

# On the Absence of Island Effects

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## Abstract

This paper explores an alternative to Tsai's (1994) analysis of Chinese *wh-in-situ* construals. It is claimed that there is a correlation between the lack of island effects in Chinese topicalization and relativization on the one hand, and that in Chinese *wh*-questions on the other. We present facts from so-called sloppy relatives and parasitic gap constructions to show that D(iscourse)-linking in Pesetsky's (1987) sense could play a part in construing *wh's-in-situ*, given that, in the vein of Huang (1984), a null operator is base-generated in [Spec, CP] for Chinese/Japanese-type languages. If the null operator in question is [+Q], then unselective binding applies to license a *wh*-question. On the other hand, if the null operator is [-Q], then predication applies to form a topic-comment structure or a relative construction.

Keyword: Chinese syntax, syntactic theory, island effects, Subjacency  
discourse-linking, *wh*-question, topicalization, relativization

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### 0. Retrospection

One of the long-term debates since the embryo of modular approach concerns the problem whether Subjacency plays a role in LF. One of its central issues concerns the fact that the wide-scope interpretation of Chinese *wh's-in-situ* does not display subjacency effects, while the corresponding overt extraction does. There are two opposing ways to approach the problem in the linguistic literature: One is championed by Huang's (1982) proposal that Subjacency only applies during the mapping from D-structure to S-structure, while the ECP holds at both S-structure and LF. The other is defended by Nishigauchi (1986,1990) and Pesetsky (1987), who maintain the globality of Subjacency and attribute the absence of Subjacency effects to LF pied-piping and D(iscourse)-linking.

Despite all the efforts that have been exerted on the debate, there are still a few clues overlooked in the crossing fire. Among them stands out the fact that the lack of Subjacency effects in single *wh*-questions is generally observed in discourse-oriented or topic-prominent languages such as Chinese and Japanese, as exemplified by (1a,b) respectively, while other languages only allow similar construals in multiple or D-linked *wh*-questions:

- (1) a. ni mai-le [<sub>DP</sub> [<sub>CP</sub> shei xie e<sub>j</sub>] de shu<sub>j</sub>]?  
 youbuy-Prf who write PNM book  
 Who is the person x such that you bought [books [that x wrote]]?
- b. John-wa [<sub>DP</sub> [<sub>CP</sub> e<sub>i</sub> dare-o aisiteiru] onna<sub>i</sub>-o] nagutta-no?  
 John-Top who-Acc loves woman-Acc hit-Q  
 Who is the person x such that John hit the woman who loves x?

Moreover, the lack of Subjacency effects is not an isolated feature of *wh*-question formation in these two languages, but obtains for topicalization as well:

- (2) a. Akiu<sub>i</sub>, [<sub>DP</sub> xuduo [<sub>CP</sub> e<sub>i</sub> chubane<sub>j</sub>] de shu<sub>j</sub>] dou mai-de bu-cuo.  
 Akiu many publish PNM book all sell-DE not-bad  
 Akiu, many books which (he) published sell well.
- b. Mary<sub>i</sub>-wa John-ga [<sub>DP</sub> [<sub>CP</sub> e<sub>i</sub>e<sub>j</sub> nagutta] otoko<sub>j</sub>-o] ketobasita.  
 Mary-Top John-Nom hit man-Acc kicked  
 Mary, John kicked the man who hit (her).

A reasonable conjecture is that the parallel between *wh*-question formation and topicalization is not an accident, but a systematic fact resulting from some formal properties they share. For instance, we may have the following base-generated configuration set for Chinese/Japanese-type

languages, which allows a non-movement construal between a c-commanding operator and its bindee, as illustrated by (3):

(3)  $Op_i [+/- wh] \dots [_{DP} [_{CP} \dots wh_i / e_i \dots ] \dots ] \dots$

Consequently, no Subjacency effect is expected. Intuitively appealing as it is, the direct evidence for this correlation is very thin. In this paper, I will try out an indirect approach. The missing link, in my opinion, lies in D-linked *wh*-questions, which possess the combined characteristic of topic constructions and *wh*-questions. Namely, it involves both D-linking and scope formation.

In section one, we start by looking into a conceptual connection between Huang's (1984) null topic parameter and Pesetsky's (1987) D-linking analysis. Section two entertains the possibility of treating topicalization as an instance of predication, where a null operator construction is most essential. Section three distinguishes a null operator from a genuine quantifier. We will tease a [Q] feature from a [wh] feature, with a view to deriving certain asymmetries of *wh*-construals in English. Section four presents a view according to which D-linked *wh*-questions involve both predication and scope formation. Pesetsky's (1987) insights will also be reinterpreted in a more articulate way within the CP system.

## 1. Setting the Stage

A careful investigation of Chinese data will find that the absence of Complex NP effects is not restricted to wide-scope *wh*-questions. Some instances of topicalization, as noted by Huang (1984), are also immune to Subjacency, as evidenced by (4a) ((2a) repeated here):<sup>1</sup>

- (4) a.  $Akiu_i (a), [_{DP} xuduo [_{CP} e_i chuban e_j ] de shu_j ] dou mai-de bu-cuo.$   
 Akiu Top many publish PNM book all sell-DE not-bad  
 Akiu, many books which (he) published sell well.
- b.  $Op_i, [_{DP} xuduo [_{CP} e_i chuban e_j ] de shu_j ] dou mai-de bu-cuo.$   
 many publish PNM book all sell-DE not-bad  
 Many books which (he/she/it/them) published sell well.

Here we have a case where a matrix topic is coreferential with an empty subject embedded in a relative clause. The presence of *xuduo* 'many' indicates that the projection of the subject NP is closed off in the sense of Fukui & Speas (1986). This ensures that the topic *Akiu* belongs to the main clause. However, no Complex NP Constraint (CNPC) effect is detected. Huang's solution is that the subject in question is an empty pronominal, and accordingly is linked to the matrix topic by observing the Generalized Control Rule (GCR), which requires a Pro (including PRO and pro) to be coindexed with the closest antecedent. As a result, no movement is involved, and hence the lack of island effects in (4a). The same analysis applies to (4b) under the assumption that a topic can be a base-generated null operator in Chinese. But a null operator cannot in itself identify the

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<sup>1</sup> The abbreviations used in this paper is glossed as follows: BA: affective Case-marker; DE: postverbal complement marker; Inc: inchoative aspect; PNM: pronominal modifier maker; Prf: perfective aspect; TOP: topic marker.

embedded empty subject (cf. Chomsky 1986a). Discourse information thus comes into play. As a result, the null topic only serves to mediate the identification from discourse. As Huang (1989) observes, a typological distinction thus can be drawn between Chinese and Romance languages. Empty pronominals are identified by INFL or AGR, in Romance languages, and by D-linking in Chinese-type languages.

In this paper, I will implement Huang's insight in a slightly different way. In the spirit of Chomsky's (1977) null operator analysis of topicalization, we assimilate (4a) to (4b) in claiming that both involve a base-generated sentential null topic, which needs to be identified by a discourse topic, as illustrated in the following configuration:<sup>2</sup>

- (5) [Topic *Akiu*<sub>i</sub> ], [ Op<sub>i</sub> [ . . . e<sub>i</sub> . . . ] ]

*Akiu*, as a proper name, suffices to initiate a discourse all by itself, and identifies the null operator in (5). In contrast, an indefinite NP, as a "novel" variable in Heim's (1982) sense, is defective in this regard, as evidenced by (6a). To make the construal feasible, a definite NP like *na-ge ren* 'that person' must instead be supplied, as shown by (6b):

- (6) a. \*[*yi-ge ren*]<sub>i</sub> , [DP *xuduo* [<sub>N'</sub> [ e<sub>i</sub> *chuban* e<sub>j</sub> ] *de shu*<sub>j</sub> ] ] *dou mai-de bu-cuo*.  
 one-CL person many publish PNMbook all sell-DE not-bad  
 A person, many books which (he) published sell well.
- b. [*na-ge ren*]<sub>i</sub> , [DP *xuduo* [<sub>N'</sub> [ e<sub>i</sub> *chuban* e<sub>j</sub> ] *de shu*<sub>j</sub> ] ] *dou mai-de bu-cuo*.  
 that-CL person many publish PNM book all sell-DE not-bad  
 That person, many books which (he) published sell well.

A general fact about topic NPs thus follows: they have to be definite or specific in order to identify the null operator in question. Pesetsky (1987), on the other hand, proposes a non-movement analysis of the lack of superiority effects in D-linked *wh*-questions. First consider the following data:

- (7) a. Who<sub>i</sub> did you persuade e<sub>i</sub> to read what?  
 b. ??What<sub>j</sub> did you persuade who(m) to read e<sub>j</sub>?
- (8) a. Which man<sub>i</sub> did you persuade e<sub>i</sub> to read which book?  
 b. Which book<sub>j</sub> did you persuade which man to read e<sub>j</sub>?

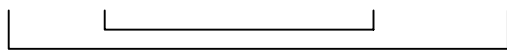
The contrast between (7a) and (7b) does not hold when we replace *who* with *which person*, and *what* with *which book*, as shown by (8a,b). In other words, superiority effects do not show up in the presence of D-linked *wh*-phrases. The way Pesetsky approaches this problem is to highlight the lexical property of a *which*-phrase, i.e. the D-linkedness, and makes it an exception to the Nested Dependency Condition (NDC). The NDC states that if two *wh*-trace dependencies overlap, one must contain the other. As we can tell from the LF representations (9), the dependency between

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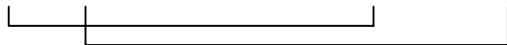
<sup>2</sup> For the distinction between discourse and sentential topics, see Farmer (1980), Hale (1980), and Kitagawa (1982).

*what* and its trace contains the dependency between *who* and its trace in (9a), but they overlap in (9b). (9b) is thus correctly ruled out in violation of the NDC:

(9) a. [what<sub>j</sub> [who<sub>i</sub> [did you persuade t<sub>i</sub> to read t<sub>j</sub> ]]]



b.??[who<sub>i</sub> [what<sub>j</sub> [did you persuade t<sub>i</sub> to read t<sub>j</sub> ]]]



For D-linked *wh*-questions, Pesetsky adopts Baker's (1970) Q-morpheme analysis, which is based on the ambiguity of (10):

(10) Who knows where we bought what?

a. [[<sub>Comp</sub> Q<sub>j</sub> who<sub>j</sub> ] e<sub>j</sub> knows [[<sub>Comp</sub> Q<sub>i,k</sub> where<sub>k</sub> ] we bought what<sub>i</sub> e<sub>k</sub> ]]

b. [[<sub>Comp</sub> Q<sub>i,j</sub> who<sub>j</sub> ] e<sub>j</sub> knows [[<sub>Comp</sub> Q<sub>k</sub> where<sub>k</sub> ] we bought what<sub>i</sub> e<sub>k</sub> ]]

(10) is ambiguous, with a narrow-scope paired reading between *where* and *what* in (10a) and a wide-scope paired reading between *who* and *what* in (10b). Now assume that every interrogative clause is headed by a Q morpheme, that it serves as an unselective binder of the in-situ *wh*-phrases. A non-movement construal then holds either between the higher Comp and *what*, or between the lower Comp and *what*. The same analysis applies to *which*-questions, as illustrated by the LF representation (11a,b):

(11) a. [<sub>S</sub> [<sub>Comp</sub> Q<sub>i,j</sub> which man<sub>i</sub> ] [<sub>S</sub> . . . persuade e<sub>i</sub> to read which book<sub>j</sub> ]]

b. [<sub>S</sub> [<sub>Comp</sub> Q<sub>i,j</sub> which book<sub>j</sub> ] [<sub>S</sub> . . . persuade which man<sub>i</sub> to read e<sub>j</sub> ]]

As the term "*wh*-trace dependency" implies, the NDC is a condition on movement. Since no movement is involved in the indexing between the Q morpheme and the in-situ *which*-phrase, the NDC is irrelevant to (11a,b). Consequently, we do not get a contrast between (8a) and (8b).

For one thing, it is instructive to note that while the contrast between (12a) and (12b) can be attributed to the ECP (cf. Huang 1982), (7b) cannot be ruled out in the same way:

(12) a. Mary asked [who<sub>i</sub> [ t<sub>i</sub> read what]]?

b.\* Mary asked [what<sub>j</sub> [who read t<sub>j</sub> ]]?

First consider the following LF representations of (12a,b):

(13) a. Mary asked [what<sub>j</sub> [who<sub>i</sub> [ t<sub>i</sub> read t<sub>j</sub> ]]]

b.\* Mary asked [who<sub>i</sub> [what<sub>j</sub> [ t<sub>i</sub> read t<sub>j</sub> ]]]

The subject trace in (13b) is not head-governed, violating the ECP. In contrast, the object traces of (7a,b) are head-governed by *persuade* and *read* respectively. The relative minor deviance of (7b) thus indicates that the ECP and the NDC each play a role here. Namely, (7b) violates the NDC, whereas (13b) violates both the ECP and the NDC.

Now let's put the null topic hypothesis and the D-linking theory side by side. Their conceptual connection is suggestive, as illustrated by (14a,b).

- (14) a.  $Op_i, \dots [Opaque\ Domain \dots Pro_i \dots ] \dots$   
 b.  $Q_i, \dots [Opaque\ Domain \dots wh_i \dots ] \dots$

What strikes us as even more crucial is their involvement in accessing discourse information, whose consequence turns out to be a pure syntactic one, that is, the absence of island effects. If this correlation is to be dismissed as a matter of pragmatic overriding, then a generalization will be lost in Syntax proper. Therefore, we will proceed to explore the formal property shared by (14a) and (14b), and present a view according to which topicalization is an instance of predication, and a D-linked *wh*-question involves both predication and scope formation.

## 2. The Syntax of Topic

A suggestive clue along our line of reasoning concerns the fact that Chinese relativization patterns with topicalization with respect to the absence of Subjacency effects. (15) is an NP with a doubly embedded relative clause, where the empty subject is coindexed with the higher noun head:

- (15)  $[_{CP} Op_i [_{IP} [_{DP} [_{CP} e_i\ xie\ e_j ]\ de\ shu_j ] ]\ dou\ mai-de\ bu-cuo]$   $de\ na-wei\ zuojia_i$   
 write PNM book all sell-DE not-bad DE that-CL writer  
 The writer *x* such that [books [which *x* wrote]] all sell well

Again, no CNPC effect is detected, which indicates that the null operator in (15) is base-generated, and generalized control is relevant in relativization.

To give a rationale behind the parallel, we entertain the possibility that topicalization and non-restrictive relativization share similar syntax and semantics: both of them involve null operators and hence predication, as sketched by (16a,b):

- (16) a.  $[_{Topic}\ NP ] , [_{CP}\ Op_i [ \dots e_i \dots ] ]$   
 b.  $[_{DP}\ [_{CP}\ Op_i [ \dots e_i \dots ] ]\ de\ NP ]$

Here our intuition is that the chain headed by the null operator in (16) creates an open place, turning its *c*-command domain into a one-place predicate. Ideas of the same sort can be found in the classic analyses of small clauses, parasitic-gaps, and *tough*-constructions (cf. Chomsky 1981-1986, Aoun & Clark 1985, Clark 1985, Kempchinsky 1986, Browning 1987). Specifically, it is a discourse topic that is predicated of in (16a), whereas it is a head noun that is predicated of in (16b). A null topic is thus understood as a predicate variable in Williams's (1980) sense. According to his view, an in-situ PRO or a "predicate variable" suffices to trigger predication, as shown below:

- (17)  $John_i$  tried [ $PRO_i$  to quit smoking].

Alternatively, as Chomsky (1986a) points out, the null operator analysis is to be adopted in both *tough*-constructions like (18a) and infinitival relatives like (18b):

- (18) a. John<sub>i</sub> is too stubborn [Op<sub>i</sub> [PRO<sub>k</sub> to talk to e<sub>i</sub> ]].  
 b. This is the right question<sub>i</sub> [Op<sub>i</sub> [PRO<sub>k</sub> to ask e<sub>i</sub> ]].

This move is obligatory for (18a,b), because the empty object in question can be neither a PRO nor a pro in English, and therefore must be a variable bound by some null operator. On empirical grounds, this position is supported by the locality effects exhibited by (19a) and (19b), which represent *tough* and relative constructions respectively:

- (19) a.\* John<sub>i</sub> is too stubborn [Op<sub>i</sub> [PRO<sub>j</sub> to talk to [the man [who loves e<sub>i</sub> ]]]].  
 b.\* This is the right question<sub>i</sub> [Op<sub>i</sub> [PRO<sub>j</sub> to ask [the man [who raises e<sub>i</sub> ]]]].

The question remains as to why the null operator of (19a,b) should move all the way to the higher Comp in violation of locality conditions. A tentative answer is that the null operator must take a c-commanding position to define a predicate domain, in much the same way as a quantifier must undergo QR to define a scope domain. If the null operator fails to move to the higher Comp, not only does the predication fail to satisfy syntactic adjacency (cf. Chomsky 1986a and Safir 1986), but compositionality is also violated on semantic grounds (cf. Srivastav 1991). This move provides a formal basis for Chao's (1968) topic-comment analysis, as illustrated below:

- (20) [<sub>Discourse</sub> Topic<sub>i</sub> , [<sub>Comment</sub> Op<sub>i</sub> [ ... e<sub>i</sub> ... ]]]

Now consider Chinese topics. It is well-known that Chinese allows "topic-in-situ", i.e., a base-generated topic with no gap in the comment clause, as exemplified below (see Li & Thompson 1981, Huang 1984, Tsao 1979,1990, and in particular, Tai 1992 for a distinction between English- and Chinese-style topics):

- (21) [<sub>Topic</sub> na-chang huo], [<sub>Comment</sub> xingkui xiaofangdui lai-de zao].  
           that-CL fire                   fortunately fire-brigade come-DE early  
 (About) that fire, fortunately the fire brigade came early.

The relationship between the topic and the comment clause is sometimes called "aboutness". Given Huang's claim that a sentential null topic can be base-generated in Chinese, this "aboutness" construal of (21) is naturally characterized as a predication relation between a discourse topic and a comment clause with a Pro, functioning as predicate variable in William's sense:

- (22) [<sub>Topic</sub> na-chang huo]<sub>i</sub> , [<sub>Comment</sub> Pro<sub>i</sub> [ xingkui xiaofangdui lai-de zao]]  
           that-CL fire                   fortunately fire-brigade come-DE early

Here the null operator analysis is not viable, since there is no variable to operate upon. Our position is supported by the presence of "sloppy relatives" in Chinese, where again no gap can be found:<sup>3</sup>

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<sup>3</sup> This sort of expressions is first pointed out to me by T.-C. Tang. Hiroaki Tada also informs me there exist similar construals in Japanese. The interpretation seems to hinge upon speakers' knowledge that the clause and the noun head must be related in some way in view of the syntactic construction.

- (23) a. [DP [CP Pro<sub>i</sub> [Akiu tan gangqin]] de shengyin<sub>i</sub> ]  
           Akiu play piano PNM sound  
           The sound which (is produced by) Akiu's playing piano
- b. [DP [CP Pro<sub>i</sub> [Akiu sha ren]] de jiama<sub>i</sub> ]  
           Akiu kill people PNM price  
           The price which (is charged in hiring) Akiu to kill people
- c. [DP [CP Pro<sub>i</sub> [Akiu zuobi] de xiachang<sub>i</sub> ]  
           Akiu cheat PNM consequence  
           The consequence which (results from) Akiu's cheating
- d. [DP [CP Pro<sub>i</sub> [Akiu jiu ren] de huibao<sub>i</sub> ]  
           Akiu save people PNM reward  
           The reward which (is gained by) Akiu's saving people

Note that the relationship between the head noun and the relative clause is not far beyond aboutness, where the exact interpretation has to be pinned down by some semantic or pragmatic conventions.<sup>4</sup> It is thus plausible to say that topic-in-situ constructions and sloppy relatives are realizations of the same typological trait, just as we have seen in the long-distance construal of topicalization (cf. (4)) and that of relativization (cf. (15)).

For one thing, as Jim Huang (p.c.) points out, similar sloppy construals can also be found in English NP projections, but in the form of gerunds, as exemplified below:

- (24) a. the price of his killing Bill  
       b. the price of him killing Bill  
       c. the consequence of his cheating Bill  
       d. the consequence of him cheating Bill

Since "sloppy gerunds" are typically associated with actions or events, we may expect their Chinese counterparts to show the same trait, which is indeed the case. As shown by (25a,b), a stative predicate cannot head a sloppy relative in Chinese:

- (25) a. \* [[Akiu (hen) congming] de haochu] hen duo.  
           Akiu very intelligent PNM benefit very many
- b. \* [[Akiu (hen) guzhi] de xiaochang] hen can.  
           Akiu very stubborn PNM consequence very miserable

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<sup>4</sup> As Jim Higginbotham (p.c.) points out, similar construals are not uncommon in English, but a lexical relative *wh* must appear to mark the open place, as exemplified below:

- (i) a. The duty manager where I live  
       b. The French president when I was in Paris

In the light of this observation, it seems reasonable to suggest that it's an implicit event argument that is relativized, as represented by Pro in (23a-d). It serves as the relevant open place which makes the sloppy construal possible. Then what is the property shared by Chinese sloppy relatives and English sloppy gerunds? One way to think about it is to say that the presence of event Pro is triggered by gerundive morphology in English, whereas it is supplied by the parametric setting of Chinese.

For another, it should be admitted that predication of this sort is not without its limitation. For example, when the sloppy relative of (23) is embedded as a sentential subject, we detect strong deviance:

- (26) \*  $[_{DP} [_{CP} [_{CP} \text{Akiu tan gangqin}] \text{hen heshi}] \text{ de shengyin}]$   
           Akiu play piano    very appropriate PNM sound  
       ? The sound which it appropriate for Akiu's playing piano (to produce)

At first glance, the locality effect of (26) suggests the presence of chain-formation, and hence the existence of a gap. However, Huang (1982) has argued convincingly that topicalization and relativization do not observe the sentential subject constraint in Chinese, as shown by (21a) and (21b) respectively:

- (27) a.  $\text{Akiu}_i, \text{ wo renwei } [_{CP} [_{CP} e_i \text{ tan gangqin}] \text{ hen heshi}]$   
           Akiu I think                   play piano    very appropriate  
           Akiu, I think it is very appropriate for him to play piano.
- b.  $[_{DP} \text{xuduo } [_{CP} \text{ wo renwei } [_{CP} [_{CP} e_i \text{ tan gangqin}] \text{ hen heshi}]]] \text{ de ren}_i ]$   
           many I think                   play piano    very appropriate PNM person  
           Many x, x a person, such that I think it is very appropriate for x to play piano

Note that the long-distance construal of (27a,b) cannot be an instance of generalized control. This is because there is an intervening potential controller, i.e., the matrix subject *wo* 'I', blocking the would-be control relation according to the GCR. Therefore, it must be a case of Chain-formation.<sup>5</sup> Here the lack of sentential subject effects is accounted for in line with the lack of the subject/object asymmetry in Chinese *wh*-movement: The subject position, as Huang proposes, is always lexically governed (and hence L-marked) in Chinese. Consequently, extraction from a sentential subject never violates Subjacency in Chomsky's (1986b) sense. It is therefore unlikely that the deviance of (26) results from Subjacency violation. Otherwise, (26) should be as good as (27a,b). We thus conclude that the relative clause of (26) does not contain a gap.

Given the null topic hypothesis, there are two possible scenarios left for our consideration. First, a null operator appears in the higher CP Spec, and predicates the whole clause of the head noun. This move, as noted by Alec Marantz (p.c.), results in anomaly, since it does not make much

<sup>5</sup> As noted by Huang (p.c.), the sentential subject constraint can be maintained if we adopt a "half-way" movement analysis based on Huang (1984,1992), as illustrated below:

(i)  $\text{Akiu}_i, [_{Op}_i [\text{ wo renwei } [t_i [ \text{ Pro}_i \text{ tan gangqin}] \text{ hen heshi}]]]$   
           Akiu I think                   play piano    very appropriate

Here a null operator is first base-generated in the embedded CP, where it controls the subject Pro of the relative clause, and then moves overtly to the matrix CP Spec, triggering predication on the topic *Akiu*. Subjacency is thus observed.

sense to relate the statement "it is appropriate for Akiu to play piano" compositionally to the notion "sound". Our point is further illustrated by making the sloppy relative an object of a speech verb like *piping* 'criticize', which improves the construal considerably with *shengyin* understood as "the sound of criticizing":

- (28) ?<sub>[DP [CP Lisi piping [CP Akiu tan gangqin]] de shengyin] hen da.</sub>  
 Lisi criticize Akiu play piano PNM sound very loud  
 The sound which (is produced by) Lisi's criticizing Akiu's playing piano  
 is very loud.

Second, a null operator is base-generated in the lower Comp: if it moves to the higher Comp, the same anomaly emerges; if it stays, then the lower CP is marked as the relevant predicate, as in (29):

- (29) \*<sub>[DP [CP [CP Op<sub>i</sub> [ Akiu tan gangqin ] ] hen heshi ] de shengyin<sub>i</sub> ]</sub>  
 Akiu play piano very appropriate PNM sound

But this leaves the string *hen heshi* 'very appropriate' outside of the predicate domain, violating Syntactic Adjacency (Chomsky 1986a, Safir 1986). (26) is therefore ruled out either by compositionality on semantic grounds or by the adjacency requirement on syntactic grounds.

In sum, we have shown that Huang's (1984) proposal is further justified by the parallel between sloppy relatives and "topic-in-situ" sentences, and overall there is a promising prospect of characterizing this parallelism in terms of predication. On the other hand, we also raise the issue concerning the distinction between predication and quantification, which still calls for justification on empirical grounds. In the next section, we will see some evidence from both English and Chinese relativization.

### 3. Predication vs. Scope Formation

Before we go any further, it is instructive to note that, despite its domain-defining property, a null operator is not a genuine quantifier. It does not induce quantification over its trace. Rather, it mediates identification of its trace through predication. Specifically, we would like to claim that relative *wh*'s have the same status as Chinese null operators. Namely, their function is to mark its c-command domain as a predicate. This point is illustrated by comparing English interrogative *wh*'s with their relative counterparts. Above all, while a paired reading is available in a multiple *wh*-question like (30a), the same construal is blocked in a relative clause like (30b):

- (30) a. (Among those people,) who likes whom?  
 b. \* The couple who likes whom

This suggests that the Absorption rule (Higginbotham & May 1981), as informally stated in (29), is not available for relativization:

- (31) [<sub>S</sub> [<sub>COMP</sub> Wh<sub>1</sub>, Wh<sub>2</sub>, . . . , Wh<sub>n</sub> ] [<sub>S</sub> . . . ] ] → [<sub>S</sub> Wh<sub>{1, 2, . . . , n}</sub> ] [<sub>S</sub> . . . ] ]

The effect of this rule is to turn a Comp containing  $n$  quantifiers into an  $n$ -ary quantifier, resulting in paired readings. Take (30a) for example: after the object *whom* undergoes LF-movement to Comp, the Absorption Rule applies to create a binary *wh*-operator, as in (32):

(32)  $[_S [_{COMP} \text{What}_i \text{Who}_j ] [_s e_j \text{ likes } e_i ] ] \rightarrow [_S \text{Wh}_{\{i, j\}} ] [_s e_j \text{ likes } e_i ] ]$

Now suppose that relative *wh*'s, in contrast to interrogative *wh*'s, are not quantifiers. It follows that relative *wh*'s are not subject to the Absorption rule. We thus correctly predict that the paired reading is unavailable for (30b).

Here a working hypothesis is in order: A relative *wh* crucially differs from an interrogative *wh* in lacking scopal properties. We may characterize this distinction in terms of the feature [Q(uestion)], which, if its value is positively set, represents interrogative quantificational force. An Interrogative *wh* is then [+Q], and a relative *wh* is [-Q]. On the other hand, interrogative and relative *wh*'s share the morphological feature [+wh] in undergoing *wh*-movement.

The [Q]-[wh] dichotomy also provides a solution to a pied-piping mystery noted by Ross (1967) and Soames & Perlmutter (1979): Pied-piping is relatively free for relativization, but much more restricted for *wh*-question formation, as shown by the contrasts between (33) and (34):

- (33) a. reports *which* the government regulates the height of the lettering on the covers of \_\_\_\_\_  
 b. reports *the cover of which* the government regulates the height of the lettering on \_\_\_\_\_  
 c. reports *the lettering on the covers of which* the government regulates the height of \_\_\_\_\_  
 d. reports *the height of the lettering on the covers of which* the government regulates \_\_\_\_\_

- (34) a. *What* does the government regulate the height of the lettering on the covers of \_\_\_\_\_ ?  
 b.\* *The cover of what* does the government regulate the height of the lettering on \_\_\_\_\_ ?  
 c.\* *The lettering on the covers of what* does the government regulate the height of \_\_\_\_\_ ?  
 d.\* *The height of the lettering on the covers of what* does the government regulate \_\_\_\_\_ ?

In (33a-d), no scope formation is involved, since relative *wh*'s do not possess scopal properties. Therefore, the only concern is locality conditions and *Wh*-Criterion (cf. Rizzi 1990). Since all the NP nodes embedded in the object are properly governed, as evidenced by the parallelism of topicalization in (35a-d), both the ECP and the CED are respected throughout (33a-d):

- (35) a. *Those reports*, the government regulates the height of the lettering on the covers of \_\_\_\_\_  
 b. *The cover of those reports*, the government regulates the height of the lettering on \_\_\_\_\_

- c. *The lettering on the covers of those reports*, the government regulates the height of \_\_\_\_\_
- d. *The height of the lettering on the covers of those reports* the government regulates \_\_\_\_\_

In contrast, only the lowest NP *what* is subject to extraction in the corresponding *wh*-questions, as shown by the contrast between (34a) and (34b-d). Since the well-formedness of scope formation crucially relies on the discharging of [+Q] in C<sup>0</sup> through Spec-head agreement, the fact follows naturally in that only the bearer of the [+Q] feature, i.e. *what*, can undergo *wh*-movement.

A technical question encountered here is how the *Wh*-Criterion is fulfilled throughout (33b-d): since all the pied-piping options are granted, it is theoretically required that a [+wh] feature should be able to appear in every NP projection of the object. This is unexpected if we subject the [+wh] feature and the [+Q] feature to the same percolation constraint. One possible solution is to further distinguish a [+wh] feature from a [+Q] feature in their capability of percolating. Above all, there are at least two alternative approaches to the percolation mechanism of [+wh] in the literature. Nishigauchi (1986) based his analysis upon the condition on analyzability (May 1977):

- (36) If a rule R mentions Spec, then R applies to the minimal [+N] phrase dominating Spec, which is not immediately dominated by another [+N] phrase.

According to his proposal, (37a) is well-formed because *which* is in a specifier position, and [+wh] is allowed to percolate to the minimal NP node which is immediately dominated by the PP node, a [-N] category according to Chomsky's feature system.<sup>6</sup> In contrast, the PP *behind which gate* as a whole is an adjunct in (37b). As a result, the feature [+wh] cannot reach the NP node dominating the whole object, failing to license pied-piping:

- (37) a. [Which gate] did he find a lion behind?  
 b.\* [A lion [behind [which gate]]] did he find?  
 c. [Behind [which gate]] did he find a lion?

As for (37c), the postnominal PP is allowed to pied-pipe simply because it is an extended projection of the NP/DP *which gate* in Grimshaw's (1991) sense. They share all categorial features including [+wh], but differs in their functional values. (Also note that this proposal crucially assume the category P is [+N].) (37b) is then ruled out straightforwardly: since the NP under extraction is not a projection of *which gate*, it has no access to the [+wh] feature.

From the viewpoint of our theory, what Nishigauchi and Grimshaw pose on pied-piping are really percolation constraints on [+Q], which obviously do not apply to [+wh] on the part of relativization. On the other hand, it appears that as far as there is no blocking category (i.e. non-L-marked XP) in the way, percolation of [+wh] is allowed to proceed.

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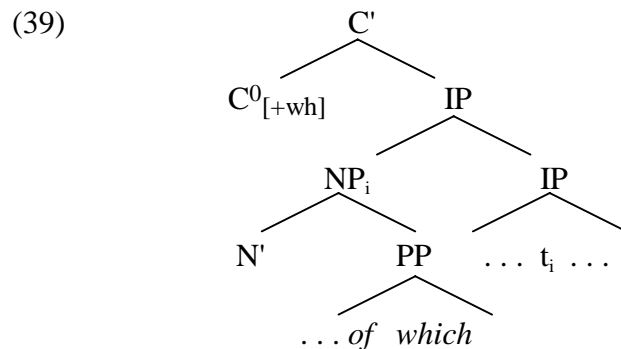
<sup>6</sup> As pointed out by Howard Lasnik (p.c.), (37) is not covered by the analyzability condition (36), which says nothing about a dominating [-N] phrase. Here I would like to propose a tentative revision of (34), which accounts for (36) as well:

- (i) If a R mentions Spec, the R applies cyclically to nodes which dominate Spec but are not immediately dominated by a [+N] node.

Another possibility is to loosen the *Wh*-Criterion to accommodate a previous version of this principle from May (1985), which require every [+wh] Comp to dominate a *wh*-phrase, and vice versa. Here we may replace domination with government along the line of Mahajan (1990), and put it in the following way:

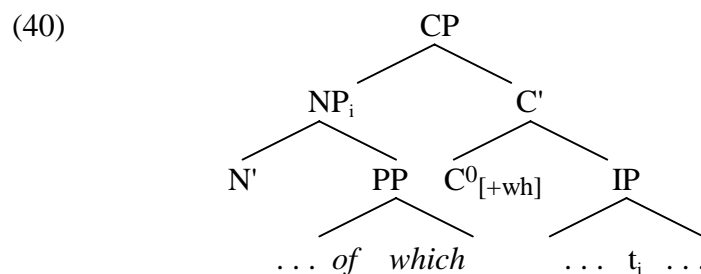
- (38) a. A *wh*-operator must be either governed by or in a Spec-head configuration with  $X^0_{[+wh]}$ .  
 b. An  $X^0_{[+wh]}$  must either govern or Spec-head agree with a *wh*-operator.

The claim is that genuine pied-piping only involves IP-adjunction, as supported by the parallelism of topicalization in (35), which is a typical instance of IP-adjunction according to Lasnik and Saito (1992). And the relative *which* is governed by local  $C^0_{[+wh]}$  in (33b-d), since all the blocking categories in between are L-marked and do not count as barriers, as illustrated below.



This move saves us from stipulating a percolation mechanism just for [+wh], and we may still keep either the analyzability condition or the notion of extended projection to account for small-scale pied-piping in (37b).

On the other hand, the only way to discharge [+Q] is to be in a Spec-head configuration with  $C^0_{[+wh]}$ . Therefore, if the pied-piped constituents in (23b-d) undergo IP-adjunction, then *Wh*-Criterion is fulfilled by government from  $C^0_{[+wh]}$ , but [+Q] will not be discharged to license the scope of *what*. If they undergo *wh*-movement, both [+wh] and [+Q] are not on the topmost NP node due to the percolation constraints just mentioned, and the scope of *what* is still not licensed, as illustrated below.



Consequently, neither way can achieve scope formation, and (34b-d) are correctly ruled out. This position receives further support from a fact about multiple *wh*-fronting languages. Rudin(1988)

has demonstrated there are two groups of languages with Bulgarian and Romanian on the one side, and Serbo-Croatian, Polish, and Czech on the other. The former languages allow more than one *wh*-phrase in CP Spec, while the latter only allow one *wh*-phrase per Comp and IP-adjoins the rest. Given our view, a plausible account is that the latter languages fulfill *Wh*-Criterion in either direction, as long as the scope in question is licensed in a Spec-head configuration.

Another argument for the [Q]-[wh] distinction comes from Chinese relativization, which, as Huang (1982) observes, behaves like topicalization rather than *wh*-question formation.

- (41) a.\* Zhangsan<sub>i</sub> , [<sub>CP</sub> Op<sub>i</sub> [<sub>IP</sub> wo mai-le [<sub>DP</sub> [<sub>CP</sub> t<sub>i</sub> xie] de shu]]].  
 Zhangsan I buy-Prf write PNM book  
 \* Zhangsan<sub>i</sub> , I bought [books [that t<sub>i</sub> wrote]].
- b.\* [<sub>DP</sub> [<sub>CP</sub> Op<sub>i</sub> [<sub>IP</sub> wo mai-le [<sub>DP</sub> [<sub>CP</sub> t<sub>i</sub> xie] de shu]]] de ren<sub>i</sub> ]  
 I buy-Prf write PNMbook PNM person  
 \*[The person [who<sub>i</sub> I bought [books [that t<sub>i</sub> wrote]]]]
- c. ni mai-le [<sub>DP</sub> [<sub>CP</sub> shei xie] de shu]?  
 you buy-Prf who write PNM book  
 Who is the person x such that you bought books that x wrote?

Both topicalization and relativization observe Subjacency where the control (non-movement) construal is not available, as shown in (41a) and (41b) respectively. (Note that the GCR is blocked by the intervening subject *wo* 'I' in both cases.) In contrast, the wide-scope construal of *shei* 'who' is well-formed in (41c), and no Complex NP effect is detected.

On the other hand, *wh*-question formation does exhibit specificity effects, while topicalization and relativization do not:

- (42) a. Zhangsan<sub>i</sub> , [<sub>CP</sub> Op<sub>i</sub> [<sub>IP</sub> [<sub>DP</sub> [<sub>CP</sub> e<sub>i</sub> xie] de naxie shu] dou hen hao]].  
 Zhangsan write DE those book all very good  
 Zhangsan<sub>i</sub> , [those books [which (he<sub>i</sub> ) wrote]] are all very good.
- b. [<sub>DP</sub> [<sub>CP</sub> Op<sub>i</sub> [<sub>IP</sub> [<sub>DP</sub> [<sub>CP</sub> e<sub>i</sub> xie] de naxie shu] dou hen hao]]] de na-ge ren<sub>i</sub> ]  
 write DE those book all very good DE that-CL person  
 [The person [who<sub>i</sub> [those books [which (he<sub>i</sub> ) wrote]] are all very good]]
- c.\* ni mai-le [<sub>DP</sub> [<sub>CP</sub> shei xie] de naxie shu]?  
 you buy-Prf who write DE those book  
 Who is the person x such that you bought those books that x wrote?

By comparing (41c) with (42c), we can see that the presence of *naxie* 'those' in the projection of head noun blocks the wide-scope construal of *shei* 'who', which may be attributed to the Specificity Condition (Fiengo & Higginbotham 1981):<sup>7</sup>

<sup>7</sup> A more adequate formulation, as Noam Chomsky (p.c.) points out, is that specific NPs cannot contain bound variables, with free variables automatically ruled out by the general constraint against vacuous quantification.

(43) Specific NPs are opaque in that they cannot contain free variables.

In contrast, (43) does not obtain for topicalization and relativization, as shown by (42a) and (42b) respectively. Besides, since there is no intervening subject in (42a,b), the non-movement construal is available.

As a result, any attempt to subject Chinese relativization and *wh*-question formation to the same locality conditions will be either too strong or too weak for both operations. This in turn suggests that the long-distance construals involved in relatives and *wh*-questions should be of different natures. Huang (1982) accounts for the contrasts of (41) by claiming that relativization, as well as topicalization, applies in overt syntax, and accordingly observes Subjacency, which applies only in overt syntax. LF *wh*-movement, on the other hand, is not subject to Subjacency, and hence the lack of complex NP effects in (41c). The contrasts of (42) also follow automatically if we side with Huang's (1984) proposal that the long-distance dependencies of (42a,b) are essentially instances of generalized control. Since control in general does not involve quantification, we correctly predict that (42a) and (42b) are not subject to the Specificity Condition.

#### 4. D-linking Revisited

So far we have related the absence of island effects in predication to a base-generated null operator construction, which is evidenced by Chinese sloppy relatives and topic-in-situ constructions. Our next step is to see whether this treatment may shed some light on the syntactic behavior of D-linked *wh*-questions. Above all, I would like to point out that a D-linked *wh*-in-situ, in contrast to its non-D-linked counterpart, is capable of licensing a parasitic gap in Chinese, as shown by the contrast between (45a) and (45b):

- (45) a. Akiu [jian-ye-mei-jian  $e_i$ ] jiu gu-le [na-yi-ge ren]<sub>i</sub> ?  
 Akiu without interviewing immediately hire-Prf which-one-CL person  
 Which person did Akiu hire immediately without interviewing?
- b.\* Akiu [jian-ye-mei-jian  $e_i$ ] jiu gu-le [shenme ren]<sub>i</sub> ?  
 Akiu without interviewing immediately hire-Prf whatperson  
 Who did Akiu hire immediately without interviewing?

While the in-situ *shenme ren* 'what person' cannot license the object gap in (45b), the same construal improves considerably if a D-linked *wh*-phrase such as *na-yi-ge ren* 'which person' is substituted for its non-D-linked counterpart, as shown by (45a).<sup>8</sup> (45a) thus patterns with topic sentences such as (46a) and relative clauses such as (46b) with respect to parasitic gap licensing:

- (46) a. [na-ge ren]<sub>i</sub>, Akiu [Op<sub>i</sub> [jian-ye-mei-jian  $e_i$ ]] jiu gu-le  $e_i$ .  
 that-CL person Akiu without interviewing immediately hire-Prf  
 That person, Akiu hired immediately without interviewing.

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<sup>8</sup> Watanabe (1992) also observes a similar fact concerning the asymmetry between comparative deletion and *wh*-question formation: only a comparative (null) operator, but not a *wh*-in-situ, can license a parasitic gap.

- b. na-ge [Op<sub>i</sub> [Akiu [Op<sub>i</sub> [jian-ye-mei-jian e<sub>i</sub>]] jiu gu-le e<sub>i</sub>]] de ren<sub>i</sub>  
 that-CL Akiu without interviewing immediately hire-Prf DE person  
 The person who Akiu hired immediately without interviewing.

Now the problem is why the D-linked/non-D-linked distinction should make a difference here, particularly in view of the fact that both *shenme ren* and *na-yi-ge ren* remain in situ. Under our approach, there is a straightforward solution: In parallel with topicalization and relativization, there is a [+Q] null operator base-generated in the matrix Comp of (45a), as dictated by the lexical properties of D-linked *wh*-phrases. As a result, the parasitic gap is licensed by the Q-operator, as illustrated below:

- (47) Topic, [Op<sub>i</sub>[+Q] [ Akiu [Op<sub>i</sub> [jian-ye-me-jian e<sub>i</sub>]] jiu gu-le [na-yi-ge ren]<sub>i</sub> ] ] ?

Specifically, this null operator doubly functions as a scope marker in scope formation and a predicate marker expressing aboutness in D-linking. It thus differs from the null operators of (16a,b) in possessing a [+Q] feature. The interpretation of this "mixed" construal goes as follows: Topic in (47) is understood as a specific group of people mentioned in the preceding discourse, and the aboutness construal results in a partitive reading of the topic: Which one of the specific group of people did Akiu hire without interviewing?<sup>9</sup>

The next step is to reinterpret Baker/Pesetsky's Q morpheme analysis with CP system. First, a *wh*-operator is filled in CP Spec either by Move- $\alpha$  or by base-generation to satisfy *Wh*-Criterion (or morphological checking in the sense of Chomsky (1992)). Then the [+Q] feature carried by the *wh*-operator is discharged to C<sup>0</sup> through Spec-head agreement. A C<sup>0</sup> thus licensed serves as an unselective binder in LF, represented by Q in (48):

- (48) Who knows where we bought what?  
 a. S-S: [CP who<sub>i</sub> [+Q,+wh] [C' C<sup>0</sup>[+wh] [ t<sub>i</sub> . . . [CP where<sub>k</sub> [+Q,+wh] [C' C<sup>0</sup>[+wh] [ . . . what<sub>j</sub> . . . t<sub>k</sub> ]]]]]  
 b. LF: [CP [C' Q { i,j } [ who<sub>i</sub> . . . [CP [C' Q { k } [ . . . what<sub>j</sub> . . . where<sub>k</sub> ]]]]]  
 [CP [C' Q { i } [ who<sub>i</sub> . . . [CP [C' Q { j,k } [ . . . what<sub>j</sub> . . . where<sub>k</sub> ]]]]]

<sup>9</sup> As a matter of fact, this partitive reading is not an isolated property of D-linked *wh*-questions, but has its corresponding construal on the part of topicalization:

- (i) a. shuiguo, xiangjiao zui tian.  
 fruit banana most sweet  
 (As for) fruits, banana is the sweetest.  
 b. shuiguo, wo zui xihuan xiangjiao.  
 fruit I most like banana  
 (Among) fruits, I like banana most.

(i) represents a type of topic-in-situ sentences where an in-situ topic keeps a set-member relationship with one of the arguments in the comment clause. Once the set-member relation can no longer be maintained, the construal is blocked by anomaly, as exemplified below:

- (ii) \* shuiguo, wo zui xihuan malingshu.  
 fruit I most like potato  
 \* (Among) fruits, I like potato most.

For one thing, *wh*-phrases are reconstructed to their base position in LF, as shown by (48b). This is because they lose their status as quantifiers after discharging the [+Q] feature. Since no movement is involved in assigning the wide scope to *what*, neither Subjacency nor the NDC is relevant.

With the mechanism developed above, we may implement Pesetsky's insight in a more articulate way: D-linked *wh*-phrases (e.g., *which*-NPs) are defined as *wh*-phrases with lexical instructions of base-generating a [+Q] null operator in CP Spec, as illustrated by (49a):<sup>10</sup>

- (49) Which book<sub>j</sub> did you persuade which man to read e<sub>j</sub>?
- a. D-S: [<sub>CP</sub> Op<sub>i,j</sub> [+Q] [<sub>C'</sub> C<sup>0</sup><sub>[+wh]</sub> [<sub>IP</sub> . . . which man<sub>i</sub> to read which book<sub>j</sub> ] ]]
  - b. S-S: [<sub>CP</sub> Op<sub>i,j</sub> [<sub>C'</sub> which book<sub>j</sub> [<sub>C'</sub> C<sup>0</sup><sub>[+Q]</sub> [<sub>IP</sub> . . . which man<sub>i</sub> to read t<sub>j</sub> ] ]]
  - c. LF: [<sub>CP</sub> Op<sub>i,j</sub> [<sub>C'</sub> Q<sub>{i,j}</sub> [<sub>IP</sub> . . . which man<sub>i</sub> to read which book<sub>j</sub> ] ]]

The [+Q] feature is then discharged to C<sup>0</sup> through Spec-head agreement, and *which book* moves vacuously to satisfy *Wh*-Criterion, as illustrated by (49b). The null operator, being deprived of the [+Q] feature, triggers D-linking and results in the partitive reading just mentioned. In LF, *which book* reconstructs to its base position, as in (49c). Finally, the [+Q] Comp acts as an unselective binder in LF, producing a paired reading for *which man* and *which book*. Since only one *wh*-trace is created throughout the derivation, the NDC is irrelevant.

## 5. Concluding Remarks

We have presented a view about how predication and scope formation work together to give a D-linked *wh*-question, and how topicalization can be related to D-linking in a sensible way. Now we are in a position to address the issue raised at the beginning of this paper: Why do Chinese/Japanese-type languages allow extensive usages of non-movement construals which are possible only with multiple or D-linked *wh*-question in other languages? The answer is that they allow a base-generated sentential null operator as a result of parameter-setting, rather than lexical idiosyncrasies: If the null operator happens to be [-Q], as in (50a), then we have a case of generalized control. If it happens to be [+Q], as in (50b), then we have a case of unselective binding:

- (50) a. Op<sub>i</sub><sub>[-Q]</sub> . . . [<sub>DP</sub> [<sub>CP</sub> . . . Pro<sub>i</sub> . . . ] . . . ] . . .  
 b. Op<sub>i</sub><sub>[+Q]</sub> . . . [<sub>DP</sub> [<sub>CP</sub> . . . wh<sub>i</sub> . . . ] . . . ] . . .

This move also explains why indefinite *wh*'s are so common in Chinese/Japanese-type languages. With the [+Q] null operator located high above, there is always a chance for other quantifiers (like

<sup>10</sup> As pointed out by Lisa Cheng (p.c.), D-linkedness cannot result from discourse factors in general. Otherwise, the following English sentence will be wrongly ruled in:

(i) \* As for John, many books which published sell very well.

This is because (i) would have the configuration such as (ii), where a null operator is base-generated in the matrix CP Spec due to the discourse construal of the *as-for* topic.

(ii) As for John<sub>i</sub>, [ Op<sub>i</sub> [[many books<sub>k</sub> [which<sub>k</sub> e<sub>i</sub> published t<sub>k</sub> ] ] sell very well]].

Rather, we have to stipulate that *which*-NPs are lexically distinct from other *wh*-phrases in that they are blessed with the D-linking property, i.e., base-generating a [+Q] null operator in matrix CP Spec.

-*mo* in Japanese and *dou* 'all' in Chinese) to compete as a potential binder of *wh*'s-*in-situ* (see Nishigauchi 1990, Cheng 1991, Watanabe 1992, Li 1992, Aoun & Li 1993, Tsai 1994).

All in all, we have demonstrated that the formal property of D-linked *wh*-questions can be characterized by sorting out factors behind topicalization and scope formation. In turn, the formal property of topicalization can be pin down by examining the parallelism on the part of relativization. If this approach turns out to be on the right track, then a generalization about Chinese/Japanese-type languages is in order. That is, the absence of island effects is an intrinsic feature of this type of language, due to the parameter-setting of base-generated null operators. In contrast, the same feature emerges only marginally in other languages, either when lexical instructions are given (as in D-linked *wh*-questions), or when specific constructions are involved (as in multiple *wh*-questions).

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