Evidence from Chinese Wh-questions strongly suggests that LF locality is a matter of referentiality and nominality, while locality in overt syntax involves the requirement of head government. This observation echoes the split ECP approach of Wahl (1987). Specifically, Chinese arguments and referential adjuncts (when, where, instrumental how and purpose why) contrast with nonreferential adjuncts (manner how and reason why) in allowing wide-scope construals out of islands in LF. Overt Wh-fronting, on the other hand, displays an argument/adjunct asymmetry. This paper proposes to deal with the LF asymmetry within the Generalized Binding framework, in association with the referential/nonreferential distinction among Wh-elements. With the ECP reduced to the generalized binding principles (GBPs), it further argues for a type of locality employing the notion of checkpoints instead of barriers, according to which the [N] feature is checked along with the [WH] feature through Comp-indexing. Consequently, nominal clauses are always islands for nonnominal/nonreferential adjuncts, because either selectional restrictions or the GBPs will be violated by long-distance extraction. This move is independently motivated by a parallel asymmetry in Chinese (non)bridge-verb constructions.

0. Setting the Stage

It is well known that, in many languages, there exists a complement/noncomplement asymmetry concerning extraction of Wh-phrases either in the syntactic component or in logical form (LF) in regard to parametric variation among languages. In light of the observation that subject/object superiority patterns with adjunct/complement superiority in English, Huang (1982) captures the insight that the former, as well as the latter, is in effect a subcase of the complement/noncomplement asymmetry predicted by the empty category principle (ECP), which requires nonpronominial empty categories to be properly governed. For languages like Chinese, where Wh-phrases remain in situ at S-structure and lack a subject/object asymmetry with respect to LF movement, he puts forward the claim that INFL qualifies as a proper governor, and thus the subject position is always properly governed. This has led to the prevailing belief

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that Chinese exhibits an argument/adjunct asymmetry rather than a subject/object asymmetry in LF.

Recently, Lin (1992) has observed that there appears to be a zenmeyang/weishenme ‘how/why’ asymmetry in regard to LF movement of Chinese Wh-adjuncts, as illustrated below:¹

(1)a. [Women zenmeyang chuli zhe-jian shi] bijiao
   \[women\] \[how\] handle his CL matter more
   hao?
   appropriate
   What is the means \(x\) such that it is more appropriate [for us to handle this matter by \(x\)]?

b. *[Women weishenme chuli zhe-jian shi] bijiao
   \[women\] \[why\] handle this CL matter more
   hao?
   appropriate
   What is the reason \(x\) such that it is more appropriate [for him to handle this matter for \(x\)]?

(2)a. Ni bijiao xihuan [[ta zenmeyang zhu] de cai]?
   you more like he how cook PNM dish
   What is the means \(x\) such that you like better [the dishes [which he cooks by \(x\)]?]

b. *Ni bijiao xihuan [[ta weishenme zhu] de cai]?
   you more like he why cook PNM dish
   What is the reason \(x\) such that you like better [the dishes [which he cooks by \(x\)]?]

(3)a. [[Tamen zenmeyang chuli zhe-bi qian] de shuofa]
   they how handle this CL money PNM story
   bijiao kexin?
   more believable

¹ The abbreviations used in this paper are glossed as follows: CL: classifier; DE: postverbal complement marker; DUR: durative aspect; EXP: experiential aspect; INC: inchoative aspect; PRF: perfective aspect; PNM: prenominal modifier marker; PRG: progressive aspect.
What is the means \( x \) such that \([\text{the story } [\text{that they handled this money by } x]]\) is more believable?

b. \*[[Tamen weishenme chuli zhe-bi qian] de shuofa] handle this CL money PNM story bijiao kexin? more believable

What is the reason \( x \) such that \([\text{the story } [\text{that they handled this money by } x]]\) is more believable?

Zenmeyang 'how' contrasts with weishenme 'why' in that the former is allowed to move out of sentential subjects, relative clauses, and appositives in LF and get a wide scope reading, as in the (a) sentences of (1–3), while the latter is not, as in the (b) sentences of (1–3). On the other hand, the narrow scope reading is simply out of the question, since the island constructions involved here are not headed by [+WH] complementizers. It is in this regard that zenmeyang 'how' shows exactly the same pattern as arguments like shei 'who', as is evident by comparing (4a–c) with the (a) sentences of (1–3) respectively:

(4)a. [Shei lai chuli zhe-jian shi] bijiao hao? *who come handle this CL matter more appropriate*

Who is the person \( x \) such that it is more appropriate \([\text{for } x \text{ to handle this matter}]\)?

b. Ni bijiao xihuan [[shei zhu] de cai]? *you more like who cook PNM dish*

Who is the person \( x \) such that you like better \([\text{dishes } [\text{which } x \text{ cooks}]])\)?

c. [[Shei tou- le na- bi qian] de shuofa] bijiao *who steal PRF that CL money PNM story more believable*

Who is the person \( x \) such that \([\text{the story } [\text{that } x \text{ has stolen that money}]\) is more believable?

Nevertheless, an argument/adjunct does obtain in the case of overt Wh-fronting (presumably an instance of focus movement), as exemplified by the contrasts between (5a, b) and (5c, d):
(5)a. Sheiₙ, ni renwei [[tᵢ chuli zhe-jian shi] bijiao who you think handle this CL matter more qiadang]?
   appropriate

Who is the person x such that you think [it is more appropriate [for x to handle this matter]]?

b. Shenme shuᵢ, ni renwei [[xiaohaizi du tᵢ] bijiao what book you think children read more qiadang]?
   appropriate

What is the book x such that you think [it is more appropriate [for children to read x]]?

c. *Zenmeyangᵢ, ni renwei [[Lisi tᵢ chuli zhe-jian shi] how you think Lisi handle this CL matter bijiao qiadang]?
   more appropriate

What is the means x such that you think [it is more appropriate [for Lisi to handle this matter by x]]?

d. *Weishenmeᵢ, ni renwei [[tᵢ Lisi chuli zhe-jian shi] why you think Lisi handle this CL matter bijiao qiadang]?
   more appropriate

What is the reason x such that you think [it is more appropriate [for Lisi to handle this matter for x]]?

This syntax/LF asymmetry is intriguing in that it indicates that there is more going on than the complement/noncomplement (or argument/adjunct) asymmetry. Furthermore, this asymmetry is unlikely to be handled by the ECP alone, since whatever rules out (5c) will rule out (1a) as well. Also note that (5c) cannot be ruled out by Subjacency in view of the well-formedness of (5a, b), which is a natural consequence if we adopt Huang's (1982) view that the subject position in Chinese is always properly governed, thus explaining the lack of sentential subject effects.

There are, in our opinion, two promising approaches to start with. First, we may follow Aoun et al.'s (1987) conception of locality, splitting the
ECP effect into two parts: the Head Government requirement in PF and the Generalized Binding Principles in LF. This seems to be a plausible approach given the fact that overt and covert movement display different patterns in Chinese. Second, in the vein of Huang (1982) and Lasnik and Saito (1984, 1989), we may maintain the ECP as a global principle, while extending the use of referential-indexing in Rizzi's (1990) sense, or alternatively, explore the distribution of Wh-adjuncts in terms of lexical relatedness along the line of Chomsky (1992). In this paper, we will arbitrarily leave the second approach open, and pursue the first as far as possible.

The presentation is organized as follows. Section 1 points out that there is something missing in the how/why asymmetry described in Lin (1992). As we shall see, manner zenmeyang further differs from its instrumental counterpart with respect to their LF extractability, as reason weishenme does from its purpose counterpart. This observation leads us to address the issue in a broader context. Section 2 starts with a brief overview of the Generalized Binding Theory (GBT) sketched by Aoun (1985, 1986) and elaborated by Aoun, Hornstein, Lightfoot, and Weinberg (1987) (henceforth WAHL). Then some advantages and problems with this approach will be discussed along with the asymmetry in question. In Sections 3 and 4, we will show how things can be worked out by relating otherwise puzzling cases to parallel extraction facts observed in typical nominal islands, which in turn suggests the relevance of the nominal/nonnominal distinction for Wh-adjuncts in Huang’s (1982) sense. Section 5 is devoted to the syntax/LF asymmetry in general, which is characterized by Huang’s generalization that where and when pattern with why and how in syntax, while they pattern with who and what in LF.

1. More Extraction Facts

To begin, if we take a wider range of data into consideration, we will note that the zenmeyang/weishenme ‘how/why’ asymmetry is actually a special case of a more general asymmetry concerning referentiality. First consider the case of zenmeyang extraction. As an adverbial, zenmeyang has two distinctive readings, means and manner, as shown in (6a) and (6b) respectively:

\[(6)\ a. \ \text{Nimen zenmeyang da zhe-chang lanqiu?} \]
\[\text{you how } \text{play this CL basketball}\]

By what means will you play this basketball game?
In response to question (6a), speakers usually answer with an instrumental PP like yong jinpuodingren ‘by a one-on-one approach’, whereas question (6b) must be answered with a manner adverbial like hen shun ‘very well’. Their different behavior with respect to LF extraction also reflects this means/manner distinction, as illustrated by the following contrasts (with the (a) sentences of (1–3) repeated here as (7a), (8a), and (9a) respectively):

2 Note that the means/manner distinction does not exactly lie in the preverbal/postverbal distinction. It is possible for preverbal zenmeyang to have a manner reading. Sentences such as (i) are in fact ambiguous, where preverbal zenmeyang can be interpreted in two ways:

(i) Lisi zenmeyang chuli zhe-jian shi?

Lisi how handle this CL matter

a. By what means did Lisi handle this matter?
b. In what manner did Lisi handle this matter?

The reading (ib) in general patterns with the manner reading associated with postverbal zenmeyang; that is, it disappears whenever island constructions are involved. For convenience of exposition, we will ignore this reading throughout the paper, except when it is relevant to the discussion.

3 Some speakers may find the (b) sentences of (7–9) quite acceptable. This is because wide-scope interpretation of a postverbal zenmeyang is possible when it is associated with a result reading, which presumably is due to the predicate usage of zenmeyang, as in (ia), where the state of the subject Lisi is under question:

(i)a. Lisi zenmeyang le?

Lisi how INC

What happened to Lisi?

b. Ni bijiao xihuan [[ta e, zhu de [Pro, zenmeyang]] de cai,]?

you more like he cook DE how PNM dish

What is the state x such that you like better [the dishes [which he cooks till x]]?

Take (8b) for example. If the intended reading of the postverbal zenmeyang is to question the result of cooking, then the wide-scope construal improves considerably, as illustrated in (ib). A possible solution is to treat resultative zenmeyang like an NP/AP predicate in a small clause (i.e. the resultative clause itself), in view of the fact that zenmeyang is actually an A-N compound, containing zenme ‘how’ and yang ‘way/manner’. Consequently, instrumental zenmeyang can be analyzed as a bare PP (i.e. a PP with a null preposition), while manner zenmeyang is a genuine adverb evolved from its PP form. The distinction between wei(-le)-shenme ‘for what’ and weishenme ‘why’ reflects exactly the same evolution. A similar case can also be found in the distinctive usages of pour quoi ‘for what’ and pourquoi ‘why’ in French (cf. example (14)). For detailed discussion, see Tsai (1992b).
(7)a.  [Ta zenmeyang chuli  zhe- jian shi]  bijiao qiadang?

he how handle this CL matter more appropriate

What is the means x such that it is more appropriate [for him to handle this matter by x]?

b.  *[Zhe- jian shi,  ta chuli- de zenmeyang]  bijiao

this CL matter he handle- DE how more appropriate

What is the manner x such that it is more appropriate [for him to handle this matter in x]?

(8)a.  Ni  bijiao xihuan  [[ta zenmeyang zhu] de  cai]?

you more like he how cook PNM dish

What is the means x such that you like better [the dishes [which he cooks by x]]?

b.  *Ni  bijiao xihuan  [[ta zhu- de zenmeyang] de  cai]?

you more like he cook DE how PNM dish

What is the manner x such that you like better [the dishes [which he cooks in x]]?

(9)a.  [[Tamen zenmeyang chuli  zhe-bi qian] de  shuofa]

they how handle this CL money PNM story

bijiao kexin?

more believable

What is the means x such that [the story [that they handled this money by x]] is more believable?

b.  *[[Zhe-bi qian, tamen chuli- de zenmeyang] de  shuofa]

this CL money they handle DE how PNM story

bijiao kexin?

more believable

What is the manner x such that [the story [that they handled this money x]] is more believable?

It is clear from the above sentences that only zenmeyang associated with the instrumental reading may move out of those islands and assume
wide scope. Manner \textit{zenmeyang}, in contrast, patterns with \textit{weishenme} 'why' in the (b) sentences of (1–3) (repeated as (10b), (11b), and (12b) respectively), failing to receive the wide scope interpretation. The situation becomes even more interesting when we find that the adverbial \textit{weishenme} has a PP counterpart \textit{wei(-le)shenme} 'for what'; the former concerns reasons, while the latter concerns purposes. Their extraction behavior again reflects this purpose/reason distinction, with purpose \textit{wei(-le)shenme} in the (a) sentences of (10–12) patterning in line with instrumental \textit{zenmeyang} and in contrast with reason \textit{weishenme}:

(10)a.  [Women \textit{wei(-le) shenme nianshu} cai you yiyi]?
\textit{we for what study just have meaning}
What is the purpose \textit{x} such that it is meaningful [for us to study for \textit{x}]?

b.  *[Women \textit{weishenme nianshu} cai you yiyi]?
\textit{we why study just have meaning}
What is the reason \textit{x} such that it is meaningful [for us to study for \textit{x}]?

(11)a.  \textit{Ni bijiao xihuan [[wei(-le) shenme gongzuo] de ren]}?  
\textit{you more like for what work PNM people}
What is the purpose \textit{x} such that you like better [people [who work for \textit{x}]]?

b.  *\textit{Ni bijiao xihuan [[weishenme gongzuo] de ren]}?  
\textit{you more like why work PNM people}
What is the reason \textit{x} such that you like better [people [who work for \textit{x}]]?

---

4 The preposition \textit{wei} 'for' is emphatically stressed when \textit{-le} is absent. The suffix \textit{-le}, as Kuang Mei (p.c.) points out, does not count as an aspect marker here, since no perfective reading is detectable. It is well-known that most of the prepositions in Modern Chinese developed from verbs. Therefore, the appearance of \textit{-le} merely indicates the verbal origin of \textit{wei} in Archaic and Ancient Chinese, as evidenced by the following example from Confucius' \textit{Analects}:

(i) \textit{Fuzi wei Wei-jun hu?}
\textit{master do in the interest of Wei lord Q}
Does Master serve the interests of the Duke of Wei?

The categorial identity of the proto-form of \textit{wei} in (i) is unmistakable; it functions as the main predicate, and falls under the category V.
(12)a.  

\[
[Tamen \text{\text{-}le} \text{\ shenme } \text{cizhi} ] \text{ de } \text{\ shuofa} \text{ bijiao }
\]

\[
\text{they for what resign PNM story more believable}
\]

What is the purpose \( x \) such that [the story [that they resigned for \( x \)] is more believable?

b. *\([Tamen \text{\text{-}le} \text{\ shenme } \text{cizhi} ] \text{ de } \text{\ shuofa} \text{ bijiao believable}\)

\[
\text{they why resign PNM story more believable}
\]

What is the reason \( x \) such that [the story [that they resigned for \( x \)] is more believable?

The patterning introduced so far is reminiscent of the discussions of referentiality initiated by Aoun (1986) and Cinque (1990), and pursued intensely by Rizzi (1990), whose theories share the intuitive idea that, as Rizzi puts it, referential elements are extractable from islands, while nonreferential ones are not. Besides, this patterning among Wh-adjuncts is not isolated, and is also found in French Wh's-in-situ. As reported by Dominique Sportiche and discussed by Aoun (1986), comment ‘how’ has two readings: only when comment is associated with an instrumental reading may it remain in situ, as in question (13), to which only an instrumental PP like \( \text{avec une clef} \) ‘with a key’, but not a manner adverbial like \( \text{lentement} \) ‘slowly’ may serve as an answer:

(13)a.  

\[
\text{Tu as ouvert la porte comment?}
\]

\[
\text{you have opened the door how}
\]

How did you open the door?

(14)a.  

\[
\text{Tu es venu pour quoi?}
\]

\[
\text{you are come for what}
\]

Why did you come?

b. *\[\text{Tu es venu pourquoi?}\]

\[
\text{you are come why}
\]

The contrast between (14a) and (14b) again follows the same pattern: it is only possible for question (14a) to receive answers like \( \text{pour étudier la géometrie} \) ‘to study geometry’, but not \( \text{parce que je suis malade} \) ‘because I am sick’. Just like their Chinese counterparts, the purpose reading is
associated with the PP *pour quoi*, whereas the reason reading is associated with the adverbial *pourquoi*.

We thereby find a clear ground to launch our analysis. Though how the notion of referentiality can be defined properly is still under debate, it suffices for the aim of this paper to label instrumental *how* and purpose *why* referential, and manner *how* and reason *why* nonreferential. This move renders the *zenmeyang/weishenme* asymmetry superfluous, and gives us a clue about what is the true generalization to be captured.

2. A GENERALIZED BINDING APPROACH

WAHL puts forward the claim that the referential/nonreferential asymmetry (R/R'-asymmetry) is correctly predicted within the GBT framework, which reduces the ECP to a head government requirement in PF, and maintains the 'generalized' version of binding principles (15) as the dominant locality condition in LF.

\begin{itemize}
  \item [(15)a.] Principle A:
    An X-anaphor must be X-bound in its Domain.
  \item [(15)b.] Principle B:
    An X-pronoun must be X-free in its Domain.
  \item [(15)c.] Principle C:
    R-expression must be A-free.
\end{itemize}

\begin{itemize}
  \item [(16)] A domain for a given expression \(x\) is the first clause or NP that contains an accessible SUBJECT for \(x\). A SUBJECT may be AGR, [NP, S], or [NP, NP].
  \item [(17)] \(x\) is accessible to \(y\) iff \(y\) is in the c-command domain of \(x\), and assigning the index of \(x\) to \(y\) would violate neither the \(i\)-within-\(i\) Condition nor Principle C of the binding theory.
\end{itemize}

Since AGR is by assumption co-indexed with the subject in a given IP, assigning the index of AGR to R-expressions within an IP projection always makes them A-bound by the subject, yielding a violation of Principle C (15c), according to the revised definition of accessibility (17). Consequently, arguments or not, their traces (i.e. variables) have no accessible SUBJECT and hence no Domain. It follows that they do not fall under the GBT. The only requirement is that they have to be linked to a c-commanding quantifier/Wh-phrase. In contrast, assigning the index of AGR to R'-traces does not violate Principle C. R'-traces thus count as A'-anaphors, subject to Principle A (15a). On the other hand, the subject
itself still observes the binding principles, since it does have an accessible SUBJECT located in a head position (i.e. AGR), where the A/A'-distinction is irrelevant.

Given WAHL's assumption that selectional restrictions of [+WH] complements should be satisfied in syntax in languages with overt Wh-movement, and that the Comp-indexing rule (18) applies at S-structure to satisfy the restriction, the GBT is able to accommodate the R/R'-asymmetry to a considerable extent.\(^5\)

\[(18) \quad [\text{Comp} X_i Y] \rightarrow [\text{Comp} X_i Y_i] \]

Let's take French Wh-in-situ for example. Given the fact that French does allow overt Wh-motion, nonreferential adjuncts (R'-adjuncts) such as manner comment and reason pourquoi must move in syntax to ensure that their indexes appear on the local Comp node, because their traces count as A'-anaphors, which must be A'-bound by a Comp within their Domains. In contrast, REFERENTIAL ADJUNCTS (R-adjuncts) such as instrumental comment in (13) and purpose pour quoi in (14) may stay in their base positions until LF, since their traces have no Domain and are hence irrelevant to Comp-indexing. The same analysis applies to other R-adjuncts such as où 'where' and quand 'when' in (19), as well as referential arguments, for which overt Wh-movement is optional (cf. Aoun 1986):

\[(19)a. \quad \text{Tu es allé où?} \quad \text{you are gone where} \quad \text{Where did you go?} \]
\[b. \quad \text{Tu es venu quand?} \quad \text{you are come when} \quad \text{When did you come?} \]

Interestingly, just like their French counterparts, Chinese spatial and temporal adjuncts pattern with instrumental zemeyang and purpose wei(-le)shenme with respect to LF extraction. As shown in (20) and (21), (zai) nali 'at' where' and shenmeshihou 'when' receive a wide scope

\(^5\) Example (18) differs from previous formulations in that it is intended to be universal. For languages like English, where doubly-filled Comp is not allowed, some language-particular filter like (i) is required.

\[(i) \quad *[\text{Comp} X_i Y_i], \text{where } Y \text{ is phonetic.} \]

The filter presents index \(i\) from percolating to a Comp containing a non-\(i\)-indexed lexical item.
reading, which indicates that they actually move out of the island constructions in LF:

(20)a. [Ta zuo zai nali] bijiao qiadang?

*he sit at where more appropriate*

Where is the place x such that it is more appropriate [for him to set at x]?

b. Ni bijiao xihuan [[ta zai nali hua] de hua]?

*you more like he at where paint PNM painting*

Where is the place x such that you like better [the painting [that he painted at x]]?

c. [[Tamen zai nali kaikuang] de shuofa] bijiao kexin?

*they at where mine PNM story more believable*

Where is the place x such that [the story [that they mined at x]] is more believable?

(21)a. [Ta shenmeshihou lai] bijiao qiadang

*he when come more appropriate*

When is the time x such that it is more appropriate [for him to come in x]?

b. Ni bijiao xihuan [[ta shenmeshihou hua] de hua]?

*you more like he when paint PNM painting*

When is the time x such that you like better [the painting [that he painted in x]]?

c. [[Tamen shenmeshihou likai] de shuofa] bijiao kexin?

*they when leave PNM story more believable*

When is the time x such that [the story [that they left in x]] is more believable?

The cross-linguistic parallel gives us a good reason to consider the referential/nonreferential asymmetry in the context of UNIVERSAL GRAMMAR (UG). Throughout this paper, we will assume that the patterning observed above is governed by universal principles and parameter-settings, and results from the interaction among modules of UG. We find the GBT especially attractive in this regard, in view of the fact that it has developed a set of mechanisms for characterizing referentiality and its wide-ranging
effects. Nevertheless, an immediate problem arises when we attempt to apply the GBT to Chinese data. First consider the LF representations of the (b)-sentences in (7–9):

(22) *[S' [Comp Zenmeyang,]i [s [S' [Comp t',]i [s zhe-jian shi, how this CL matter ta e_j chuli- de t_i ]] bijiao qiadang]?
      he handle DE more appropriate

(23) *[S' [Comp Zenmeyang,]i [s ni bijiao xihuan how you more like [NP [S' [Comp t',]i [s ta e_j zhu- de t_i ]] de cai_j ]]?
      he cook DE PNM dish

(24) *[S' [Comp Zenmeyang,]i [s [NP [S' [Comp t',]i [s zhe-bi qian, how this CL money tamen e_j chuli- de t_i ]] de shoufa] bijiao kexin]?
      they handle DE PNM story more believable

In (22), manner *zenmeyang extracts from the sentential subject through the embedded Comp, and Comp-indexing accordingly applies after LF movement.\(^6\) Since the index of the intermediate trace has already percolated to the lower Comp at this stage, the initial trace is A'-bound in its Domain. On the other hand, the intermediate trace itself has no accessible SUBJECT, since Chinese sentences lack AGR projections.\(^7\) Consequently, the intermediate trace is A'-bound by the matrix Comp, and nothing rules out (22). The same problem obtains for (23) except that the intermediate trace does have a SUBJECT, i.e. the matrix subject *ni* ‘you’. Nevertheless, the intermediate trace is still A'-bound in its Domain, i.e.,

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\(^6\) Since Chinese Wh-phrases are generally assumed to move in LF, Comp-indexing must apply after LF movement, or the selectional restriction on Comp would not be satisfied.

\(^7\) This proposal traces back to Huang’s (1982, 1983) discussion of long-distance binding of *ziji* ‘self’, which is taken by Aoun (1986) to explain the absence of a subject/object asymmetry in Chinese.
the main clause. As for (24), the structural relation between an appositive and its head noun deserves some discussion. Based upon Japanese extraction facts, Fukui (1988) argues that appositive clauses are actually N-complements, whereas relative clauses are N-specifiers. Although there might not be such a sharp distinction in Chinese, at least it is safe to say that both relatives and appositives are located in the projection of N. This point is borne out by the following contrasts, which indicate that their syntactic positions cannot be higher than those of possessives, which close off the NP/DP projection in the sense of Fukui and Speas (1986).

(25)a. \[\text{NP} \text{Gebaini (de) [\text{s}': \text{shou ren piping]} \text{de lilun]} \]
\text{Copernicus PNM by people criticize PNM theory}

Copernicus’ theory, which was criticized by people

b. *[\text{NP [\text{s}': \text{shou ren piping]} (de) Gebaini de lilun]}
\text{by people criticize PNM Copernicus PNM theory}

c. \[\text{NP Gebaini (de) [\text{s}': diqiu rao- zhe taiyang zhuan] \text{de lilun]} \]
\text{Copernicus’ theory that the earth revolves around the sun}

d. *[\text{NP [\text{s}': diqiu rao- zhe taiyang zhuan] (de)}
\text{earth circumvent DUR sun turn PNM theory}

Copernicus PNM theory

Again, nothing is wrong with (24), despite the fact that the sentence is impossible with a manner reading (but considerably improved with a result reading; see note 3). Consequently, there is no principled way to rule out (22–24) in terms of Principle A. This situation remains unchanged for LF

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8 But note that this conclusion is not forced if we allow the subject dominating a sentential subject and the head of a complex NP to be a SUBJECT (cf. Aoun, 1986; Weinberg and Hornstein, 1986). This move, though stipulative in nature, serves to define a local Domain for restricting adjunct extraction. Consequently, the real empirical problem with the GBT approach, as a reviewer points out, is the asymmetry between [+N] and [−N] clausal complements discussed in Section 3.2. For ease of exposition below, we will pretend that this move is not possible, and try to present a unified account of LF island effects in terms of nominality.
extraction of reason *zenmeyang*, as illustrated in the LF representations of the (b) sentences of (10–12):

(26) *\([s'_{\text{Comp \ Weishenme}_i}, s'_{\text{Comp \ ti}}, \text{women why we nianshu}]) \text{ cai you yiyi]? study just have meaning}

(27) *\([s'_{\text{Comp \ Weishenme}_i}, s'_{\text{Comp \ ti}}, \text{ni bijiao xihuan why you more like}}\)] \text{ de ren}\]? work PNM people

(28) *\([s'_{\text{Comp \ Weishenme}_i}, s'_{\text{Comp \ ti}}, \text{they resign de shufa bijiao kexin]}?) PNM story more believable

Since (26–28) have the same configuration as (22–24), the (b) sentences of (10–12) cannot be correctly ruled out by Principle A for similar reasons.

3. Nominal Clauses as LF Islands

3.1. Nominal Adjuncts vs. Nonnominal Adjuncts

A possible solution to the puzzle presented above comes from the NOMINAL/NONNOMINAL ASYMMETRY (N/N'-asymmetry) explored by Huang (1982) and the nominal status of Comp. Huang argues that Wh-adjuncts like *when* and *where* are NPs inserted in the environment \([\text{P}\text{PP\text{NP}...}]\), where P may or may not be phonetically realized. *Why* and *how*, on the other hand, should be categorized as nonnominals such as PP or AdvP. As shown in the contrasts between (29a, b) and (29c, d), only *where* and *when* can be complements of prepositions. Likewise, we find parallel facts in Chinese, as exemplified in (30):

(29) a. From where did he come?
    b. Since when has he been here?
    c. *For why did he come?*
    d. *By how did he come?*
(30)a. Ta cong nali lai?
   he from where come
   From where did he come?

b. Ni cong shenmeshihou kaishi shangban?
   you since when start working
   Since when have you been here?

c. *Ta wei weishenme lai?
   he for why come
   *For why did he come?

d. *Ta yong zenmeyang kai men?
   he with how open door
   *By how did he come?

By assuming *weishenme ‘why’ and zenmeyang ‘how’ to be nonnominal, (30c, d) are correctly ruled out, simply because only nominals (and probably clauses) may be governed/Case-marked by preposition. In terms of this categorial distinction among Wh-phrases, Huang proposes that the argument/adjunct asymmetry in syntax and the N/N’-asymmetry in LF can be derived from the condition on extraction domain (CED), which states that X may be extracted from Y only if Y is properly governed. In syntax, if extraction of where and when affects only the NP node within PP, it will be ruled out by the CED, since the domain of an adjunct is by definition not properly (head) governed. Consequently, overt extraction of where and when must affect the entire PP, and pattern with extraction of why and how, which are themselves PPs (or AdvPs). In contrast, since it is generally assumed that the CED holds only in syntax, LF extraction of where and when is allowed to affect only the NP node in [P P NP], and leaves the head P stranded. Huang thus draws the conclusion that there is a systematic distinction between two types of operators: arguments/nominals on the one hand and adjuncts/nonnominals on the other hand, and puts forward the generalization that where and when pattern with why and how in syntax, while they pattern with who and what in LF.

This proposal, in our opinion, is highly plausible but technically insufficient for the following reason: on theoretical grounds, we should ask why nominals contrast sharply with non-nominals in regard to LF extraction, a question for which the CED provides no answer. On empirical grounds, the nominal/nonnominal distinction fails to capture not only the asym-
metry among nonnominals, such as that between manner \textit{zenmeyang} and instrumental \textit{zenmeyang}, but also the parallels between nominals and nonnominals, such as that between \textit{shenmeshihou} ‘when’ and instrumental \textit{zenmeyang}. In the following sections, by introducing the categorial feature [N] into the selectional restrictions on clausal complements, we will demonstrate that capturing Huang’s generalization and solving the binding puzzle are in fact two facets of the same task.

3.2. Bridge Verbs and Selectional Restrictions

Let us first examine a set of facts which show that LF extraction from clausal complements is sensitive to matrix predicates:

(31)

\begin{enumerate}
\item Ni renwei [Lisi yinggai \textit{zenmeyang} chuli \textit{zhe-jian shi}]?
\begin{itemize}
  \item you think \textit{Lisi should how \textit{handle this CL matter}}
\end{itemize}
What is the means $x$ such that you think [that Lisi should handle this matter by $x$]?

\item Ni renwei [\textit{zhe-jian shi}, \textit{Lisi chuli- de \textit{zenmeyang}}]?\newline
\begin{itemize}
  \item you think \textit{this CL matter Lisi handle DE how}
\end{itemize}
What is the manner $x$ such that you think [that Lisi handled this matter in $x$]?

\item Ni renwei [Lisi \textit{wei(-le) schenme cizhi}]?
\begin{itemize}
  \item you think \textit{Lisi for what resign}
\end{itemize}
What is the puropose $x$ such that you think [that Lisi resigned for $x$]?

\item Ni renwei [Lisi \textit{weishenme cizhi}]?
\begin{itemize}
  \item you think \textit{Lisi why resign}
\end{itemize}
What is the reason $x$ you think [that Lisi resigned for $x$]?

\item Ni renwei [Lisi \textit{shenmeshihou qu-guo \textit{Meiguo}}]?
\begin{itemize}
  \item you think \textit{Lisi when go EXP America}
\end{itemize}
When do you think Lisi will go to America?
\end{enumerate}

(32)

\begin{enumerate}
\item Lisi \textit{hen yihan [ta buneng \textit{zenmeyang} chuli \textit{zhe-jian shi}]?}
\begin{itemize}
  \item \textit{Lisi very regret he cannot how \textit{handle this CL matter}}
\end{itemize}
What is the means $x$ such that Lisi regrets [that he could not handle this matter by $x$]?
\end{enumerate}
(32b). *Lisi hen yihan [zhe-jian shi, ta buneng chuli- de
Lisi very regret this CL matter he cannot handle DE
zenmeyang]?
how
What is the manner x such that Lisi regrets [that he could not
handle this matter in x]? 

c. Lisi hen yihan [ta wei(-le) shenme cizhi]?
Lisi very regret he for what resign
What is the purpose x such that Lisi regrets [that he resigned
for x]? 

d. *Lisi hen yihan [ta weishenme cizhi]?
Lisi very regret he why resign
What is the reason x such that Lisi regrets [that he resigned
for x]? 

e. Lisi hen yihan [ta buneng shenmeshihou qu Meiguo]?
Lisi very regret he cannot when go America
What is the time x such that Lisi regrets [that he cannot go to
America in x]?

Comparing (31) with (32), we find that the main predicate renwei ‘think’
serves as a ‘bridge’ through which the R'-adjuncts such as manner zenmeyang
and reason weishenme can be extracted from complement clauses,
whereas yihan ‘regret’ does not. On the other hand, extraction of R-
adjuncts like instrumental zenmeyang and shenmeshihou ‘when’ does not
manifest bridge-verb effects. This reminds us of the asymmetry between
factive and nonfactive verbs sketched in Kiparsky and Kiparsky’s (1970)
pioneering work. One of the differences they mentioned concerns subject
extraction, as shown in (33):

(33)a. Who do you think kicked that dog?
b. *Who do you regret kicked that dog?

Following Kayne’s (1981a, b) proposal that a [+N] category cannot
govern across an S-type boundary, Adams (1985) proposes that the con-
trast between (33a) and (33b) should be attributed to different selectional
restrictions imposed by the matrix verbs: nonfactive verbs, in contrast
to factive verbs, subcategorize for nonnominal clausal complements, as
evidenced by the following contrasts:
(34)a. *I think the fact that Dylan kicked that dog.
b. I regret the fact that Dylan kicked that dog.

(35)a. *I think having agreed to the proposal.
b. I regret having agreed to the proposal.

Only the factive verb *regret in (34b), but not the nonfactive verb think in (34a), allows complements of the form [NP the fact S']. In parallel, only regret in (35b), but not think in (35a), takes a gerundive complement. It follows that the subject trace in (36b) is not properly (head governed by the local co-indexed [+N] Comp, since it is incapable of governing across an S-type boundary. In contrast, the local co-indexed [-N] Comp does govern the subject trace in (36a), and the ECP (or the head government requirement in Aoun's sense) is thus satisfied.

(36)a. [S: [Comp who, ]i [s you think [S': [Comp[+N] t'] i [s t_i . . .]]]]

b. [S: [Comp who, ]i [s you regret [S': [Comp[-N] t'] i [s t_i . . .]]]

The null hypothesis is that in Chinese, as well as in English, factive verbs like yihan 'regret' subcategorize for [+N] clausal complements, and nonfactive verbs like renwei for [-N] ones. However, this seems problematic in view of the following extraction facts:

(37)a. Ni jide [Lisi yinggai zenmeyang chuli zhe-jian shi]? you remember Lisi should how handle this CL matter

What is the means x such that you remember [that Lisi should handle this matter by x]?

b. *Ni jide [zhe-jian shi, Lisi chuli- de zenmeyang]? you remember this CL matter Lisi handle DE how

What is the manner x such that you remember [that Lisi handled this matter in x]?

c. Ni jide [Lisi wei(-le) shenme cizhi]? you remember Lisi for what resign

What is the purpose x such that you remember [that Lisi resigned for x]?
As seen in (37) and (38), the ambiguous (factive vs. nonfactive) verb *jide* ‘remember’ and the nonfactive *tongyi* ‘agree’ pattern with *yihan* ‘regret’ rather than *renwei* ‘think’. The same patterning is also reflected in their ability to take derived nominals, as shown below:
(39)(a) *Ta renwei [NP [Lisi jie che] de shi].
  
  he think Lisi borrow car PNM matter
  
  *He thinks [the matter [that Lisi borrowed a car]].

(b) *Ta cai [NP [Lisi jie che] de shi].
  
  he guess Lisi borrow car PNM matter
  
  *He guesses [the matter [that Lisi borrowed a car]].

(c) *Ta shuo [NP [Lisi jie che] de shi].
  
  he say Lisi borrow car PNM matter
  
  *He says [the matter [that Lisi borrowed a car]].

(d) Ta dui [NP [Lisi jie che] de shi] hen yihan.
  
  he about Lisi borrow car PNM matter very regret
  
  He regrets [the matter [that Lisi borrowed a car]].

(e) Ta jide [NP [Lisi jie che] de shi].
  
  he remember Lisi borrow car PNM matter
  
  He remembers [the matter [that Lisi borrowed a car]].

(f) Ta tongyi [NP [Lisi jie che] de shi].
  
  he agree Lisi borrow car PNM matter
  
  He agrees to [the matter [that Lisi borrowed a car]].

(40)(a) *Ta renwei [NP Lisi de tuilun].
  
  he think Lisi PNM reasoning
  
  *He thinks Lisi’s reasoning.

(b) *Ta cai [NP Lisi de tuilun].
  
  he guess Lisi PNM reasoning
  
  *He guesses Lisi’s reasoning.

(c) *Ta shuo [NP Lisi de tuilun].
  
  he say Lisi PNM reasoning
  
  *He says Lisi’s reasoning.
(40)d. Ta dui [NP Lisi de tuibu] hen yihan.

He regrets Lisi’s regression.

e. Ta jide [NP Lisi de tuilun].

He remembers Lisi’s reasoning.

f. Ta tongyi [NP Lisi de tuilun].

He agrees with Lisi’s reasoning.

As the contrasts in (39) and (40) suggest, it is the ability to take nominal complements, but not the distinction between factive and nonfactive readings, which determines the ‘bridgehood’ of Chinese verbs.\(^9\)

For one thing, it is perfectly possible for a bridge verb to have an ordinary NP as its object, e.g., *shuo yiju hua* ‘say a sentence’ and *cai*

\(^9\) A potential empirical problem, as a reviewer notes, is that sentences like (ia) are quite acceptable in comparison with the ill-formedness of (39c):

(i)a. Ta shuo-le [Lisi tuibu] (*de) zhe-jian shi.

He said the thing that Lisi fell behind.


A reasonable conjecture is that *zhejian shi* ‘this matter’ is a postverbal topic rather than the head noun of the embedded clause, since the presence of *de*, a prenominal modifier marker, makes (ia) degrade considerably. Moreover, when we shift the demonstrative *zhejian* ‘this’ to a higher projection in the Complex NP to ensure that *shi* ‘matter’ is the head noun, the sentence degrades again, as in (ib). In contrast, both the paraphrases are allowed when non-bridge verbs like *jide* ‘remember’ are used, as shown below:

(ii)a. Ta jide [Lisi tuibu] (de) zhe-jian shi.

He remembered the matter of Lisi is falling behind.

b. Ta jide [zhe-jian [Lisi tuibu] de shi].

Another argument for the conjecture is that if we replace *zhejian shi* ‘this matter’ with its indefinite counterpart, that construal becomes unacceptable, as in (iii), which illustrates a general fact about topics, namely, they must be definite or specific:

(iii) *Ta shuo-le [Lisi tuibu] yi- jian shi.

He said the PRF Lisi regress one CL matter
zhege mi ‘guess this riddle’. Therefore, the correct generalization is that only verbs taking derived nominals, i.e., propositions which assume the form of NP, may block LF extraction. Consequently, subcategorizing an NP does not necessarily guarantee a [+N] clausal complement. This conclusion is particularly welcome in that it adds further confirmation to Grimshaw’s (1979) observation that categorial similarities do not entail semantic identity. Quite the contrary, it is semantic identity that often leads to categorial similarities. As reported by Kennelly (1990), Turkish clausal complements uniformly undergo nominalization, where the subject takes genitive Case and the verb exhibits nominal agreement. In other words, there is no nominal/clausal distinction with respect to complement selection. On the other hand, subject NPs do take nominative Case in a specific class of adjunct clauses. It is thus plausible to say that semantic selection prefers some sort of uniformity in syntactic categories. In Turkish, this uniformity is realized in the extensive usage of gerundive constructions. In Chinese and English, the same property is realized in the sharing of [+N] between clauses and derived nominal. We will therefore side with Stowell (1981) in claiming that all clauses are [+N], and selection of [−N] clausal complements is essentially data-driven (see also Aoun (1985) and Kayne (1981a, b)). This move accounts for the cross-linguistic generalization that bridge verbs are always the minority in comparison with the huge inventory of nonbridge verbs.

A fair question in this context is how a language learner recognizes the markedness of bridge-verb constructions. If we take the view that the lack of derived nominal complements determines the bridgehood of verbs, then we run into the difficulty that children generally do not learn things from negative evidence. Therefore, we will assume that children recognize bridge verbs by hearing sentences like (31b, d), where extraction of non-nominal Wh-adjuncts is allowed. On the same basis, they infer that bridge verbs must select [−N] clausal complements, and accordingly disallow their derived nominal counterparts.

3.3. Nominal Islands

Based on the above observation, an argument may be constructed to account for the binding puzzle raised by (7–12). To start with, we would like to point out that the contrasts presented in (32), (37), and (38) show a surprising parallelism to those encountered in (7–12); that is, manner zemneyang contrasts with instrumental zemneyang, while reason weishenme contrasts with purpose wei(-le)shenme. This point is illustrated by the following LF representations of (32a–e):
We would like to suggest that this parallelism is not a coincidence, but rather follows from the same locality condition. To begin with, consider how the N/N'-asymmetry of Wh-adjuncts might be linked to that of clausal complements. The intuitive idea is that this linkage can be achieved via Comp-indexing. Specifically, we will entertain the possibility that the categorial feature [N] is percolated to the Comp node just as the [WH] feature is, to satisfy the selectional restrictions on clausal complements. Moreover, it is important to note that this process does not set values for Comp features, but rather checks if a newcomer agrees with the conditions posed by the host, usually the higher predicate. So Comp-indexing does not actually change the lexical properties of Comp; it implements the secondary selection at S-structure/LF (in contrast to the primary selection at D-structure) in terms of co-indexing. Now recall that verbs like yihan ‘regret’ subcategorize for [+N] clausal complements, and hence [+N] Comps. As illustrated in (42), once Comp-indexing applies, percolation of the [−N] feature will result in feature conflict and fail to satisfy the selectional restrictions posed by the main verb yihan:
This gives us some idea about what is wrong with (41b, d): the initial traces of manner zenmeyang and reason weishenme become illicit when co-indexing is blocked by feature conflict on the intermediate Comp, since the adjuncts in question are classified as [-N] (cf. Section 3.1). Consequently, (32b, d) are ruled out by Principle A, since the initial traces left by R'-adjuncts (i.e. A'-anaphors) are not A'-bound due to the failure of Comp-indexing. On the other hand, R-adjuncts like instrumental zenmeyang and shenneshihou 'when' have no Domain, which allows them to skip any local Comp. The same argument applies to the contrasts of (37) and (38), because jide 'remember' and tongyi 'agree', as well as yihan, subcategorize for [-WH, +N] complement clauses.

In contrast, as illustrated in (43), verbs like renwei 'think' in (31) subcategorize for [-WH, -N] Comps, through which a nonnominal R'-ad- junct can be extracted without violating any principle, and its traces are licensed accordingly. R-adjuncts, not falling under the GBT, again enjoy this privilege all the way to matrix Comps.

This analysis revives the nominal/nonnominal distinction of Wh-adjuncts in two salient ways. First, by introducing the idea that the nominal feature [N] plays a role in secondary selection in LF, we provide a direct
answer to the question of why the nominal status of an operator should have a bearing upon the R/R'-asymmetry in general. Second, under the GBT approach taken here, the nominal/nonnominal distinction plays a major role in deriving the nominal island effects, which we hope will lead to a deeper understanding of the nature of locality.

The striking similarity of patterning in nonbridge verb constructions leads us to draw the null hypothesis that sentential subjects, relatives, and appositives are inherent nominal islands, under which the seeming residue of the GBT is coherently characterized by the nominal/nonnominal asymmetry explored so far. Furthermore, as Audrey Li (p.c.) points out, this idea neatly conforms to early generative grammarians' intuition that sentential subjects, as well as relatives and appositives, are dominated by NP nodes. Along these lines, the solution to the binding puzzle is quite simple and coherent. As sketched in the following LF configurations, the (b) sentences of (7-9) are ruled out, as violations of Principle A: the initial R'-trace fails to be A'-bound because of nominal feature conflict on the local Comp nodes, namely, there is no local co-indexed Comp available for A'-anaphor licensing:

\[(22') \quad [s' [\text{Comp} \text{zenmeyangi}_t i [s [s' [\text{Comp} [+N] t_i[-N]] [s \ldots t_i ]] \text{VP }]]]
\]
\[(23') \quad [s' [\text{Comp} \text{zenmeyangi}_t i [s \ldots [\text{NP} [s' [\text{Comp} [+N] t_i[-N]] [s \ldots e_j t_i ]] N_i]]]]
\]
\[(24') \quad [s' [\text{Comp} \text{zenmeyangi}_t i [s [\text{NP} [s' [\text{Comp} [+N] t_i[-N]] [s \ldots t_i ]] N] \ldots ]]]
\]

Exactly the same account obtains for the (b) sentences of (10-12), as presented below:

\[(26') \quad [s' [\text{Comp} \text{weishenme}_t i [s [s' [\text{Comp} [+N] t_i[-N]] [s \ldots t_i ]] \text{VP }]]]
\]
\[(27') \quad [s' [\text{Comp} \text{weishenme}_t i [s \ldots [\text{NP} [s' [\text{Comp} [+N] t_i[-N]] [s \ldots e_j t_i ]] N_i]]]]
\]
\[(28') \quad [s' [\text{Comp} \text{weishenme}_t i [s [\text{NP} [s' [\text{Comp} [+N] t_i[-N]] [s \ldots t_i ]] N] \ldots ]]]
\]

Consequently, an ‘escape hatch’ in syntax can sometimes be a trap in LF, especially for nonnominal R'-adjuncts like manner zenmeyang and reason weishenme. On the one hand, they are forced to undergo successive cyclic movement, since they are rated as nonreferential and accordingly subject to the binding requirement. On the other hand, if a local Comp in its path is [+N], Comp indexing will fail due to feature conflict, and
result in a Principle A violation. This is exactly why nonnominal R'-adjuncts never extract out of nominal islands. A complementizer of a nominal clause thus acts more like a check point than an escape hatch.

4. Further Consequences

4.1. A-not-A Questions

In addition to Wh-questions, the interpretation of A-not-A (yes/no) questions also exhibits nominal island effects. Huang (1988a) argues convincingly that an A-not-A question is not derived by the rule of coordinate deletion. Rather, it is derived by a rule of reduplication triggered by an abstract [+Q] (question) morpheme in INFL, which reproduces an adjacent dummy of the head verb and inserts a negative morpheme bu ‘not’ between them. One of his arguments is based on island effects in the presence of A-not-A questions:

(44)a. *[Ta chu- bu- chuli zhe-jian shi] bijiao qiadang?
   he handle-not-handle this CL matter more appropriate
   Is it more appropriate [for him to handle or not to handle this matter]?

b. *Ni xihuan [ta zhu- bu- zhu] de cai]?
   you like he cook-not-cook PNM dish
   Do you like [dishes [which he cooks or does not cook]]?

c. *[[Tamen chu- bu- chuli zhe-bi qian] de shuofa]
   they handle-not-handle this CL money PNM story
   bijiao kexin?
   more believable
   Is [the story [that they handled or did not handle this money]] more believable?

A wide scope reading for A-not-A questions cannot occur with sentential subjects, relatives, and appositives, as shown in (44a–c) respectively. For one thing, the abstract [+Q] morpheme is not referential at any rate, and for another, it behaves more like an AUX/adverb than an AGR. We thus have every reason to consider it both nonreferential and nonnominal. Consequently, a trace left by a [+Q] morpheme is not A'-bound in nominal islands, due to feature conflict in local [+N] Comps. We thus correctly rule out (44a–c).
Another piece of evidence for the nominal island analysis comes from bridge verb constructions, which again follow the same pattern, as indicated by the contrasts of (45):

(45)a. Ni renwei [Lisi xi- bu- xihuan Meiguo]?
   *Do you think [that Lisi likes or does not like America]?

b. *Ni hen yihan [Lisi xi- bu- xihuan Meiguo]?
   *Do you regret [that Lisi likes or does not like America]?

c. *Ni jide [Lisi xi- bu- xihuan Meiguo]?
   *Do you remember [that Lisi likes or does not like America]?

d. *Ni tongyi [Lisi qu-bu- qu Meiguo]?
   *Do you agree [that Lisi goes to or does not go to America]?

Recall that nonbridge verbs like yihan ‘regret’, jide ‘remember’, and tongyi ‘agree’ select [−WH, +N] clausal complements, whereas bridge verbs like renwei ‘think’ select [−WH, −N] ones. It follows that extraction of the [+Q] morpheme in (45b–d) should be blocked accordingly with respect to the GBT. The nominal island effects with A-not-A questions thus fall under our analysis in a coherent way.

4.2. Wh-islands

The standard Wh-island effects also lend support to the nominal island analysis. As Huang (1982, p. 530) observes, an NP or argument may move out of a Wh-island in LF, while a non-NP or adjunct may not. As shown by (46a, b), zai nali ‘at where’ and shenmeshihou ‘when’ pattern with shei ‘who’ and sheme ‘what’ with respect to LF extraction:

(46)a. Ni xiang-zhidao [shei zai nali gongzuo]?
   *Who is the person x such that you wonder [where x works]?

b. Where is the place x such that you wonder [who works at x]?
b. Ni xiang-zhidao [Lisi shenmehsihou mai-le sheme]?  
   you wonder Lisi when buy PRF what

   a. What is the thing x such that you wonder [when Lisi bought x]?  
   b. When is the time x such that you wonder [what Lisi bought in x]?  

Zai nali and shenmehsihou, as well as shei and sheme, may get wide scope over the matrix clauses in (46a, b), regardless of the apparent island violation. This parallel follows straightforwardly from the GBT: since their traces are all referential and hence have no Domain, they behave alike with respect to abstract movement. Now consider the following facts concerning the interpretation of zenmeyang ‘how’:

(47)a. Ni xiang-zhidao [shei zenmeyang chuli zhe-jian shi]?  
   you wonder who how handle this CL matter

   a. Who is the person x such that you wonder [how x handled this matter]?  
   b. What is the means x such that you wonder [who handled this matter x]?  
   c. What is the manner x such that you wonder [who handled this matter in x]?  

b. Ni xiang-zhidao [lanqiou, shei da-de zenmeyang]?  
   you wonder basketball who play DE how

   a. Who is the person x such that you wonder [how x plays basketball]?  
   b. What is the manner x such that you wonder [who plays basketball in x]?  

As shown in (47a), the preverbal zenmeyang can only receive an instrumental reading whenever a wide scope question is possible (cf. note 2). Postverbal zenmeyang, on the other hand, never construes with the instrumental reading; hence the absence of a wide scope reading in (47b). All these contrasts fall neatly under our analysis: whether manner zenmeyang moves first or not, the lower Comp must be occupied by the argument shei when Comp-indexing applies, and therefore there is no way to license the R'-trace (i.e. A'-anaphor) left behind. In contrast, the R-trace of instrumental zenmeyang has no Domain according to the accessibility condition (17), so long-distance extraction is allowed. As usual, this expla-
nation can be carried over to the asymmetry between purpose \textit{wei(-le)-shenme} and reason \textit{weishenme}, as indicated by the following contrast:

(48)a. Ni xiang-zhidao [shei wei(-le) shenme cizhi]?
\textit{you wonder who for what resign}
\begin{itemize}
\item a. Who is the person $x$ such that you wonder [why $x$ resigned]?
\item b. What is the purpose $x$ such that you wonder [who resigned for $x$]?
\end{itemize}

b. Ni xiang-zhidao [shei weishenme cizhi]?
\textit{you wonder who why resign}
\begin{itemize}
\item a. Who is the person $x$ such that you wonder [why $x$ resigned]?
\item b. * What is the reason $x$ such that you wonder [who resigned for $x$]?
\end{itemize}

4.3. Infinitive and Subjunctive Complements

An empirical problem with the nominal island analysis raised by C.-C. Tang (1990), concerns predicates taking infinitival complements like \textit{jihua} 'plan' and \textit{dasuan} 'plan'. They generally pattern with nonbridge verbs in regard to the $R/R'$-asymmetry, as evidenced by the following examples:

(49)a. Lisi jihua [zenmeyang chuli zhe-jian shi]?
\textit{Lisi plan how handle this CL matter}
What is the means $x$ such that Lisi plans [to handle this matter by $x$]?

b. *Zhe-jian shi, Lisi jihua [chuli- de zenmeyang]? 
\textit{this CL matter Lisi plan handle DE how}
What is the manner $x$ such that Lisi plans [to handle this matter in $x$]?

c. Lisi jihua [wei(-le) shenme mai diannao]?
\textit{Lisi plan for what buy computer}
What is the purpose $x$ such that Lisi plans [to buy a computer for $x$]?

d. *Lisi jihua [weishenme mai diannao]?
\textit{Lisi plan why buy computer}
What is the reason \( x \) such that Lisi plans \([\text{to buy a computer for } x]\)?

(50)a. Lisi dasuan \([\text{zenmeyang chuli zhe-jian shi}]\),
\[Lisi \text{ plan } \text{how handle this CL matter}\]
What is the means \( x \) such that Lisi plans \([\text{to handle this matter by } x]\)?

b. \(*\text{Zhe-jian shi, Lisi dasuan }[\text{chuli- de zenmeyang}]\),
\[this \text{ CL matter Lisi plan handle DE how}\]
What is the manner \( x \) such that Lisi plans \([\text{to handle this matter in } x]\)?

c. Lisi dasuan \([\text{wei(-le) shenme mai diannao}]\),
\[Lisi \text{ plan for what buy computer}\]
What is the purpose \( x \) such that Lisi plans \([\text{to buy a computer for } x]\)?

d. \(*\text{Lisi dasuan }[\text{weishenme mai diannao}]\),
\[Lisi \text{ plan why buy computer}\]
What is the reason \( x \) such that Lisi plans \([\text{to buy a computer for } x]\)?

Jihua, just as we predict, selects derived nominals by default, as shown by (51a). However, dasuan does not take a derived nominal as its complement, as shown by (51b):

(51)a. Lisi jihua \([\text{gonghui de bagong}]\).
\[Lisi \text{ plan union PNM strike}\]
Lisi plans the union’s strike.

b. \(*\text{Lisi dasuan }[\text{gonghui de bagong}]\).
\[Lisi \text{ plan union PNM strike}\]
Lisi plans the union’s strike.

Since our basic assumption is that clauses are \([+N]\) in the absence of data-driven processes, we correctly predict that the range of extractability in infinitives is not different from that in other types of complements. So the right question to ask is why the verb dasuan does not select derived nominals. By comparing (51) and (52), we find that the answer is actually straightforward:
(52)a. Lisi zheng zai- jihua [zhe-jian shi].
Lisi right now PRG plan this CL matter
Lisi is planning this matter right now.

b. *Lisi zheng zai -dasuan [zhe-jian shi]
Lisi right now PRG plan this CL matter
Lisi is planning this matter right now.

Since _dansuan_ does not take an ordinary object NP either, the ill-formedness shared by (51b) and (52b) is likely to be a matter of strict subcategorization (or categorial-selection in the sense of Grimshaw (1979) and Pesetsky (1982)). Consequently, (51b) is ruled out simply because _dasuan_ does not subcategorize for NPs. In contrast, since _jihua_ does take an ordinary NP object, as in (52a), both semantic selection (s-selection) and categorial selection (c-selection) are satisfied in (51a). We thus account for the contrast between (51a) and (51b) without further stipulation.

Another empirical problem concerns the fact that there exists a class of verbs whose clausal complements display the nominal island effect, but have no derived nominal counterparts. As noted by a reviewer, complements of subjunctive verbs like _xiwang_ 'hope' and _jiading_ 'assume' discriminate between purpose _wei(-le)shenme_ and reason _weishenme_ with respect to their LF extractability, as shown by the contrast between (53a) and (53b) (see also Lin (1992)). The same situation obtains for instrumental and manner _zenmeyang_, as shown by the contrast between (54a) and (54b):

(53)a. Ta xiwang/jiading [Lisi wei(-le) shenme tou- le che]
he hope assume Lisi for what steal PRF car
What is the purpose _x_ such that he hopes/assumes that Lisi stole a car for _x_?

b. *Ta xiwang/jiading [weishenme Lisi tou- le che]
he hope assume why Lisi steal PRF car
What is the reason _x_ such that he hopes/assumes that Lisi stole a car for _x_?

(54)a. Ta xiwang/jiading [Lisi zenmeyang xiu na- lian che]
he hope assume Lisi how fix that CL car
What is the means _x_ such that he hopes/assumes that Lisi will fix that car by _x_?
b. *Ta xiwang/jiading [na-lian che, Lisi xiu-de zenmeyang]?
   
   he hope assume that CL car Lisi fix DE how
   
   What is the manner x such that he hopes/assumes that Lisi will fix that car in x?

However, their derived nominal counterparts are unexpectedly disallowed, as evidenced by (55a, b):

(55)a. *Ta xiwang/jiading [[Lisi tou che] de shi].
   
   he hope assume Lisi steal car PNM matter
   
   He hopes/assumes the matter that Lisi stole a car.

b. *Ta xiwang/jiading [gonghui de bagong].
   
   he hope assume union PNM strike
   
   He hopes/assumes the union's strike.

Here our problem is very similar to that encountered in infinitive complements. Namely, if xiwang and jiading select [+N] clausal complements by default, why don't they select derived nominals as well? Again, the answer is surprisingly simple: we may solve the problem in exactly the same way sketched above, based on the following data:

(56) *Ta xiwang/jiading [zhe-jian shi].
   
   he hope assume this-CL matter
   
   He hopes/assumes this matter.

Since xiwang and jiading do not subcategorize for NPs, as indicated by the deviance of (56), (55a, b) are ruled out in violation of c-selection.

Over all, we have shown that a verb's lack of ability to take derived nominal complements may not have a direct bearing on the nominal status of the corresponding clausal complement of the same verb. Rather, it is c-selection (or strict subcategorization) that plays a major role here in determining the distribution of derived nominals. Owing to the language-specific nature of c-selection, our analysis also explains why the negative correlation between extractability and the ability of a verb to take a derived nominal is exceptionless in English, while it is not in Chinese. Moreover, we correctly predict that the inability of a bridge verb to take

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10 Thanks to an NLLT reviewer for bringing this issue to my attention. See Tsai (1991) for an argument for the independence of c-selection (contra Pesetsky's (1992) Case-theoretic account), which is based on the Case requirement of Chinese CPs.
a derived nominal is universal, since c-selection is only relevant in the presence of derived nominal complements.

4.4. *LF Subjacency*

An intriguing aspect of the LF nominal island effect, as a reviewer points out, is its striking similarity to the Subjacency effect, especially when we consider instances of strong islands such as sentential subjects and Complex NPs. Nevertheless, there are reasons not to adopt a Subjacency account in a movement-oriented approach.

First of all, Subjacency, as broadly accepted, does not discriminate between arguments and adjuncts. Consequently, in the case of strong islands, whenever we rule out an instance of adjunct extraction in terms of LF Subjacency, we predict the impossibility of the corresponding argument extraction. The prediction, as we have seen in (4a–c), is not supported on empirical grounds. This is exactly why Huang (1982) concludes that Subjacency does not hold in LF.\(^{11}\)

Moreover, Subjacency appears to be redundant in the case of nominal complements (cf. Section 3.2): whenever we have an LF Subjacency violation, in parallel we have an ECP or Binding Principle A violation. Given the globalism of the ECP, we may apply the Kayne/Adams analysis to the Chinese data by stipulating that a [+N] Comp cannot govern into its clausal complement. Consequently, only nominals survive, since they satisfy both Subjacency and the antecedent-government requirement by successive cyclic movement. In contrast, extraction of [−N] adjuncts is ruled out by both the ECP and Subjacency, since they are neither head-governed, nor allowed to pass through the local Comp. Given the ‘split ECP’ approach, the same situation occurs, except that the relevant principle is Binding Principle A rather than the ECP, and the relevant factor is the possibility of local A’-binding rather than antecedent-government. In sum, not only has Subjacency made a wrong prediction in regard to the strong island effect, but it has no independent status as far as LF locality is concerned.

On the other hand, if we do take the view that there is no LF movement involved in wide-scope Wh-question formation (cf. Pesetsky, 1987, Aoun and Li, 1990), then there is theory-internal motivation for LF Subjacency.

\(^{11}\) Nishigauchi (1986), on the other hand, argues for LF Subjacency based on the presence of Wh-island effects in Japanese, which is unexpected if Subjacency does not play a role in LF. Nevertheless, Watanabe (1991) shows that Huang's conclusion can be maintained by employing the notion of invisible S-structure movement, i.e. movement of ECs in overt syntax.
In order to derive the nominal/nonnominal asymmetry, some linking mechanism must be provided for long-distance construal between two base positions, which is crucially not available for nonnominal Wh-phrases. For example, we can assume that there is an interrogative operator (or a Q morpheme in C. L. Baker's sense) base-generated in Comp, which serves as a potential binder of a Wh-in-situ only if it is nominal. We may represent the restriction as follows:

\[(57) \quad \text{[Op} [\text{Wh}_{-N}] \text{]}\]

However, this move presents us with another problem. While ruling out wide-scope readings of \([-N]\) Wh-phrases in island constructions, we also rule out their counterparts in simple sentences and bridge verb constructions. Consequently, LF Wh-movement is independently required for the scope formation of \([-N]\) Wh-phrases, upon which Subjacency is a ready locality condition.

4.5. A Reply to Lin (1992)

Lin (1992) also raises a few objections to the nominal island analysis. Let's examine them one by one. The first objection is based on the following data from C.-C. Tang (1990), with slight changes:

\[(58)a. \quad \text{Wo bijiao xihuan} \quad [\text{ta e, zhu-de hen man} \quad \text{de cai}]\]

I more like he cook DE very slow PNM dish

I like better the dish which he cooked slowly.

\[(58)b. \quad \text{*[Zhe-jian shi, ta chuli de hen zixi]} \quad \text{bijiao}\]

this CL matter he handle DE very careful more

qiadang.

appropriate

It is more appropriate for him to handle this matter carefully.

As Tang notes, since island constructions containing manner adverbials like man 'slowly' and zixi 'carefully' already result in ungrammaticality, the (b) sentences of (7-9) can be ruled out for some independent reason rather than as ECP violations. Based on Tang’s observation, Lin proceeds to claim that the deviance of (7b–9b) should not be attributed to LF extraction of postverbal zemenyang; rather, whatever rules out (58a,b)

\[12\] For relevant discussion, see Aoun and Li (1990), Cheng (1991), Li (1992), and Tsai (1992a, b).
also rules out (7b–9b). Before we go any further, let’s first clarify the data. With some stylistic changes, sentences like (58b) are actually quite acceptable:

(59) \[\text{Zhe-jian shi, ta chuli de zixi yi-Dian} \text{ bijiao hao.}\]

This CL matter he handle DE careful a little more good

It would better for him to handle this matter a little more carefully.

Moreover, appositive constructions generally allow the presence of postverbal manner adverbials:

(60) \[\text{Akiu bu xiangxin} \text{ [\text{guoniu pa- de hen man} \text{ de}]} \text{ shuofa}.\]

Akiu not believe snail crawl DE very slow PNM story

Akiu does not believe the story that snails crawl very slowly.

So the real problem is with the relative construction in (58a). Now compare (58a) with (61a, b). We find that there is a subject/object asymmetry concerning postverbal manner adverbials: when the subject undergoes relativization, no deviance is detected

(61)a. \[\text{Wo xihuan kan} \text{ [\text{yi chang [e_i jingxing- de hen shun} PNM game}\text{ de bisai].}}\]

I like watch one CL progress DE very smoothly

b. \[\text{Tamen zhi gu} \text{ [\text{e_i zi xie- de kuai} \text{ de ren}].}\]

They only hire character write DE quickly PNM person

They only hire people who write (characters) quickly.

This curious phenomenon indicates that there might be some sort of specificity associated with a lexical subject. Our prediction is that no blocking effect will appear if the subject happens to be a generic noun like renlei ‘humankind’. This prediction is borne out by (62a):
(62)a. [[Renlei yong-de zui duo] de jiaotonggongju
  \textit{humankind use DE most frequently PNM vehicle}
shi qiche.
  \textit{is automobile}

The vehicles which humankind use most frequently are automobiles.

b. *Tamen zhi gu [[e, zhe-zhong ziti xie- de kuai]
  \textit{they only hire this type font write DE quickly}
delren].
  \textit{PNM person}

They only hire people who write this type of font quickly.

Furthermore, we also correctly predict the ill-formedness of (62b), where a definite NP \textit{zhe-zhong ziti} 'this type of font' is substituted for the generic noun \textit{zi} 'character' in (61b).

On theoretical grounds, there is no a priori reason to believe that manner adverbials and their interrogative counterparts should behave alike, especially considering the differences between their scope-taking possibilities (cf. note 18). While we sympathize with Tang and Lin's concerns about the difficulty caused by (58a), there is a more promising prospect of solving the problem without sacrificing the generality of the ECP/GBT account.

The second issue raised by Lin concerns the plausibility of using (non-)bridge verb constructions as a criterion for testing LF locality. Lin points out that the complement clause of (63a) ((32b), repeated here) is already ill-formed as a matrix sentence. He then concludes that the real factor behind the deviance of (63a,b) may be related to the negator and/or the modal operator \textit{(bu)neng}, 'can(not)', and categorically denies the relevance of clausal complements containing postverbal \textit{zenmeyang}:

(63)a. *Lisi hen yihan [zhe-jian shi, ta buneng chuli-
  \textit{Lisi very regret this CL matter he cannot handle}
de \textit{zenmeyang}]?
  \textit{DE how}

What is the manner \(x\) such that Lisi regrets [that he could not handle this matter in \(x\)]?
(63)b. *Zhe-jian shi, ta (bu)neng chuli- de zenmeyang?

What is the manner x such that he could not handle this matter in x?

It is reasonable that there might be other types of locality playing a role here such as Relativized Minimality (Rizzi, 1990) or the Minimal Binding Requirement (Aoun and Li, 1989), and perhaps they could be profitably considered. But we fail to see how Lin is led to conclude that cases which do not involve negation and modal quantification are also irrelevant (e.g. (31b) vs. (37b, 38b)). Moreover, the contrast between (32a) and (32b) still exists even in the absence of *buneng*, as illustrated below:

(64)a. ?Lisi hen yihan [ta zenmeyang chuli zhe-jian shi]?

What is the means x such that Lisi regrets [that he handled this matter by x]?

b. *Lisi hen yihan [zhe-jian shi, ta chuli- de zenmeyang]?

What is the manner x such that Lisi regrets [that he handled this matter in x]?

Sentence (64a) is a little odd due to the negative implication of the matrix verb yi\(\text{han} \) 'regret', which is precisely the reason why we add *buneng* 'cannot' to compensate and make (32a,b) semantically coherent.

Furthermore, the situation is not as simple as Lin describes. On the one hand, the minimality effect does not affect instrumental *zenmeyang*, as shown by the contrast between (65a) and (65b).

(65) Zhe-jian shi, ta (bu) neng zenmayang chuli?

a. What is the means x such that he could not handle this matter by x?

b. *What is the manner x such that he could not handle this matter in x?

On the other hand, there is nothing incompatible between the nominal island analysis and the notion of minimality. It is highly possible that certain types of locality conditions may conspire in deriving the opacity effects discussed above, resulting in varying degrees of acceptability.
Lin's third objection concerns the justification of the categorial status of postverbal *zenoneyang*. He contends that descriptive complements (i.e. postverbal manner adverbials) should be categorized as APs rather than AdvPs, which is not unreasonable, since the majority of them have corresponding adjective usages. Consequently, manner *zenoneyang* would be classified as [+V, +N], and should not display nominal island effects. Here again Lin presupposes an analogy between manner adverbials and their interrogative counterparts, which is not quite well-founded, as we have seen above. But for argument's sake, let's take his line of thinking for granted. We shall also keep in mind that the feature system is not empirically self-evident, and as Jackendoff (1977) points out, needs to be justified on the basis of what categories fall together in language-specific processes.

The first way out is simply to postulate that Chinese APs do not differ from VPs in category; namely, they are all [+V, −N]. This move is supported by the well-known fact that Chinese adjectives allow extensive predicate usages; they are [+Subj, +Obj] in Jackendoff's sense. Particularly when construed as transitive, Chinese adjectives are essentially nondistinct from verbs. Alternatively, given the criterion that a genuine adverb cannot be a syntactic predicate (i.e. cannot take a subject), we may question whether there is a nontrivial distinction between a postverbal manner adverbial and a resultative complement. The answer is positive. When postverbal complements happen to be APs like *hen chenggong* 'very successful' and *hen piaoliang* 'very beautiful', (66a) and its corresponding *ba*-construction (b) are both well-formed:

(66)a. Zhe-jian shi, Akiu ban- de hen chenggong/piaoliang.
   *this CL matter Akiu handle DE very successful beautiful*
   Akiu handled this matter to the extent that it is successful/beautiful.

b. Akiu [ba zhe-jian shi] ban- de hen
   *Akiu BA this CL matter handle DE very*
   chenggong/piaoliang.
   *successful beautiful*
   Akiu handled this matter so much as to make it successful/beautiful.

In contrast, if manner adverbials like *qijin* 'vigorously' and *liluo* 'neatly'
are supplied instead, only (67a), but not its corresponding ba-construction (67b), is allowed:

(67)a. Zhe-jian shi, Akiu ban- de hen qijin/ liluo.

Akiu handled this matter very vigorously/neatly.


*Akiu handled this matter so much as to make it vigorously/neatly.

As Huang (1989) observes, when postverbal complementation is involved in ba-constructions, the 'extent' reading of (66a) is not available; instead, an 'affected' reading occurs with the object zhe-jian shi 'this matter' understood as some sort of Patient, as in (66b).\(^{13}\) Huang suggests that this is because the presence of ba forces the verb head and the resultative complement to assign a Patient role to the object compositionally. In other words, ban-de and hen chenggong/piaoliang form a complex predicate in (62b), predicking on the object (ba) zhe-jian shi, as illustrated in the following configuration:

(68) VP
    \[\text{[ba zhe-jian shi]}_i \text{ V'}\]
    \[\text{ban-de } \text{ [RCPro} \text{ hen chenggong/piaoliang]}\]

The compositional \(\theta\)-role assignment in turn relies on the presence of a subject Pro (including PRO and pro, cf. Huang 1984) in the RESULTATIVE CLAUSE (RC). The empty subject serves as an open place in predicking the whole V' of the ba-phrase (cf. Williams, 1980). Consequently, as noted by Huang (1991), if the subject Pro is not available for some reason, the predication simply collapses. Now suppose that the manner adverbials in (67a) are APs and function as predicates. The prediction is that the corresponding ba-construction (67b) should be at least as good as (66b), which is not empirically borne out. On the other hand, if we hold that

\(^{13}\) If forced, the affected reading can also be associated with (66a), but it is never as prominent as the extent reading.
postverbal manner adverbials are genuine adverbs, and cannot take a subject, (67b) is ruled out straightforwardly due to failure to satisfy the requirement encoded by _ba_-phrases. This argument is further supported by the fact that the subject of an RC cannot be a lexical NP in the presence of a _ba_-phrase. As shown by (69a, b), a lexical pronoun may alternate with the subject _Pro_, as long as the affected reading is not forced.

(69)  
(a) Akiu, wo ma- de [RC _Pro_ dou ku-le]  
Akiu _I_ scold _DE_ even cry _INC_  
I scolded Akiu to the extent that (he) even cried.

(b) Akiu, wo ma- de [RC _ta_ dou ku-le].  
Akiu _I_ scold _DE_ _he_ even cry _INC_  
I scolded Akiu to the extent that he even cried.

(70)  
(a) Wo [ba Akiu] ma- de [RC _Pro_ dou ku-le].  
_I_ _BA_ Akiu scold _DE_ even cry _INC_  
I scolded Akiu so much as to make (him) cry.

(b) *Wo [ba Akiu] ma- de [RC _ta_ dou ku-le].  
_I_ _BA_ Akiu scold _DE_ _he_ even cry _INC_  
I scolded Akiu so much as to make him cry.

In contrast, when the affected reading is forced by a _ba_-construction, only RCs with empty subjects survive, as evidenced by the contrast between (70a) and (70b). Since a lexical pronoun in general does not serve as an open place in predication, it follows that the complex predicate formation fails in (70b).

Finally, Lin points out that descriptive complements may undergo A-not-A question, which is a crucial property of (syntactic) predicates:

(71)  
Tamen lanqiu da- de hao- bu-hao?  
they basketball play _DE_ good-not-good  
Do they play basketball well?

It is certainly plausible to say that the predicate usage is sufficient condition on A-not-A question formation. But is it a necessary condition? That is, is it the case that all A-not-A questions must be associated with a syntactic predicate? Not necessarily, as shown below:
Neither of the A-not-A questions in (72a, b) is associated with a syntactic predicate, since *chang* 'often' and *ba* do not take a subject. As a result, (71) is simply irrelevant in determining the predicate status of descriptive complements.

In sum, we have demonstrated that none of Lin's (1991) objections constitute real challenges to our approach. On the other hand, those questions he raises do lead us to consider the problem from different angles, which in turn has led us to broaden the coverage of the analysis.

5. The Syntax/LF Asymmetry

In this section, we shall proceed to sort out some factors behind the syntax/LF asymmetry mentioned at the beginning of this paper. First recall that Chinese does allow overt Wh-fronting to some extent, and it exhibits an argument/adjunct asymmetry.\(^{14}\)

\[(73)\]
\[
\text{a. } \text{Shei}_i, \text{ ni kan } [t_i \text{ zu} \text{ xi} \text{ xuan Lisi}]? \\
\text{who do you think most like Lisi?}
\]

\[
\text{b. } \text{Shenme}_i, \text{ ni kan } [\text{Lisi zu} \text{ xi} \text{xuan t}_i]? \\
\text{what do you think Lisi most like?}
\]

\[(74)\]
\[
\text{a. } \text{*Zenmeyang}_i, \text{ ni kan } [\text{Lisi yinggai t}_i \text{ chuli zhe-jian shi}]? \\
\text{how do you think Lisi should handle this CL matter?}
\]

\(^{14}\) It is worthwhile noting that under WAHL's assumption, nothing prevents overt Wh-movement from applying in Chinese as far as selectional restrictions can be satisfied in LF. This allows the possibility that Chinese, Wh-phrases may undergo Comp-to-Comp substitution in overt syntax. Unfortunately, we fail to find any evidence for or against this implication. We will therefore leave the issue open here.
By what means/How do you think [Lisi should handle this matter t].

b. *Zenmeyang, ni kan [zhe-jian shi, Lisi chuli- de ti]? how you think this CL matter Lisi handle DE
   In what manner/How do you think [Lisi handled this matter t]?

c. *Wei(-le)shenme, ni kan [Lisi ti cizhi]? for what you think Lisi resign
   For what purpose/Why do you think [Lisi resigned t]?

d. *Weishenme, ni kan [ti Lisi cizhi]?
   why you think Lisi resign
   For what reason/Why do you think [Lisi resigned t]?

As illustrated by the contrast between (73) and (74), the patterning at S-structure departs considerably from that at LF.15 Namely, instrumental zenmeyang and purpose wei(-le)shenme dramatically side with their nonreferential counterparts with respect to Wh-fronting. As a matter of fact, all kinds of adjuncts group together in contrast with arguments. As shown by (75a, b), neither zai nali ‘at where’ nor shenmeshihou ‘when’ can undergo overt fronting even in a bridge verb construction.

(75)a. *Zai nali, ni kan [ta ti gongzuo]?
   at where you think he work
   Where do you think [he works t]?

b. *Shenmeshihou, ni kan [ta ti qichuang]?
   when you think he get up
   When do you think [he will get up t]?

Now the question is whether there is a principled way to derive the right partition among Wh-adjuncts in overt syntax. Under the split ECP approach, the PF requirement of head-government explains the argu-

15 Since the Chinese Comp-indexing rule applies in LF, WAHL’s proposal that a subject trace should be governed by its local co-indexed Comp in PF is irrelevant here. Consequently, a subject/object asymmetry is expected in regard to overt Wh-fronting in Chinese. However, this prediction is not borne out, as shown by (5a, b) and (73a, b). Therefore, whether we endorse the GBT framework or not, Huang’s claim that Chinese INFL serves as a proper (head) governor must be maintained.
ment/adjunct asymmetry at S-structure. That is, we may postulate that Chinese Wh-adjuncts, as opposed to their English counterparts, are not head governed by INFL (cf. the English translation throughout (74a–d) and (75a, b)). Here we adopt Rizzi's (1990) system, which distinguishes a VP-adjoined position from a VP-internal adjunct position in regard to their accessibility to head government from INFL, as sketched below (headness irrelevant)

(76)

\[
\begin{array}{c}
\text{INFL}^\prime \\
\text{INFL}^\circ \\
\text{VP} \\
\text{VP} \\
\text{V'} \\
\text{XP}_1 \\
\text{XP}_2
\end{array}
\]

The adjoined position occupied by \( \text{XP}_1 \) is head-governed by INFL. Since not every segment of the higher VP dominates \( \text{XP}_1 \), the higher VP node does not count as a blocking category in the sense of Chomsky (1986b).\(^\text{16}\) In contrast, \( \text{XP}_2 \) is protected from government, since every segment of the lower VP does dominate \( \text{XP}_2 \). (Also note that the lower VP may be head-governed by INFL, but it is certainly not L-marked by INFL.) According to Rizzi, the \( \text{XP}_1 \) position is available for manner adverbials like \textit{how} (and probably \textit{when} and \textit{where} as well), while adjunct APs can only take the \( \text{XP}_2 \) position. Since a selected AP is generally assumed to be under \( \text{V'} \) and head-governed by \( \text{V}^0 \), this move accounts for the following contrast in overt Wh-movement (examples from Rizzi, 1990):

(77)a. How flat\(_i \) did she [\( \text{V'} \), hammer the metal \( t_i \)]?

b. *How raw\(_i \) did he [\( \text{V'} \), eat the meat \( t_i \)]?

As for sentential adverbials like \textit{why}, they can be located in a higher functional projection or even in Comp. The distribution of English adver-

\(^{16}\) The relevant definitions are given as follows (for detailed discussion, see Chomsky (1986b)):

(i) \( \alpha \) is dominated by \( \beta \) only if it is dominated by every segment of \( \beta \).

(ii) \( \gamma \) is a blocking category (BC) for \( \beta \) iff \( \gamma \) is not L-marked and \( \gamma \) dominates \( \beta \).

(iii) \( \alpha \) L-marks \( \beta \) iff \( \alpha \) is a lexical category that \( \theta \)-governs \( \beta \).
bials thus can be summarized in the following diagram with INFL split into AGREEMENT (Agr) and TENSE (T) in the spirit of Pollock (1989):

(78)  
\[
\text{Agr}^\star \\
/ \text{Agr}^\circ \quad \text{TP} \\
/ \quad \text{TP} \\
/ \quad \text{Reason Adv} \\
/ \\
/ \text{T}^\prime \\
/ \quad \text{T}^\circ \\
/ \\
/ \text{VP} \\
/ \\
/ \text{Manner Adv} \\
/ \\
/ \text{V}^\prime \\
/ \\
/ \text{Adjunct AP}
\]

In view of the deviance of (74a–d) and (75a, b), the null hypothesis is that Chinese Wh-adjuncts, if lower than modals, occupy the XP₂ position in (76), where neither INFL nor V₀ serves as a head governor. This automatically applies to zai nali ‘at where’, purpose wei(-le)shenme, and instrumental zenmeyang, since they never appear before modals:

(79)a. *Akiu zai nai hui/yinggai gongzuo?
   Akiu at where will/should work
   Where will/should Akiu work?

b. *Zai nali Akiu hui/yinggai gongzuo?
   at where Akiu will/should work

c. Akiu hui/yinggai zai nali gongzuo?
   Akiu will/should at where work

(80)a. *Akiu wei(-le) shenme hui/yinggai li- jia- chu- zou?
   Akiu for what will/should leave home out go
   For what purpose will/should Akiu go away from home?
(80)b. *Wei(-le) shenme Akiu hui/yinggai li- jia- chu- zou?
for what Akiu will should leave home out go

c. Akiu hui/yinggai wei(-le) shenme li- jia- chu- zou?
Akiu will should for what leave home out go

(81)a. *Akiu zenmeyang hui/yinggai chuli zhe-jian shi?
Akiu how will should handle this CL matter
How will/should Akiu work?

b. *Zenmeyang Akiu hui/yinggai chuli zhe-jian shi?
how Akiu will should handle this CL matter

c. Akiu hui/yinggai zenmeyang chuli zhe-jian shi?
Akiu will should how handle this CL matter

Shenmeshihou ‘when’, on the other hand, may appear either higher or lower than modals:

(82)a. Akiu shenmeshihou hui/yinggai zou?
Akiu when will should leave
When will/should Akiu leave?

b. Shenmeshihou Akiu hui/yinggai zou?
when Akiu will should leave

c. Akiu hui/yinggai shenmeshihou zou?
Akiu will should when leave

This relatively free distribution is allowed only in presence of modals: if we instead substitute a sentential adverbial like pingchang ‘normally’, as in (83a–c), only the sentence corresponding to (82c) survives, where senmeshihou is lower than the adverbial

(83)a. *Akiu shenmeshihou pingchang zou?
Akiu when normally leave
When does Akiu normally leave?

b. *Shenmeshihou Akiu pingchang zou?
when Akiu normally leave
c. Akiu pingchang shenmeshihou zou?

Akiu normally when leave

Also, not every Wh-adjunct is eligible for licensing modals. As shown by the contrast between (84a–c) and (84d), only extraction of *shenmeshihou* is licensed by the presence of *hui* ‘will’ and *yinggai* ‘should’ (cf. also (75b));

(84)a. *Zai nali, ni kan [ta hui/yinggai ti gongzuo]?*

*Where do you think he will/should work?*

b. *Wei(-le)shenme, ni kan [Lisi hui/yinggai ti cizhi]?*

*For what do you think Lisi will/should resign?*

c. *Zenmeyangi, ni kan [Lisi hui/yinggai ti zhe-jian she]?*

*How do you think Lisi will/should handle this CL matter?*

d. *Shenmeshihou, ni kan [ta hui/yinggai ti qichuang]?*

*When do you think he will/should get up?*

The above observation thus indicates that Chinese modals are capable of head government, but tend to be selective, which in turn suggests that the location of *shenmeshihou* should differ from other Wh-adjuncts. A natural proposal in this context is that it occupies the XP₁ position in (76) and hence is capable of accessing head government from modals, as sketched below.¹⁷

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¹⁷ Here we adopt the internal subject hypothesis (cf. Kuroda, 1988), Koopman and Spor- tiche, 1989), among others), which adds further complications to the picture sketched in (76). Nonetheless, the relevant structural distinction is maintained in (85), and its theoretical implication is still the same. The crucial point is that *shenmeshihou* is a sister of VP, while the others are sisters of V'. For some significant consequences of this hypothesis in Chinese, see Aoun and Li (1989) and Huang (1990).
\textit{Shenmeshihou}, being located in an adjoined position, is always head-governed by a modal, if there is one. This move not only accounts for the well-formedness of (84d), but also correctly predicts the distribution of \textit{shenmeshihou} in (82a, b): since \textit{shenmeshihou} is head-governed, it is free to adjoin to ModP or IP. Our position receives further confirmation from the following data:

\begin{enumerate}
\item (86)a. Akiu qu xuexiao.  
\textit{Akiu go school}  
Akiu goes to school.
\item b. *[Qu xuexiao]_{i}, Akiu t_{i}.  
\textit{go school Akiu}
\end{enumerate}

\begin{enumerate}
\item (87)a. Akiu hui/yinggai qu xuexiao.  
\textit{Akiu will should go school}  
Akiu will/should go to school.
\item b. [Qu xuexiao]_{i}, Akiu hui/yinggai t_{i}.  
\textit{go school Akiu will should}
\end{enumerate}

As shown by the contrast between (86b) and (87b), the validity of VP-preposing hinges upon the presence of modals, which follows straightforwardly given our view that \textit{hui} and \textit{yinggai} serve as head governors. As a matter of fact, \textit{shenmeshihou}, if present, has to be preposed with the VP in question:
(88)a. *[Shenmeshihou qu xuexiao], Akiu hui/ yinggai ti?  
When go school Akiu will should  
When will/should Akiu go to school?

b. *[Qu xuexiao], Akiu hui/ yinggai shenmeshihou ti.
    go school Akiu will should when

Sentence (88a) is slightly awkward, but still a lot better than (88b). This is again expected, since only the topmost VP node in (85) is head-governed by modals.

The trickiest case involves the postverbal *zenmeyung, which is ambiguous between manner and result readings (cf. note 3). Take (74b) for example (repeated here as (89)). If we force the result reading, the outcome is barely acceptable.

(89) Zenmeyang~ ni kan [zhen-jian shi, Lisi chuli- de ti]?  
how you think this CL matter Lisi handle DE  
a. #In what manner do you think [Lisi handled this matter t]?  
b. ??Till what state do you think [Lisi handled this matter t]?

But if we substitute a generic noun for the topic, and restore it to the so-called CONTRASTIVE TOPIC position, as in (90), the grammaticality improves considerably, whether we associate *zenmeyung with the result reading or not.

(90) Zenmeyang, ni kan [Lisi ge chang-de ti]?  
how you think Lisi song sing DE  
a. ?In what manner do you think [Lisi handled this matter t]?  
b. ?Till what state do you think [Lisi handled this matter t]?

Even more interestingly, if we further switch the predicate to an intransitive verb like *pao 'run', no deviance is detected:

(91) Zenmeyang, ni kan [Lisi pao-de ti]?  
how you think Lisi run DE  
a. In what manner do you think [Lisi ran t]?  
b. Till what state do you think [Lisi ran t]?

What causes the degradation in (89) is not well understood; it is presumably due to some sort of specificity associated with topicalization (see also Section 4.5). The crucial point here is that postverbal *zenmeyang patterns
with *shenmeshihou* in being head-governed, which is obscured by irrelevant factors. But this conclusion is quite surprising if we follow Mei (1987) in treating resultative and descriptive (manner) complements as sisters of $V'$ rather than of $V^0$. The proposal is quite sensible in that manner and result *zenmeyang* are by no means selected by verbs, and accordingly should not appear in a $\theta$-marked position. On the other hand, it is still plausible to say that postverbal *zenmeyang* is head-governed by a $V^0$-de complex, in view of the fact that -de not only exclusively introduces resultative and descriptive complements, but is always adjacent to them.

To solve the above dilemma, we adopt Huang's (1989; forthcoming) position, where an illuminating picture of Chinese postverbal complementation has been sketched in the spirit of Larson (1988). In the relevant discussion, Huang adopts McConnell-Ginet's (1982) distinction between Ad-VP and Ad-Verb, and translates it into a VP-shell-style analysis. Essentially, there are two types of manner adverbs: the outer one is a modifier of VP, while the inner one is a stative predicate which may either predicate on some nominal, or form a complex predicate with $V^0$. The distinct behavior of preverbal and postverbal *zenmeyang* thus falls neatly under this outer/inner pattern, as illustrated below:

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(92) VP
   |  SUBJ V'
   |     zemneyang V'
   |       [v,e] VP
   |         OBJ V'
   |           V-de zemneyang
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Preverbal *zenmeyang* is outside of the head-government domain of $V^0$, which is defined in terms of sisterhood. It cannot access head-government from outside either, because it is not in a VP-adjoined position (see above). Consequently, there is no way preverbal *zenmeyang* can extract overtly. On the other hand, postverbal *zenmeyang* is always head-gov-
erned, and hence free to move. One complication is that when postverbal *zenmeyang* is associated with the result reading, it actually predicates on a subject *Pro*, forming a resultative clause in Huang's (1989) sense:

\[(93) \quad \text{VP} \]
\[\text{SUBJ} \quad \ldots \ldots \quad \text{V'} \]
\[\text{V-de} \quad \text{RC} \quad \text{Pro} \quad \text{zenmeyang} \]

Here we propose that what undergoes overt fronting is the whole resultative clause. Since the subject in question is always an empty pronominal according to Huang, we can never tell (91a) from (91b) simply by surface appearance.

As for reason *weishenme*, as Lin (1992) points out, it always stands higher than modals such as *hui* 'will' and *yinggai* 'should', as shown by the contrast between (94a, b) and (94c).

\[(94)a. \quad \text{Akiu weishenme hui/ yinggai li-jia-chu-zou?} \]
\[\text{Akiu why will/should leave home out go} \]
\[\text{Why will/should Akiu go away from home?} \]

\[b. \quad \text{Weishenme Akiu hui/ yinggai li-jia-chu-zou?} \]
\[\text{why Akiu will should leave home out go} \]
\n\[c. *\text{Akiu hui/ yinggai weishenme li-jia-chu-zou?} \]
\[\text{Akiu will should why leave home out go} \]

Consequently, reason *weishenme* is too high to be head-governed by \(V^0\), INFL, or modals. We may adopt Lasnik and Saito's (1984) view that it is adjoined to the S/IP node, in which case (94b) reflects the D-structure representation, and subsequent topicalization (IP-adjunction according to Lasnik and Saito (1989)) results in configuration (94a). 18 In the CP system,

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18 This proposal is incompatible with Lin's (1992) conclusion that reason *weishenme* is base-generated in CP Spec (i.e. Comp in the S' system). Under the conjunctive ECP approach, Lin argues that LF extraction of *weishenme* is blocked in nonbridge verb constructions due to the lack of head government; the same construal is ruled out in sentential subjects and Complex NPs, since the immediate dominating CP node is not L-marked and is hence a
(74d) is ruled out because \( C^0 \) is generally inert for government (cf. Rizzi, 1990). In the \( S' \) system, (74d) cannot be saved by government from a local co-indexed Comp, since Chinese Comp-indexing rule applies in LF. On the other hand, head government from the main verb \( kan \) 'think' only reaches the local Comp, but not the IP-adjointed position. As a result, neither alternative licenses overt extraction of reason \( weishenme \).

To sum up, in terms of the interaction between the \( R/R' \)-asymmetry and the nominal/nonnominal asymmetry, we captured half of Huang’s generalization, namely that \( where \) and \( when \) pattern with \( who \) and \( what \) in LF. In this section, by appealing to the PF requirement of head government, we assimilated the other; that is, \( where \) and \( when \) pattern with \( why \) and \( how \) in syntax.

6. Concluding Remarks

Departing from the \( zenmeyang/weishenme \) ‘how/why’ asymmetry in LF and the nominal/nonnominal asymmetry in overt syntax, this paper has shown that WAHL’s (1987) approach provides an elegant characterization of Chinese Wh-extraction. The asymmetry between English and Chinese bridge-verb constructions is also explained if we assume that different types of locality are involved in extraction in different components.

Based upon the nominal/nonnominal distinction among Wh-adjuncts, we have argued for a type of locality pertaining to nominal islands in LF. A Comp is reinterpreted as a checkpoint for nominality, where a passing Wh-element must show some sort of ‘passport’, i.e. its categorial feature, to get through. This conception of Comp-indexing is compatible with Chomsky’s (1992) proposal that Spec-head agreement should embody a checking mechanism.

Finally, we have provided a new approach to Huang’s (1982) generalization, and have increased its coverage by exploring the asymmetries among barrier to antecedent government. \( zenmeyang \), located in VP, is allowed to extract in LF, given the assumption that the intermediate trace in the local CP Spec is irrelevant to the ECP. For Lin, overt adjunct extraction is generally blocked on the assumption that an adjunct must keep adjacent to the head which licenses it (cf. Travis, 1988; Sportiche, 1988; Jane Tang, 1990). Since Lin does not take cases like (84d) and (91) into consideration, we may leave the issue open here for fairness of argument. Nevertheless, we should be careful about identifying Wh-adjuncts with their noninterrogative counterparts, because Wh-phrases possess scopal properties which dictate their syntactic behavior: namely, they must be related to Comp during the mapping from D-structure to LF. As a result, the constraint designed for noninterrogative adjuncts might be too strong for Wh-adjuncts. This conclusion is further borne out by the relatively free distribution of \( shenmeheshou \) ‘when’ and \( zenmeyang \) ‘how’ in the presence of suitable head governors.
Chinese Wh-adjuncts. Though our proposals are far from conclusive, we hope that they may serve as working hypotheses for further understanding of the correlates between locality principles and lexical properties of Wh-elements.

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