not occur within VP, they are not lexically governed. Therefore, according to the ECP, their traces must be antecedent-governed. This means that an adjunct or an INFL constituent can only be moved a short step at any one time, to a landing site that is close enough to govern its trace at the extraction site. This locality requirement prevents an adjunct from moving across an island, and we have a principled explanation for the island effects of both *A-not-A* questions and certain wh-questions.¹²

As for disjunctive questions, the fact that they do not exhibit island effects follows from the postulation that their derivation involves no movement, nor traces of any kind that are subject to the ECP (or Subjacency). It is well known that deletion processes do not obey island constraints, hence the well-formedness of sentences like (62b) and (63b).

5. INDEPENDENT MOTIVATIONS

We have seen that under the modular approach, all the problems noted in section 2 disappear and the relevant facts receive a principled explanation.

But this approach is not motivated by these considerations alone. In this section, I will present comparative evidence as independent support for the proposed analysis.

5.1. Taiwanese Kam-questions

Many Chinese dialects have a question form illustrated by the Taiwanese examples below:

- (70) li kam beh lai?
you Q want come
Do you want to come?
- (71) li kam chaiia: i kio shimi mia:?
you Q know he call what name
Do you know what his name is?

In each of (70) and (71), there is an element, *kam*, that occurs between the subject and the VP. The presence of this element, presumably a result of fusion from *ka:-mng* 'dare-ask' ('may I dare ask'), is obviously what makes (70)–(71) questions. Note that *kam* occurs in the position of the INFL. The existence of *kam*-questions in Taiwanese thus provides important evidence for our analysis, since it shows that a question can indeed be formed with an interrogative INFL constituent. I propose that the *kam*-questions are Taiwanese counterparts of the *A-not-A* questions in Mandarin (more precisely, the [A not AB] type). That is, whereas the [+Q] INFL is realized by a reduplication in Mandarin, it is directly realized as *kam* in Taiwanese. *Kam*-type questions are used in many other dialects, in fact, as Zhu (1985) has pointed out. To cite just a few examples, in addition to *kam* in Taiwanese, we have *a* in Shanghai and Suchou, *ke* in Early Mandarin:

- (72) nong a le va? (Shanghai)
you Q come Prt
Will you come?
- (73) ni ke you kong? (Early Mandarin)
you Q have time
Do you have time?

My proposal that *kam*-questions and *A-not-A* questions are different realizations of the same element in different dialects converges with that of Zhu (1985), who cites extensive cross-dialectal data showing that the *kam*-type and the *A-not-A* type are counterparts of each other across different dialects. A difference between my analysis and that of Zhu's is

that whereas he analyzes the *kam*-question as a variant of the *A-not-A* question and the latter, in turn, as a variant of the disjunctive question, I have treated the [A not AB] type of question as a variant of the *kam*-question, and the latter in turn, in its syntax, as a type of constituent question. The wh-question-like property of *kam*-questions is evident from the fact that they exhibit long-distance scope dependency ((74)–(75)) and island effects ((76)–(77)):

- (74) li kam u chi:?
you Q have money
Do you have money?
- (75) li siu: i kam e lai?
you think he Q will come
Do you think he will come?
- (76) *|i kam u lai| kha hou?
he Q have come more good
(Lit.) *That he *kam* has come is better?
- (77) *li kha ai [kam u chi: e] lang?
you more like Q have money REL person
(Lit.) *You like the person who *kam* has come?

5.2. Complementary Distribution of kam and A-not-A

As evidence for the claim that *kam*-questions and *A-not-A* questions are of the same type, Zhu (1985) shows that these two forms generally do not co-occur in the same dialect — a kind of 'complementary distribution'. To the extent that this is true, our analysis of course receives additional strong support. However, there are exceptions to Zhu's claim. As counterexamples, Malmqvist (1986) cites sentences like the following from *Xi You Ji* (*Journal to the West* or *The Adventures of the Monkey*), a book which is believed to have been written in a *kam*-type dialect:

- (78) ye hai bu zhi shi ta bu shi ta li.
also still not know be him not be him Prt
Also (we) still don't know whether it was him or wasn't him.
(XYJ, 24.334)
- (79) you-ge shenme Qi-Tian-Da-Sheng cai lai zheli fou?
have-one what QTDS (Monkey's title) just came here not
Was there some kind of a QTDS who just came here or not?
(XYJ, 6.79)

- (80) ni ba shifu tuo guoqu bu shi?
 you BA master drag over not be
 Do you want to drag the Master over or not?
 (XYJ, 22.229)

It is even possible to find both a *kam*-word (*ke* below) and an *A*-not-*A* form within the same sentence:

- (81) kan ke qing Lao Sun bu qing.
 see Q invite Lao Sun not invite
 See if [they] will invite me (Lao Sun) or not invite [me].
 (XYJ, 5.60)

Zhu (1985) himself notes some examples of what he refers to as 'mixed forms':

- (82) Xi-Men-Qing wen Wen-Xiu-Cai: shu ke xie-le bu ceng?
 Xi-Men-Qing ask Wen Xiu-Cai book Q wrote not have
 XMQ asked WXC: have the books been written or haven't?
 (Jin Ping Mei, 67.1870)
- (83) wei zhi lao die ke yiyun bu yi.
 not know old dad Q permit not permit
 (I) wonder if Old Dad would permit it or not permit [it].
 (Jin Ping Mei, 69.1961)

In Taiwanese, 'mixed forms' of the following kind are also acceptable to some speakers:

- (84) li kam e lai be?
 you Q will come not-will
 Will you come or won't?
- (85) li kam bat chit-e lang (a) m-bat?
 you Q know this person or not-know
 Do you know this person or don't know [him]?

The existence of these sentences (especially those with the 'mixed forms') poses a non-trivial problem for Zhu's analysis and the claim that *A*-not-*A* questions are in complementary distribution with *kam*-questions. Notice, however, that all these examples are examples of the [*AB* not *A*] type, or can be seen as of this type (e.g., (78), with *B* being null in [*AB* not *A*]). Crucially, the counterexamples do not belong to the [*A* not *AB*] type, and no example with both a *kam*-form and an [*A* not *AB*] form seems to exist:

- (86) a. ni ke gaoxing?
 you Q happy
 Are you happy?

- (86) b. ni gao-bu-gaoxing?
 c. *ni ke gao-bu-gaoxing?
- (87) a. li kam bat chit-e lang?
 you Q know this person
 b. li bat-m-bat chit-e lang?
 c. *li kam bat-m-bat chit-e lang?

If this is correct, then the occurrence of (78)–(85) does not present a problem for my analysis (though it does for Zhu's). In fact, these sentences provide evidence for the claim that the [*AB* not *A*] questions should be distinguished from the [*A* not *AB*] type. And the complementary distribution of the latter type with the *kam*-form within a sentence provides an argument for treating them as allomorphs of the same morpheme.

5.3. Directionality and Phonetic Identity

A few Taiwanese *A*-not-*A* questions can take either the [*A* not *AB*] form or the [*AB* not *A*] form:¹³

- (88) a. li bat-m-bat khi Bikok?
 you have-not-have go America
 Have you been to America?
 b. li bat khi Bikok m-bat?
- (89) a. li ai-m-ai chit-e lang?
 you like-not-like this person
 Do you like this person?
 b. li ai chit-e lang m-ai?

However, in the following sentences only [*AB* not *A*] forms are acceptable:

- (90) a. li u cia hun bou cia hun?
 you have eat tobacco not-have eat tobacco
 Do you smoke or not smoke?
 b. li u cia hun bou?
 c. *li u bou cia hun?
- (91) a. i e lai be lai?
 he will come not-will come
 Will he come or not come?

(91) b. *i e lai be?*

c. **i e be lai?*

A key difference between these two groups of sentences is the following. In (88) and (89) the verbs *bat* 'have experience in' and *ai* 'like' have transparent negated forms, *m-bat* and *m-ai*, which contain the negative morpheme *m* plus a sequence phonetically identical to the affirmative form. But in (90) and (91), the negative forms of *u* 'have' and *e* 'will' are *bou* and *be* (not *m-u* or *m-e*). These forms are not analyzable into a sequence of negation followed by a phonetically identical copy of the affirmative. Why should this difference correspond to a difference in acceptability observed here? Under the proposed analysis, the answer is simple. Since [*A not AB*] questions are formed by reduplication, the result of reduplication will give two phonetically identical copies. So (88a) and (89a) are acceptable, where the negative forms can be obtained by reduplication. But (90c) and (91c) are unacceptable, since the sequences *u bou* and *e be* cannot be obtained by reduplication. On the other hand, all of the [*AB not A*] questions are acceptable, because these questions are instances of anaphoric ellipsis. A necessary condition for ellipsis is that the item to be deleted is in some way (phonetically or referentially) identical to some other item in a given context, but such a process does not require what is left over to be phonetically identical to something else. Therefore, all the (b) sentences in (88)–(91) are well formed regardless of whether their verbs have transparent negative forms or not.

5.4. Tone Sandhi

Finally, our analysis receives important support from a fact of Taiwanese tone sandhi. In Taiwanese (and other South Min dialects), each tone is associated with two forms: a 'citation tone' and a 'sandhi tone'. In each of the [*A not AB*] questions below, both the original verb (*bat, si, ka:*) and its copy are pronounced with a sandhi tone.

(92) a. *li bat-m-bat khi Bikok?*
you have-not-have go America

Have you been to America?

b. *li si-m-si Tan Siansi:?*
you be-not-be Tan Mr.

Are you Mr. Tan?

c. *li ka:-m-ka: sai chhia?*
you dare-not-dare drive car

Do you dare to drive a car?

But in the disjunctive questions (with *asi* 'or') below, only the second occurrence of the verb uses a sandhi tone. In the position preceding *asi* 'or', the elements *bat, si, ka:* must retain their citation tones.

(93) a. *li bat-asi-m-bat khi Bikok?*
you have-or-not-have go America

Have you been to America?

b. *li si-asi-m-si Tan Siansi:?*
you be-or-not-be Tan Mr.

Are you Mr. Tan?

c. *li ka:-asi-m-ka: sai chhia?*
you dare-or-not-dare drive car

Do you dare to drive a car?

Since Cheng (1973) (cf. also Chen (1987)), it has been well known that the choice between a citation tone and a sandhi tone in a given environment largely depends upon the syntactic structure of the environment. The core principle is that a tone immediately followed by a major phrase boundary (end of an NP, VP, S, etc.) retains its citation form, and in other environments it must take its sandhi form. The fact that the first *bat, si,* and *ka:* in each of (93) must retain their citation tones shows that immediately before *asi* 'or' there is a major phrase boundary. Since we analyze these sentences as deriving from full bi-sentential sources, this fact is obtained if we assume that coordinate deletion does not take place until after the tone sandhi rule, or that the brackets and boundaries are retained under deletion. On the other hand, since the sentences in (92) are derived from simplex sentence sources by reduplication of the first verbal element in VP, and since there is never a major phrase boundary between the verbal element and its negative copy, all of these verbal elements must use their sandhi tones. The difference between (92) and (93) thus argues strongly, again, for treating *A-not-A* questions as different syntactic constructions from true disjunctive questions.

6. CONCLUSION

Summarizing, I have argued that the paradigm in (1) should be analyzed as involving three separate construction types: true disjunctive questions, *A-not-A* questions that are derived by reduplication, and *A-not-A* questions that are instances of anaphoric ellipsis. This analysis explains a number of otherwise problematic facts concerning lexical integrity, preposition stranding, island constraints, and certain conditions governing the application of coordinate deletion. It also accounts for the distribution of certain alternative question forms across Chinese dialects and certain

phonological facts of Taiwanese questions. I hope this paper has demonstrated the use of a modular approach to an understanding of the relevant constructions in Chinese, and to linguistic explanation in general.

NOTES

* An earlier version of this paper was orally presented at the Second International Conference on Sinology at Academia Sinica, Taipei, in 1986, and a written version of the presentation appears (in Chinese) in its proceedings and *Zhongguo Yuwen*. I have also presented parts of this material at various linguistic colloquia, and have since benefited from comments made by various people. In preparing the current version, I have benefited particularly from comments by Peter Cole, Robbie Ishihara, Carol Georgopoulos, Audrey Li, Jim McCawley, Tsulin Mei, and two anonymous reviewers.

¹ A number of V-O 'compounds' exhibit what Chao (1968) calls 'ionization', whereby some degree of separability of their parts is allowed. These include *dan-xin* 'worry', *bang-mang* 'help'. When followed by an object, such constructions cannot have their parts separated:

- (i) wo bu dan-xin zhejian shi.
I not carry-heart this matter
I am not worried about this matter.

But in the absence of the object, separation is possible:

- (ii) xin, wo dao shi bu dan.
heart I but be not carry
Worried, I nevertheless am not. (Lit. Heart, I don't carry.)
- (iii) wo dan-le san tian de xin.
I carry-ASP three day 's heart
I worried for three days. (Lit. I carried three days' heart.)

Examples like *dan-xin* are best analyzed as having a dual status of a being a word and a phrase, as a result of the fact that the historical process of lexicalizing certain V-O phrases into compounds is not complete. See Huang (1984) for some discussion.

² The LIH may have to be modified somehow in view of English examples like *pro- and anti-abortion, pre- and postwar movies*, etc., but its otherwise general validity seems beyond doubt.

³ There are two apparent counterexamples to the prohibition against P-stranding. The elements *zai* and *bei* are prepositions meaning 'at' and 'by' when they are followed by objects. But in the following examples they do not take objects:

- (i) ta zai kan shu.
he at read book
He is reading.
- (ii) ta bei da le.
he by hit ASP
He was hit.

These are not real examples of P-stranding, however, since there is no implied location or agent whose reference is understood in discourse (though a genuine gap following a verb

must always have a definite reference). It is more reasonable to treat these as the progressive aspect and the passive voice markers, respectively.

⁴ Some speakers find sentences like (27b) marginally acceptable, though not those like (28b). This has to do with the fact that some prepositions in Chinese (which are historically derived from verbs) still retain their verbal features (e.g., may be used as main verbs, like *gen* 'with' or 'to follow') while others do not (e.g. the preposition *ba*). In general, the marginal possibility of stranding a putative preposition P is in direct proportion to P's ability to occur as a full verb. This generalization will follow if we assume that, when a putative P is stranded with marginal acceptability, it is used marginally as a full verb.

⁵ Sentences like (i) are perfectly grammatical, with [A not A] occurring within the sentential subject:

- (i) [ta qu bu qu Meigu] bu qingchu.
he go not go America not clear
Whether he will go to America is not clear.

But (i) differs from those in (33) in that the A-not-A question in (i) is an indirect question embedded as a subject. In (i), the scope of the A-not-A form does not exceed the sentential subject, so no island effects are observed. In the relevant examples in the text, what is shown is that [A not A] cannot occur within an island and have scope over that island (i.e. cannot be interpreted as a direct question having scope over the matrix clause).

⁶ Reduplication is subject to the condition that the sequence that reduplicates must be a phonological unit. Since the sequence *xihuan zheben* 'like this' is not a constituent, it cannot reduplicate: **ni xihuan zheben bu xihuan zheben shu?* I tentatively assume that the reduplication occurs as a phonological rule. It is also possible to analyze it as a lexical rule (as Moira Yip and Larry Hyman have pointed out to me). Since a lexical rule cannot reduplicate a whole VP, the sentence (1b) cannot be derived by reduplication. In this case, (1b) must be treated as a question of the [AB not A] type. As indicated above, questions of the form [A not A] (like (1b)) can be treated as instances of either [A not AB] or [AB not A] (where B is null).

⁷ More specifically, the A-not-A element (the [+Q] INFL in (44)) is the Chinese counterpart of *whether* in English. Under the proposed approach, disjunctive questions in English *whether* are, in their syntax, also wh-questions (with the wh-word *whether*). An important difference between English *whether* and the Chinese A-not-A element is that, whereas *whether* occurs in COMP, the A-not-A element occurs in INFL. But this is just an instance of the more general fact that whereas English is a wh-in-COMP language, Chinese is a wh-in-situ language. That is, we may say that INFL is the 'A-position' from which the A-bar element *whether* has been moved. The postulation that English disjunctive questions involve wh-movement (like other wh-questions) has important desirable consequences. Cf. Larson (1985) for a treatment along similar lines.

⁸ In their surface syntax, wh-questions and disjunctive questions also share the property that they may occur with the final particle *ne*. This contrasts with regular yes/no questions, which are formed by adding the final particle *ma* to a declarative sentence:

- (i) ni mai shu ma?
you buy book FP
Would you like to buy books?

A-not-A questions take the final particle *ne*, so in this respect, too, they pattern with wh- and disjunctive questions, but not with yes/no questions:

- (ii) ni mai bu mai shu ne/*ma?
you buy not buy book FP/FP
Would you like to buy books or not?

⁹ In current grammatical descriptions, the results of the ellipsis include the 'small pro', [_{VP}e], etc. In more theoretical terms these empty categories should probably be directly generated in the base, but I will talk about them as if they are generated by a process of ellipsis. In the base-generation theory, the empty categories involve a process of interpretation in Logical Form (LF) (cf. Williams (1977)). The restrictions on ellipsis (with respect to lexical integrity and P-stranding, etc.) that will be referred to in the text must then be stated in terms of restrictions on the occurrence of the relevant empty categories or the LF process that interprets them.

¹⁰ In a structure of subordination, ellipsis can of course go backward:

- (i) *wo hai mei kan-wan [e], ta jiu ba shu na-zou le.*
I still not read-up he then BA book take-away ASP
 Before I finished reading [it], he took away the book.

¹¹ No problem needs to arise either if the reduplication process is taken to be a lexical rule (see note 6). Since a lexical rule typically affects subparts of a word, it of course does not obey the LIH. The well-formedness of (60a) is again expected.

¹² I will not burden the reader with exact technical details of this explanation. The idea that the distribution and interpretation of *why* exhibit ECP effects is first proposed in Huang (1982), and has been worked out in more detail in Lasnik and Saito (1984) and Chomsky (1986). Since the INFL constituent is located outside of VP, its trace (like the trace of adjunct *why*) is subject to antecedent government. The similarities between *why*-questions and *A-not-A* questions are therefore entirely expected. Incidentally, note that an argument *wh*-phrase (like 'who' and 'what') does not exhibit similar island effects:

- (i) [[wo kan naben shu] bijiao hao]?
I read which book more good
 That I read which book is better?
- (ii) [ni xihuan [piping shei de] shu]?
you like criticize who REL book
 You like the book that criticizes who?

In these examples, the *wh*-phrases 'which book', 'who' are already lexically governed. Since their traces need not be antecedent-governed, movement (in LF) of these phrases does not violate the ECP. (The movement still violates Subjacency, but it is a general property of LF movement rules that they do not exhibit Subjacency effects.)

I assume that [*AB* not *A*] questions are also subject to abstract movement (of the base-generated coordinate VP) in LF. Therefore such questions also exhibit island effects on a par with the [*A* not *AB*] type.

¹³ See Lin (1974) for more examples. Note that for two forms to be analyzed as variants of one it is not necessary that they cannot be found within the same dialect. All that is necessary is that they do not co-occur within the same sentence. Therefore Zhu's observation that two question forms do not co-occur in the same dialect represents only a natural tendency, not absolutely required of our analysis.

Department of Modern Languages and Linguistics
Cornell University
212 Morrill Hall
Ithaca, NY 14853
U.S.A.

PIED PIPING AND LOGICAL FORM

0. INTRODUCTION

In this paper, I present an analysis of the Logical Form derivation of pied piping constructions. I assume that pied piping is an instance of the rule 'move alpha', where alpha is an *X'* that contains a *wh*-element. However, questions arise as to the LF derivation of pied piping constructions. For although much work has been done to make explicit the LF derivation of cases of simple *wh*-movement, very little has been done regarding cases of pied piping. It has been proposed in the literature that such derivations involve the reconstruction of S-structure *c*-command relationships at LF. In the first section below, I show that an actual derivation of this type is problematic. I present an alternative analysis in section 2 below and argue that the LF representations derived there satisfy empirical and theoretical criteria.

1. RECONSTRUCTION

As a first consideration, examine the LF representations of the cases of simple *wh*-movement shown below.

- (1) a. Who did John see?
 for which *x* (*x* a person), John saw *x*
- b. What fell?
 for which *x*, *x* fell
- c. What did John hide the money in?
 for which *x*, John hid the money in *x*
- (2) a. the woman who John saw
 the woman *x*, such that John saw *x*
- b. the book which/that fell
 the book *x*, such that *x* fell
- c. the box which John hid the money in
 the box *x*, such that John hid the money in *x*

In the preceding examples, I assume that the rule of QR (May 1977, 1985) has applied. This rule operates in the LF component and extracts a quantifier to a pre-S position so that it binds (*c*-commands) its variable.