This paper develops Chomsky’s proposal that the theoretical status of D-structure should be nullified in favor of alternation between Merger and Chain Formation up to the point of SPELL-OUT. We argue that, under Economy considerations, Merger has priority over Chain Formation in building A’-dependencies. A cross-linguistic correlation between wh-questions and quantification is further established to show that operator-variable dependencies should be parametrized relative to operator height, namely, operators merging into CP/IP in Chinese, into PP/DP in Japanese, and into D0/N0 in English. It is further argued that only nouns may enter into unselective binding since they are the sole providers of non-pronominal variables. Adverbs, in contrast, are intrinsic operators and must move to create variables (i.e., traces left behind by movement). Together with the working hypothesis that operator features are not universally strong, the noun-adverb distinction provides a straightforward account of LF argument-adjunct asymmetries, reinventing the insights of Huang (1982) and Lasnik and Saito (1984, 1992) in a minimalist fashion.

1. TO MOVE OR NOT TO MOVE – THAT IS THE QUESTION

Locality effects, being an indication of movement, have undergone vigorous investigation since Ross’s (1967) work on syntactic islands. Principles built upon locality effects are received with equal enthusiasm, often taken to represent the general properties of Universal Grammar (UG). The absence of locality effects, on the other hand, presents challenges to the above endeavor, often taken to be a matter of syntactic idiosyncrasies (e.g., base-generation of an operator in a scope position) or lexical idiosyncrasies (e.g., the availability of resumptive pro in a particular language). In some cases, relevant principles are localized to accommodate ill-behaved long-distance construals, as is the case with Subjacency (Huang (1982)). As originally conceived in the so called T-model (Chomsky and Lasnik (1977)), movement is virtually cost-free, as the term “Move a” implies.

Nevertheless, it is not entirely clear that language works in favor of movement. In many cases, a non-movement strategy seems to fare a lot better than its movement counterpart and typically ignores syntactic islands. This certainly gives an edge to Chomsky’s (1991, 1993) proposal that movement is employed only as a last resort. Under the minimalist approach, the only levels needed in grammar are PF and LF, and accordingly the theoretical status of D-structure and Projection Principle are nullified. As a result, lexical insertion need not be done all at once at a level between
the lexicon and S-structure, and nothing prevents Merger from blocking Chain formation along the “least effort” guideline: First consider a formal object which is by definition a pair, as is the case of operator-variable constructions. There are essentially two ways to construct an operator-variable pair under the minimalist approach. Take wh-questions for example. The first one involves Merger (also known as binary substitution), which targets $X'$ and substitutes a Q(uestion)-operator for an empty position $\Delta$ external to $X'$. The operator in turn unselectively binds a wh-in-situ without resorting to Chain formation, as illustrated in (1a):

$$\text{(1) a. } [x' \Delta [x' \ldots \text{wh} \ldots]] \rightarrow [x' \text{Op}_{q[i]} [x' \ldots \text{wh} \ldots]]$$
$$\rightarrow [x' \text{Op}_{q[i]} [x' \ldots \text{wh}(i) \ldots]]$$

$$\text{b. } [x' \Delta [x' \ldots \text{wh} \ldots]] \rightarrow [x' \text{wh}, [x' \ldots _t \ldots]]$$

The second strategy employs Chain formation (also called singulary substitution). As illustrated in (1b), the would-be wh-in-situ moves instead into $\Delta$, creating an operator-variable pair by itself. A distinction thus can be made with regard to Economy considerations: while Chain formation increases the “length” of the wh, such a notion is irrelevant for Merger and unselective binding. Economy thus picks (1a) over (1b) as the optimal design for wh-dependencies. Other things being equal, a recast base-generation account should be preferable to a movement one in deriving certain syntaco-semantic dependencies. We may formulate the intuitive idea in the following terms.¹

$$\text{(2) Lexical Courtesy Hypothesis (LCH):}$$

If a language may introduce an operator by Merger, it will not resort to Chain formation.

Besides, Merger is the only way to weave phrase markers into one single piece, satisfying the minimal requirement for a legitimate PF representation. Therefore, the “courtesy” in considering Merger costless is really a built-in part of Economy: We may not minimize the linguistic design into “saying nothing” for the sake of communication, but “moving nothing” is certainly a minimalist goal to achieve.

This paper is devoted to showing that, despite its unlikelihood at first glance, the LCH plays an important role in shaping A’-dependencies cross-linguistically. With the help of a lexical parameter differentiating the structural height of operators, it correctly predicts a typology of unselective binding construals (also cf. Aoun and Li (1993b)), as illustrated in the following diagram (word orders irrelevant):
Our argumentation is organized as follows: Section 2 raises a conceptual problem facing the LCH: Does unselective binding play a role at all with regard to Economy considerations? We relate the issue to a controversy surrounding LF subjacency and point out that the answer may lie in a general characterization of $A'$-dependencies across languages. Section 3 proceeds to plot a way out through the joint force of the “Shortest Movement” Condition and the following parameter-settings:

\[
\text{(4) Lexical Merger Parameter:} \]
\begin{itemize}
  \item a. Chinese-type: Merging an operator into CP or IP
  \item b. Japanese-type: Merging an operator into PP or DP
  \item c. English-type: Merging an operator into $D^0$
\end{itemize}

Based upon a cross-linguistic parallel between quantification and $wh$-question formation, we show that the settings (4a–c) receive substantial support from the distribution of indefinite $wh$ and island effects. Section 4 and 5 wrap up our analyses by substantiating two basic claims about $wh$-dependencies: First, only nominals are subject to unselective binding. Second, operator features are not universally strong. In section 6, we conclude this paper by providing an overview on the typology of $wh$-dependencies.

2. A Conceptual Problem and an Empirical Solution

A conceptual problem with the LCH, as raised by Noam Chomsky (p.c.), is that, although Merger is preferable to Chain formation in not increasing the length of a formal object, the LCH does need some “add-on” linking mechanism to make unselective binding work. The analysis represented by (1b) thus appears to follow from a richer theory which requires unselective binding in addition to LF $wh$-movement. Consequently, (1a,b) may not be subject to comparison on grounds of Economy.
In the following discussion, we propose to tackle this problem from an empirical point of view and present two arguments for incorporating the notion of unselective binding into the Minimalist framework. First, we point out that a cross-linguistic generalization will be lost if we alienate unselective binding from the inner working of grammar. It is claimed that indefinite *wh*-construals are subject to the same parameter-setting as (4) and have approximately the same distribution as their interrogative counterparts, as illustrated in (3) (word orders irrelevant):

\[
(5)
\]

Second, we address the lingering controversy surrounding LF subjacency and show that unselective binding plays a central part in accommodating argument-adjunct asymmetries under the Minimalist approach, which in turn lends support to Chomsky’s (1995) effort to eliminate category movement in favor of feature movement in LF. Let’s elaborate on this point a bit further. Within the Minimalist framework, the level of S-Structure, a derivative concept in essence, is understood as a SPELL-OUT point of a particular derivation to PF. Consequently, nothing should hinge upon the notion of S-Structure. Nor, it seems, can we take locality conditions such as Subjacency to be a matter of overt Syntax, as originally suggested by Huang (1982). The empirical motivation for Huang’s proposal is well known, as evidenced by the following argument-adjunct asymmetry of Chinese *wh*-in-*situ*:

\[
(6)\ n. \text{Akiu } \text{kan-bu-qi } [\text{DP } [\text{CP Op, e, zuo shenme}]] \text{ de}
\text{Akiu look-not up do what PNM}
\text{ren,]?}
\text{person}
\]

‘What is the thing/job x such that Akiu despises [people [who do x]]?’
Both (6a) and (6b) involve wh-in-situ embedded in complex-NP islands. The differences are that (6a) contains a wh-argument, i.e., shenme ‘what’, whereas a wh-adjunct weishenme ‘why’ is embedded in (6b). More importantly, question formation is blocked in (6b) but not in (6a). As Huang points out, (6b) can be ruled out along with its English counterpart (7a), given that weishenme undergoes LF movement to the matrix Comp, creating the illegitimate LF representation (7b):

(7) a.* Why does John like [DP books [CP which [IP Bill wrote t]]]?

b.* weishenme j Akiu xihuan [DP [CP Op, [IP Luxun t xie e]i]]

‘What is the reason x such that Akiu likes [books that Luxun wrote for x]’?

The deviance of (5), therefore, is identified with the kind of locality effects typically associated with the ECP and Subjacency. The beauty of this analysis lies in the parallelism that it envisions among languages: Sooner or later, a wh-phrase must be related to a [Q] Comp by movement. Consequently, Chinese and English wh-questions look exactly alike at LF.

Nevertheless, there remains a non-trivial problem to tackle. Let’s consider the following LF representation of (6a) given the LF wh-movement hypothesis:

(8) Shenme j Akiu kan-bu-qi [DP [CP Op, [IP e zuo t]]] de

‘What Akiu look-not-up do PNM person’

The object trace of shenme ‘what’ is lexically governed by the embedded verb zuo ‘do’, thus satisfying the disjunctive version of the ECP (Chomsky (1981), Huang (1982), Lasnik and Saito (1984, 1992)). On the other hand, both DP and CP count as barriers in Chomsky’s (1986b) sense since the relative clause (i.e., the CP node) is not L-marked, and the DP node in turn inherits barrierhood from the CP node. Although the Chain (shenme, t) does not violate the ECP in its disjunctive formulation, it
undoubtedly violates Subjacency, with both DP and CP crossed in one link. However, no deviance is detected in (6a). For this very reason, Huang concludes that Subjacency holds in overt syntax but not in LF.

Under the LCH, we essentially turn the table around, sketching a mirror image of Huang’s generalization: Languages share the optimal strategy of unselective binding but differ in their ability to “disemploy” wh-movement, as dictated by their morphological makeups. In light of this observation, we would like to offer an alternative to accommodate the asymmetry between (6a) and (6b) without compromising the global status of Subjacency: 3On the one hand, we will characterize the long-distance construal in (6a) as an instance of unselective binding (cf. Heim (1982), Pesetsky (1987), Nishigauchi (1986, 1990)). 4On the other hand, we would also like to maintain the insight behind Huang’s treatment of (6b). Namely, (6b) is ruled out in violation of the “Shortest Movement” Condition, in that weishenme ‘why’ of (7b) skips over an A’-specifier (i.e., the local [Spec, CP] occupied by the relative operator) without being able to take the shortest route. A typical relativized minimality violation is therefore inevitable.

3. MERGER VS. CHAIN FORMATION

3.1. Disintegrate Lexical Integrity

Since the argument we have advanced so far is a conceptual and hence universal one, it implies that, even in a wh-movement language like English, the LCH is strictly observed: Somehow an operator-variable pair has to be formed prior to wh-movement. If this reasoning proves to be sound, then the key question to ask is probably not why the Chinese sentence (6a) does not display Subjacency effects but why its English counterpart (9) is never allowed:

(9) *Akiu despises people who do what?

In the face of the LCH, we may rephrase the question in a more interesting way: Why does English never take advantage of the optimal design (1a)? Our answer is that English does implement the design but in a miniature scale. To see this, consider the following paradigms:

(10) a. wh-words
    wh-o wh-en
    wh-om wh-ere
    wh-at

b. pronominals
    th-ey th-en
    th-em th-ere
    th-at
By comparing (10a) with (10b), it is not difficult to see that English wh-words and pronominals are more or less built on the same materials except that the prefix for pronominals is *th- instead of wh-.

Nevertheless, there is a crucial distinction between these two morphemes: Th- should be regarded as a reduced form of English definite article the, capable of licensing the indefinite morphemes it attaches to (i.e., ey, en, em, ere, and at). Wh-, on the other hand, does not seem to possess quantificational force, as evidenced by free relative wh-construals:

(11a) shows that wh- does not block unselective binding from -ever, which licenses the polarity readings of the wh-indefinites, as illustrated by (12a):

(12) a.

As a result, whoever can be paraphrased as ‘anyone’, whatever as ‘anything’, whenever as ‘anytime’, and so forth. In contrast, pronominals cannot be suffixed by -ever, as shown by (11b). This indicates that th- blocks the binding construal between -ever and the indefinite in (12b), just as its determiner counterpart would do in a full DP.

A similar pattern is also found in a class of adverbials built on wh-words:

Here the binding relation holds between the existential operator some and the indefinite morphemes (i.e., at and ere), as shown by (13a). As it turns out, somewhere means ‘in some place’, while somewhat can be read either as ‘to some extent’ or as ‘something’ (cf. He is somewhat of an artist). The same construal is unavailable to the corresponding pronominals in (13b). The cause again seems to lie in the (strong) quantifier status of th-, which blocks unselective binding from some-, as illustrated by (14b):
The contrast between (12a,b), as well as that between (14a,b), is therefore reminiscent of Reinhart’s (1993) observation that DPs headed by which may be treated as a function variable, subject to unselective binding, which option is never available for definite DPs. We will elaborate on this point in section 3.

Keeping the prospect in mind, we may put the design (1a) to work. A natural suggestion here is that interrogative wh has a Q(uestion)-operator instead of -ever as the relevant binder, as shown below:

This move can be achieved by employing Merger, which targets the lower D$^0$ and extends the target by inserting a Q-operator as its specifier. We then have a ready answer for why (9) is not a possible English sentence. Since what is itself an operator-variable pair, Merger is uncalled for. If the Merger operation does apply, as it is cost-free, the Q-operator dangling alone in [Spec, CP] results in vacuous quantification, and the derivation crashes, as illustrated by (16a):

The rest of the story is essentially the same: Since the [wh] feature is strong in English, wh-movement must apply before SPELL-OUT to make sure that what undergoes feature checking o matrix [Spec, CP], as illustrated by (16b). (9) is thus ruled out in failing to check the strong feature of what in overt syntax.

As for relative wh, we may either leave the structure as it is, in which case relative wh is essentially a null operator plus a set of $\phi$-features, or insert a null operator in the specifier position, serving as a medium for identification (cf. Chomsky (1986a)):
Either way, we make the right prediction that relative *wh* is not a quantifier. Rather, it takes scope positions for defining the domain of (syntactic) predicates. It is in this respect that “free relative” is an ironic term for *wh*-words like *whoever*, as they are really “bound” relatives, as much as ordinary relative *wh* is free.

In light of the above analysis, it seems quite safe to say that English implements the design (1a) at a word level. Accordingly, the feature [wh] should be conceived as a morphological device which triggers overt *wh*-movement and, by doing so, creates configurations for both predication and *wh*-question formation.

### 3.2. Interrogative Construals in Chinese Bare Conditionals

If our position proves to be defensible, Chinese *wh*-questions may well embody the design (1a) in its grandest scale. That is, (6a) has (18) instead of (8) as its LF:

\[
(18) \quad \text{[CP Op}_x\text{[IP Akiu kan-bu-qi [DP [CP Op}_x\text{[IP e, zuo Akiu look-not-up do shenme(x)]] de ren,]?]
\]

What is the thing/job x such that Akiu despises [people [who do x]]?

Since the operator-variable pair (Op\text{[Q]}, *shenme*) is built by Merger and unselective binding and since movement is not involved, naturally we do not expect any island effect. It follows that nothing hinges upon the notion of S-structure in this solution.

Probably the most solid showing of this magnitude of binding comes from Chinese bare conditionals. As pointed out by Cheng and Huang (1996), a pair of *wh-in-situ* in separate clauses triggers a conditional construal in Chinese, without the help of any lexical complementizer like *rugeo* ‘if’ or *yaoshi* ‘in case that’.
(19) a. shei lai, shei chi.
    who come who eat
    ‘If x comes, x eats (it).’

    b. shei xian lai, shei (jiu) xian chi.
    who first come who then first eat
    ‘If x comes first, x eats first.’

Since this type of conditional can be so “bare” as (19a,b), it is not difficult to see that there must be an implicit (necessity) operator which takes the widest scope in licensing the conditional readings. The resulting logical representations thus have a classic “donkey” look (cf. Heim (1982)):

(20) a. $\forall x (x \text{ comes } \rightarrow x \text{ eats it})$
    b. $\forall x (x \text{ comes first } \rightarrow x \text{ eats first})$

They observe that the second wh-in-situ in the consequent clause cannot be treated as an E-type pronoun in Evans’ (1980) sense since it is in complementary distribution with typical pronominals and demonstratives, as evidenced by the contrast between the bare conditional (21a) and the ruguo-conditional (21b):

(21) a. shei chi-dao, shei/*na-ge-ren/*ta/*pro jiu dei
    Who late-come who/that-CL-preson/(s)he then must
    qingke.
    treat
    ‘If x comes late, then x must treat (anyone else).’

    b. ruguo shei chi-dao, na-ge-ren/ta/pro/*shei jiu dei
    if who late-come that-CL-person/(s)he/who then must
    qingke.
    treat

As a result, (19a,b) are most likely to be instances of unselective binding, just as Heim (1982) originally proposes for “donkey” sentences.

Here we would like to point out that their position is further supported by the fact that the pairing construal not only can be multiple but also can be interchangeable, as long as the wh-in-situ involved are identical on the surface:
(22) shei qin-le shei, shei jiu dei qu
who kiss-Prf who who then must marry (male to female)
shei.
who
a. ‘If x has kissed y, then x (male) must marry y (female).’
b. ‘If x has kissed y, then y (male) must marry x (female).’

This is fully expected since the binders in question are claimed to be
unselective. We may thus assign the following two logical representations
to (22a,b) respectively:^{10}

(23) a. $\forall x \forall y (x \text{ has kissed } y \rightarrow x \text{ must marry } y)$
b. $\forall x \forall y (x \text{ has kissed } y \rightarrow y \text{ must marry } x)$

For the purpose of this paper, let’s twist the bare conditionals a little
bit, i.e., making the numbers of wh-in-situ uneven in the antecedent and
consequent clauses. The result is most intriguing. Sentences such as (24)
and (25) are not ruled out with the “stranded” wh-in-situ construed as
interrogative:

(24) shei ying-le shei, shei jiu dei qingke (ne)?
who defeat-Inc who who then must treat $Q_{wh}$
a. ‘Who is the person x such that if x defeats y, then y must
   treat?’ (the first wh stranded)
b. ‘Who is the person y such that if x defeats y, then x must
   treat?’ (the second wh stranded)

(25) shei ying-le, shei jiu dei qing shei (ne)?
who win-Inc who who then must treat who $Q_{wh}$
a. ‘Who is the person x such that if y wins, then x must
   treat y?’ (the second wh stranded)
b. ‘Who is the person y such that if x wins, then x must
   treat y?’ (the third wh stranded)

In (24), we have two wh-in-situ in the antecedent clause but only one in
the consequent clause. Either the first wh or the second wh may induce a
matrix question, with the other paired with the third wh in the consequent
clause, forming a bare conditional, as illustrated by (24a,b) respectively.
The situation with (25) is the other way around. There is only one wh-in-
situ in the antecedent clause but two in the consequent clause: Either the
second wh or the third wh may induce a matrix question, with the other
paired with the first wh in the antecedent clause, as illustrated by (25a,b)
respectively.
In light of our view presented in (18), this phenomenon is hardly surprising since there is no Chain formation involved. On the other hand, the situation becomes less clear when we reconsider sentences like (19a,b) in the new light. When a touch of “privilege” is added to the predicate xian chi ‘eat first’, the interrogative reading becomes salient while the conditional construal remains intact, as shown by (26a):

(26) a. shei xian lai, shei jiu keyi xian chi ne?
who first come who then can first eat Q
‘Who is the person x such that if x comes first, then x is allowed to eat first?’

b. Akiu xiang-zhidao [shei xianlai, shei jiu keyi
Akiu want-know who first come who then can
xianchi].
first eat
‘Akiu wonders [who is the person x such that if x comes first, x is allowed to eat first].’

This reading is most salient when the bare conditional is embedded as an indirect question, as shown by (26b).

The solution, in our opinion, lies in a more articulated logical representation of (19b), offered by Cheng and Huang (1996):

(27) For all (x, s(situation)) (if x comes first in s, (x eats first in s)

Here the situation or spatio-temporal variable is spelled out, and the semantics shared by bare conditionals and ruguo-conditionals is also captured. More importantly, this analysis allows us to solve the puzzle straightforwardly. That is, by delegating the conditional construal to the pair of situation variables, there is plenty of room left for the interrogative construal on the part of wh-in-situ. As a result, the proposed Q-operator is able to “cut in” and license the question readings of (26a,b) in the following manner:

(28) Q, [x a person] \forall, [s a situation] if x comes first in s, x is allowed to eat first in s

At this stage, it is tempting to suggest that maybe the conditional construal has nothing to do with the wh-in-situ since they appear to have their own life. In fact, this position is not totally hopeless at first glance:
(29) a. laoshi shang-ke renzhen, xuesheng *(jiu) hui
teacher give-lecture attentively student then will
yong-gong.
exert-effort
‘If teachers teach attentively, then students will study hard.’

b. Akiu yong-gong, ta/pro *(jiu) shang-de-kiao daxue.
Akiu exert-effort he then go-can-finish college
‘If Akiu studies hard, then he can get into college.’

(29a,b) show that without any conditional marker or *wh-in-situ*, conditional construals are still possible. However, the presence of *jiu ‘then’* becomes obligatory, which seems to be a physical reminder of the missing conditional marker. Similar situations also obtain in some apparent violation of the pairing requirement:

(30) shei yong-gong, na-ge-ren/ta/pro *(jiu) shang-de-liao
who exert-effort that-CL-person/s/he then go-can-finish college
‘If anyone/someone studies hard, then s/he can get into college.’

The fact that (29a,b) are well-formed therefore does not indicate that universal quantification over situations alone can license the conditional construal in question. Rather, it confirms Cheng and Huang’s conjecture that Chinese allows an abstract conditional operator. Consequently, (29a,b), as well as (30), should be interpreted as if there is a conditional marker *ruguo ‘if’* in sentence-initial position. Furthermore, while an indefinite *wh-in-situ* may occur unpaired in an antecedent clause, as in (30), presumably licensed by the unseen *ruguo*, consequent clauses block the same construal, as evidence by (31):

(31) Akiu yong-gong, shei jiu shang-de-liao daxue?
Akiu exert-effort who then go-can-finish college
a.# ‘If Akiu studies hard, then anyone/someone can get into college.’
b. ‘Who can get into college if Akiu studies hard?’

As a result, (31) can only be construed as interrogative. It is therefore not surprising to see that the interrogative construal in (28) disallows a “paired” reading (i.e., with the pair of variables referring to distinct persons). In other words, representations like (32) are never possible for (26a,b):
This suggests that even though the *wh*-in-*situ* in question are subject to independent construals, their licenser (i.e., the Q-operator) still observes the same principle as the necessity operator does.

To get the whole picture, we need to consider constructions such as (33), where paired interrogative readings are actually possible. For ease of exposition, we will omit situation variables and reserve the formulae “Qₘₙ” and “Qₙₘ” exclusively for paired construals of distinct *wh’s* from different clauses. In addition to the expected double conditional readings (cf. (23)), (33) has the following interrogative readings:

(33) *(cai-cai-kan)* shei ying-le shei, shei jiu dei qing
    try-to-guess who defeat-Inc who who then must treat
    shei (ne)?
    who Qₜₜ

a.  ∀ₘ Qₙ (if x defeats y, then x must treat y)
b.  Qₘ ∀ₙ (if x defeats y, then x must treat y)
c.  ∀ₘ Qₙ (if x defeats y, then y must treat x)
d.  Qₘ ∀ₙ (if x defeats y, then y must treat x)
e.  ∀ₘ Qₙ (if x defeats y, then x must treat z)
f.  Qₘ Qₙ (if x defeats y, then z must treat y)
g.  ∀ₘ Qₙ (if x defeats y, then z must treat x)
h.  Qₘ Qₙ (if x defeats y, then y must treat z)
i.  Qₘ Qₙ (if x defeats y, then x must treat y)
j.  Qₘ Qₙ (if x defeats y, then y must treat x)
k.  Qₘ Qₙ (if x defeats y, then x must treat z)
l.  Qₘ Qₙ (if x defeats y, then z must treat y)
m.  Qₘ Qₙ (if x defeats y, then z must treat x)
n.  Qₘ Qₙ (if x defeats y, then y must treat z)

As one might expect, it is not easy to get all of the readings of (33e–h) and (33k–n), due to ensured computational complexity. Nevertheless, it is quite possible to pin down each reading with carefully constructed scenarios. For instance, the answers to (33g) and (33m) could be (34a) and (34b) respectively, where Wangyun and Lübu are conspirators against Dongzhuo:
(34) a. shei ying-le Dongzhuo, Wangyun jiu dei qing who defeat-Inc Dongzhuo Wangyun then must treat shei.
who
‘If x defeats Dongzhuo, then Wangyun must treat x.’

b. Lübu ying-le Dongzhuo, Wangyun jiu dei qing Lübu defeat-Inc Dongzhuo Wangyun then must treat Lübu.
Lübu.
‘If Lübu defeats Dongzhuo, then Wangyun must treat Lübu.’

All in all, we have demonstrated that paired question construals (i.e., construals involving distinct \(wh\)-variables) are allowed only if at least one pair of identical \(wh\)-variables is licensed, either by a necessity operator or by a Q-operator. Namely, implicit situation variables do not have independent status in licensing bare conditionals, and the following logical representations are blocked along with (32):

(35) a. \(Q_{x, z} Q_{y, k}\) (if \(x\) defeats \(y\), then \(k\) must treat \(z\))
b. \(Q_{x, z} Q_{y, k}\) (if \(x\) defeats \(y\), then \(z\) must treat \(k\))
c. \(Q_{x, z} Q_{y, k}\) (if \(y\) defeats \(x\), then \(k\) must treat \(z\))
d. \(Q_{x, z} Q_{y, k}\) (if \(y\) defeats \(x\), then \(z\) must treat \(k\))

The implication is far-reaching. As we have seen in (34) and (35), the question construal does not observe the identical pairing requirement when the conditional construal is not at stake.\(^{11}\) The same observation applies to (26a,b) and (33). This indicates that there is no “archetype” behavior for unselective binding: Everything is conditioned by logical necessity imposed by principles in UG, which happens to apply on the sentence level due to the morpho-syntactic makeup of Chinese. In other words, unselective binding is just binding, definable in terms of the notion of c-command. By reflecting upon the specificity effects manifested by lexical binding in English (cf. the contrasts between (11a,b)), we find similar traits. That is, lexical binding is just binding, subject to general principles such as the specificity condition (Fiengo and Higginbotham 1981) and definable in an optimal and minimal way. We will allude to this point later when we look at an even bigger picture.
3.3. Japanese Mo-quantification and Chinese Dou-quantification

Under the LCH, we may expect to find a type of language in between English and Chinese, where a Q-operator is located in the vicinity of ordinary determiners, say, the Spec of DP. The possibility has been entertained by Watanabe (1992a, 1992b), based on a variety of indefinite contruals of Japanese *wh*-in-situ, as shown in the following paradigms:

(36) a. interrogative construals       b. universal construals
    dare  ‘who’                     dare-mo  ‘everyone’
    nani  ‘what’                    ? nani-mo  ‘everything’
    doko  ‘where’                   doko-mo  ‘everywhere’
    itsu  ‘when’                    itsu-mo  ‘whenever’
    naze  ‘why’

c. polarity construals           d. existential construals
    dare-mo  ‘anyone’               dare-ka  ‘someone’
    nani-mo  ‘anything’             nani-ka  ‘something’
    doko-mo  ‘anywhere’             doko-ka  ‘somewhere’
    ——                               itsu-ka  ‘sometime’
    ——                               naze-ka  ‘for some reason’

Built upon Kuroda’s (1965) observation that Japanese *wh*-words (indeterminate pronominals in his terms) behave rather like unbound variables, Nishigauchi (1986, 1990) makes the proposal that morphemes such as *-mo* and *-ka* should be analyzed as unselective binders in the sense of Lewis (1975) and Heim (1982). He further demonstrates that these morphemes behave more like prepositions or determiners than part of a word. For instance, *ka* may switch its word order with prepositions like *kara* ‘from’, inducing subtle semantic distinction:

(37) a. dare-ka-kara henna tegami-ga todoi-ta.
    who-some-from strange letter-Nom arrived
    ‘A strange letter came from somebody.’

    b. dare-kara-ka henna tegami-ga todoi-ta.
    who-from-some strange letter-Nom arrived
    ‘A strange letter came from god knows who.’

On the other hand, *-mo* can be attached to adjunct clauses or complex NPs:
(38) a. [dare-ga ki-te]-mo, boku-wa aw-a-nai.
   who-Nom come all I-Top meet-not
   ‘For all x, if x comes, I will not meet (x).’

b. [[dare-ga kai-ta] tegami]-ni-mo onazi kota-ga
   who-Nom wrote letter-in-all same thing-Nom
   kai-te-at-ta
   written-was
   ‘For all x, y, x a person, y a letter x wrote, the same thing was
written in y.’

The conditional construals of (38a,b) are reminiscent of a variety of bare
conditionals in Chinese, which patterns with ruguo-conditionals in dis-
allowing a wh-in-situ in the consequent clause (cf. section 2.2):

(39) shei xianlai, na-ge-ren/ta/pro/*shei dou dei
   Who first come that-CL-preson/(s)he/who all must
   qing-ke.
   invite-guest
   ‘If x comes first, x must play the host.’

As shown above, the difference between the dou-conditional (39) and a
genuine bare conditional is that the optional connective jiu ‘then’ is replaced
by dou ‘all’. Their semantics nonetheless differ drastically: Only demon-
stratives and E-type pronouns, but not wh-in-situ, are allowed in the
consequent clause of (39). Similarly, mo-conditionals do not license an extra
wh-in-situ in the consequent clause, as in (40), either:

(40) * [dare-ga ki-te]-mo, boku-wa dare,-ni aw-a-nai.
   who-Nom come all I-Top who-Dat meet-not
   ‘For all x, if x comes, I will not meet x.’

In sum, Japanese mo and Chinese dou pattern together at least in two
respects: First, they may license a wh-in-situ from a detached position.
Second, they take scope only over the antecedent clause of a conditional
construction. In other words, they never license a wh-in-situ in a consequent
clause. This point can be illustrated further by comparing the following
two constructions:12
First we leave out null subjects since there is no way to tell their positions relative to the focused constituent in question. As shown by (41a), definite subjects such as na-ge ren ‘that person’ and ta ‘(s)he’ cannot be co-referential with the wh-in-situ in the adjunct (antecedent) clause, presumably due to Principle C violations. In contrast, when the antecedent clause is preposed to sentence-initial position, as in (41b), referential construals become available. Unselective binding construals, in contrast, are blocked in both cases. This indicates that dou never widens its scope by undergoing LF QR to license a genuine bare conditional. In other words, (41a,b) can never have the following donkey-type representation:

(42) dou x (x comes → x will flush)

It is also instructive to note that this “scope rigidity” follows straightforwardly from the Syntax-LF isomorphism in Huang’s (1982) sense.

Nevertheless, there is still a crucial difference between Japanese mo and Chinese dou. Mo behaves like determiners or prepositions (cf. Nishigauchi (1986, 1990)): As evidenced by the contrast between (43b,c), it cannot be stranded by scrambling dare ‘who’ out:

(43) a. Dare-ka-ga dare-mo-o aisi-te-iru.
   someone-Nom everyone-Acc love-be
   ‘Someone loves everyone.’

b. [Dare-mo-o], dare-ka-ga t, aisi-te-iru.
   everyone-Acc someone-Nom love-be

c.* Dare, dare-ka-ga t, mo-o aisi-te-iru.
   who someone-Nom every-Acc love-be
The same observation applies to *ka*, as shown by the contrast between (44b,c):

(44) a. Dare-mo-ga nani-ka-o tabe-te-iru.
    everyone-Nom something-Acc eating-be
    ‘Everyone is eating something.’

b. [Nani-ka-o], dare-mo-ga ti tabe-te-iru.
    something-Acc everyone-Nom eating-be

c.* Nani, dare-mo-ga t,-ka-o tabe-te-iru.
    what everyone-Nom some-Acc eating-be

In comparison, *dou* can be and in fact must be stranded in the presence of focus movement. As shown by (45a) and (46a), *dou* usually takes scope over a constituent immediately to its left. When the constituent undergoes focus fronting, *dou* has to stay in-situ, as evidenced by the contrast between (45b,c), as well as that between (46b,c):

(45) a. Akiu shei dou xiangxin.
    Akiu who all trust
    ‘Akiu trusts everyone.’

b. shei, Akiu ti dou xiangxin.
    who Akiu all trust

c.* [shei dou], Akiu ti xiangxin.
    who all Akiu trust

    Akiu who come all will face-red
    ‘Whoever comes to visit, Akiu will flush.’

b. [CP shei lai], Akiu ti dou hui lian-hong.
    who come Akiu all will face-red

c.*[[CP shei lai] dou], Akiu ti hui lian-hong.
    who come all Akiu will face-red

In short, *dou* may behave like a clitic, but it is not a morphological suffix or a determiner.

The conclusion therefore appears to be that, while Japanese *mo*-quantification patterns with Chinese *dou*-quantification in terms of semantics, they differ in morpho-syntactic terms: *Mo* behaves like a quantificational suffix, and *dou* a sentential adverbial. The asymmetry is further illustrated
by the fact that bare conditionals are nowhere to be found in Japanese, as evidenced by (47):

(47) * dare\textsubscript{e}-ga ki-te, boku-wa dare\textsubscript{e}-ni aw-a-nai.
     who-Nom come I-Top who-Dat meet-not

‘For all x, if x comes, I will not meet x.’

This suggests that Japanese does not allow an abstract necessity operator on the sentence level, which in turn substantiates our conjecture that Japanese stands in between Chinese and English in terms of the maneuverability of unselective binding. Given that the degree of binding maneuverability reflects the height of operators, we may well hypothesize that Japanese Q-operators are located in the Spec of PP or DP, in the vein of Watanabe (1992a, 1992b), Tsai (1992), and Aoun and Li (1993b) (cf. (3)).

3.4. Toward a Minimalist Design of Wh-Dependencies

The above observations, though by no means infallible, points to an interesting conclusion: Unselective binding is an augmentation of lexical binding. The relation between shei ‘who’ and dou ‘all’ in Chinese, as well as that between dare ‘who’ and -mo ‘all’ in Japanese, is not different from the relation between who and -ever in English. Under this view, the distinction between external and internal binding in Nishigauchi’s (1990) sense is only an illusion, created by morphological makeups of individual languages and imposed by principles associated with particular configurations (e.g., the identical pairing requirement in Chinese bare conditionals).

We thus expect that interrogative construals also display the same trait across languages. First let’s consider Japanese wh-questions. Although it is still under debate whether Japanese displays genuine wh-island effects (cf. Lasnik and Saito (1984, 1992) vs. Nishigauchi (1986, 1990), Pesetsky (1987), and Watanabe (1992a, 1992b), it is generally agreed that Japanese lacks Complex NP (i.e., strong island) effects. Let’s assume that there does exist such an asymmetry between Complex NPs and wh-islands in Japanese and see what our theory may say about it. The solution turns out to be quite straightforward, as illustrated below (data from Watanabe (1992a), categorial labels attached to the right in Japanese for ease of exposition):
Following Watanabe, we may assume that a Q-operator originates from the Spec of DP in Japanese, as in (48a). Consequently, itpatterns with English wh (i.e., full wh-phrases containing a Q-operator, cf. section 2.1) in displaying wh-island effects, as in (48b). On the other hand, since the Q-operator is already in the Spec of DP, any wh-in-situ within its c-command domain (and hence within a Complex NP) can be licensed by unselective binding, as illustrated below:

(48) a. ?? [[John-wa [[Mary-ga [[nani_{NP} ty_{DP}]-o katta_{CP}]
  John-Top Mary-Nom what -Acc bought
  ka-dooka_{CP} Tom-ni tazuneta_{IP} no_{C} OP_{[O]_{CP}}?
  whether Tom-Dat asked Q
  ‘What is the thing x such that John asked Tom whether Mary bought x?’

b. ??_{CP} What_{C} did_{IP} John ask Tom_{CP} whether_{IP} Mary bought_{IP} t_{],]}?]

This is exactly what we would expect in view of the absence of locality effects in mo-quantification of (50) ((38b) repeated here):

(50) [[[dare(x)-ga ty_{DP} kai-ta_{CP} OP_{[O]_{CP}}
  who-Nom wrote letter -in-all
  onazi kota-ga kai-te-at-ta.
  same thing-Nom written-was
  ‘For all x, y, x a person, y a letter x wrote, the same thing was written in y.’

Our analysis Japanese carries over to Chinese straightforwardly, except that the position of Chinese binders is probably much higher than PPs or DPs, as mentioned above. As evidenced by the parallel between the long-distance interrogative construal in (71) and dou-quantification in (72), this class of A’-dependency does not observe Subjacency or the ECP:
(51) \[
\text{[CP } \text{Op}_x \text{ [IP } \text{DP} \text{ CP} \text{ Akiu de piping [pp dui shei(x)]]}\]
\text{Akiu PNM criticism about who}
\text{zaocheng] de shanghai] zui da]}
\text{cause PNM damage most great}

‘Who is the person x such that [the damage [which Akiu’s criticism caused x]] is greatest?’

The difference between Chinese and Japanese therefore lies in the fact that the former clearly lacks *wh*-islands effects, as illustrated by the following classic example from Huang (1982):

(52) \[
\text{ni xiang-zhidao [shei mai-le shenme] (ne/ma)?}
\text{you want-know who buy-Prf what Q}_{yes/no}
\text{a. ‘Who is the person x such that you wonder what x bought?’}
\text{(Q}_{wh})
\text{b. ‘What is the thing x such that you wonder who bought x?’}
\text{(Q}_{wh})
\text{c. ‘Do you wonder who bought what?’}
\text{(Q}_{yes/no})
\]

For skeptics who question the wide scope question construals of (52), we may consider the following examples further:

(53) \[
\text{ni xiang-zhidao [shei lai-bu-lai] (ne)?}
\text{you want-know who come-not-come Q}_{wh}
\text{a. ‘Who is the person x such that you wonder whether x will come?’}
\text{b.‘Do you wonder who will come?’}
\text{(Q}_{wh})
\text{c.‘Do you wonder who bought what?’}
\text{(Q}_{yes/no})
\]

(54) \[
\text{ni xiang-zhidao [Akiu mai-bu-mai shenme] (ne)?}
\text{you want-know Akiu buy-not-buy what Q}_{wh}
\text{a. ‘What is the thing x such that you wonder whether Akiu will buy x?’}
\text{b.‘Do you wonder what Akiu will buy?’}
\text{(Q}_{wh})
\text{(Q}_{yes/no})
\]

The idea is to single out the wide scope readings by invoking the incompatibility between *wh*-questions and yes/no-questions. The judgment is clear-cut. Native speakers who usually have trouble in processing (52) pick up the wide scope readings of (53) and (54) without much difficulty.

The distribution of locality effects in the three types of language may thus be summarized as follows:
This is exactly what we would expect from the distinct positions of Q-operators in these languages, as illustrated below (word orders irrelevant):

(56) a. Chinese-type: [\text{CP Op}_x [Q] [IP \ldots wh(x) \ldots]]

b. Japanese-type: [\text{CP Op}_x [Q] [IP \ldots [PP/DP t_x [\ldots wh(x) \ldots]] \ldots]]

c. English-type: [\text{CP [PP/DP wh(x)-Op}_x [Q]] [IP \ldots t_k \ldots]]

Since Chinese Q-operators are inserted in [Spec, CP], no movement is involved. In contrast, as Japanese Q-operators are inserted in [Spec, DP], the “half-way” movement to the CP Spec evades Complex NP islands but still displays wh-island effects. As for English, since the whole wh-phrase must move to check its feature on [Spec, CP], both Complex NP and wh-island effects are bound to show up.

If our analysis proves to be on the right track, then the linking mechanism required in (56a) is only an annotation of the general binding relationship behind any operator-variable pair, definable by the notion of c-command. Since the relationship can be realized in such a minimal way, it manifests itself maximally across languages. Along this line, the basic intuition behind the LCH seems to hold, and the intrinsic priority of (56a) over (56b) can still be made to follow from a broader notion of Economy.

4. Nouns vs. Adverbs

So far we have been pursuing an ideal design at the cost of a popular assumption; that is, all wh-phrases are created equal. As a matter of fact, it is crucial for our purpose here that wh-phrases vary in their internal structures, not only across languages, but also across categories. Although it is not clear so far that this is indeed the case, our analysis is essentially in line with the spirit of the Minimalist approach. Namely, languages differ only in the lexicon and PF.

Following Tsai (1992, 1997a), we propose to reduce the argument-adjunct asymmetry to a noun-adverb asymmetry, under the assumption that only nouns may introduce pure (i.e., [-pronominal]) variables in situ. This move captures the essence of Higginbotham’s (1983, 1985) proposal that N is generated with an index-argument, which must be “discharged” in terms of binding from a determiner. For instance, a definite DP such as the donkey is analyzed as an operator-variable pair based on its internal structure (57):
(57) a. \[
\begin{array}{c}
\text{DP} \\
\text{Det} \\
\text{the} \\
\text{N} \\
\text{donkey (i)}
\end{array}
\]

b. \[\text{the}_x (\text{donkey (x)})\]

(57a) can then be mapped straightforwardly into the usual logical representation for the DP, i.e., (57b). Reinhart (1993) extends this plot further to \textit{which}-NPs:

(58) a. \[
\begin{array}{c}
\text{DP} \\
\text{Det} \\
\text{NP} \\
\text{which} \\
\text{N} \\
\text{donkey (i)}
\end{array}
\]

b. \[f \{x | \text{donkey (x)}\}\]

Here \textit{which} is treated as a weak determiner, which by definition is defective in serving as an operator. As an alternative, Reinhart suggests that together with a set introduced as the translation of \textit{N}, it forms a (choice-) function variable, as in (58b). As a result, \textit{which}-NP may be interpreted in situ given the Q-morpheme hypothesis (cf. Katz and Postal (1964), Baker (1970), Pesetsky (1987). In contrast, \textit{who} and \textit{what} are categorized as determiners, which project directly to DP:

(59) \[
\begin{array}{c}
\text{DP} \\
\text{Det} \\
\text{who/what}
\end{array}
\]

The difference is that although \textit{who} and \textit{what} may in theory be translated as functions, there is no \textit{N}-set in (59) for them to apply to. Consequently, the only way to realize their quantificational force is to undergo \textit{wh}-movement.

We then expect Chinese \textit{wh}-phrases to pattern with \textit{which}-NPs (and \textit{wh}-pronominals in the new light) in terms of their status as variables. This
possibility has already been explored by Cheng (1991) and Li (1992) with fruitful results: wh-phrases appear to lack their own quantificational properties in Chinese, behaving more in line with polarity items.\textsuperscript{15} 

Our theory, however, is not entirely borne out. As we have seen in (6b), wh-adjuncts such as weishenme 'why' apparently do not fit into the picture. They display both strong and weak island effects when wide-scope question formation is involved and in general resist indefinite construals. For example, while schenme 'what' can be embedded within conditionals and read as ‘something’, as in (60), the same construal is impossible for weishenme, as evidenced by (61):

(60) ruguo Akiu mai-le shenme, ta yiding hui lai
    if Akiu buy-Prf what he surely will come
gaosu wo.
tell me

‘If Akiu bought something, he surely will come to tell me.’

(61) * ruguo Akiu weishenme buneng jiao zuoye, ta
    if Akiu why cannot hand-in homework he
    yiding hui lai gaosu wo.
surely will come tell me

‘If for some reason Akiu cannot hand in homework, he surely will come to tell me.’

Nevertheless, the asymmetry is not so surprising if again we put English wh-words under a microscope: While we can easily pick out some-what, what-ever, or even what-so-ever in the dictionary, (non-)words like *some-why and *why-ever are never to be found. This in turn suggests that why, unlike who and what, is not subject to binding construals, as illustrated in the following diagram:

\begin{figure}[h]
\centering
\begin{tikzpicture}
\node (wh) {wh-} child {node (y) {y(x)}
    child {node (Adv) {$^\text{Adv}^0$}
        child {node (some) {some-x}}
    }
};
\node (wh) {wh-} child {node (y) {y(x)}
    child {node (Adv) {$^\text{Adv}^0$}
        child {node (wh) {wh-} edge from parent node [left] {\text{Adv}^0}
            child {node (ever) {ever-x}}
        }
    }
};
\end{tikzpicture}
\caption{Diagram of wh-words under a microscope.}
\end{figure}

Nor does Japanese allow universal quantification over naze ‘why’: *naze-mo, which would mean ‘for any/every reason’ if well-formed, is not a possible combination.

All in all, we find that it is quite safe to assume that adverbs, as intrinsic operators, do not enter into unselective binding as variables. Rather, being
denied access to Merger, they appeal to Chain formation to avoid vacuous quantification. The traces which they leave behind then count as variables for binding purpose. Given Huang’s (1982) LF movement analysis, we thus have a principled account of why (6b) displays locality effects and why LF representations like (7b) are impossible.

The same analysis applies to the contrast between (60) and (61). As observed by Cheng and Huang (1996), the existential construal of the wh-in-situ in (60) results from existential closure ($\exists$-closure) triggered by ruguo ‘if’, given that Chinese wh-phrases count as polarity items (cf. Cheng (1991), Li (1992)), as illustrated below:

\[(63) \quad [\text{CP} \text{ruguo} \ \exists_x \ [\text{IP} \text{Akiu} \ [\text{VP} \text{mai-le} \text{ shenne(x)}]]], \ldots \text{if Akiu buy-Prf what} \]

We may account for the deviance of (61) in a straightforward manner. On the one hand, weishenme ‘why’ cannot be targeted by unselective binding from $\exists$-closure on the IP node, as illustrated below:

\[(64) \quad * [\text{CP} \text{ruguo} \ \exists_x \ [\text{IP} \text{Akiu weishenme(x)}] \ [\text{VP} \text{jiao zuoye}] \ [\text{if Akiu why can-not hand-in homework}]] \ldots \]

On the other hand, since there is no intermediate scope position for wh-phrases in (64), weishenme must move all the way to the matrix CP Spec. As a result, (61) is ruled out in violation of the “Shortest Movement” condition.

5. **Strong vs. Weak Operator Features**

An issue which we have not touched upon so far concerns the status of Chinese Comp in regard to feature checking; namely, whether its operator feature is strong or not. We have not concerned ourselves with this aspect mainly because, given that the design (1a) is realized in an IP-CP magnitude, the Q-operator in question should satisfy the checking requirement vacuously. Nonetheless, since we have introduced the noun-adverb distinction in terms of their ability to enter into binding construals, it becomes necessary to spell out the inevitable: Operator features are weak in Chinese, and the procrastination principle applies accordingly to block overt wh-extraction. In other words, Chomsky’s (1993) generalization that operator features are universally strong is probably too strong for our purposes here.
For one thing, there does not seem to be an *a priori* reason why languages should agree on the status of operator features while they diverge with respect to N-features and V-features, as generally assumed to be the case with English and French head movement (cf. Chomsky (1991)). The issue, as it turns out, is really an empirical one. So let’s start with the null hypothesis that languages vary in regard to the strong/weak status of their operator features and see how far it can go.

First note that if operator features are strong across languages, the claim that Subjacency holds only in overt syntax still serves as an adequate descriptive generalization. Our task, therefore, is to find out if there exists a language where *wh*-phrases are in general allowed to stay in situ but nonetheless display Subjacency effects. Hindi *wh*-questions seem to be a promising candidate, as evidenced by (65a,b). (All Hindi data below from Mahajan (1990).)

(65) a.*raam-ne socaa ki [dp yah baat [cp ki mohan-ne kis-ko Ram-erg thought this fact that Mohan-erg who maaraa] galat hE hit wrong is

‘Who is the person x such that Ram thought that [the fact [that Mohan hit x]] is wrong?’

b.*raam-ne [dp us aadmii-ko [cp jis-ko ravi-ne kyaa ciiz Ram-erg that man who Ravi-erg what thing diii] baazaar jaate dekhaa gave market going saw

‘What is the thing x such that Ram saw [the man [who Ravi gave x]] going to the market?’

As Mahajan points out, the deviance in question poses non-trivial problems for S-structure Subjacency. He then proposes that Hindi *wh*-phrases do not undergo LF *wh*-movement; rather, they are quantifier-raised (Qred) to adjoin to the immediately dominating Ips (see also Kim (1991)). By restating the *Wh*-Criterion in terms of government, (65a,b) is then ruled out by selectional restrictions on the matrix [+wh] Comp, in that the government relation between C[⁺ˌ]wh and the *wh*-phrase in question is blocked by the DP and CP node, both barriers in Chomsky’s (1986b) sense (see also Nishigauchi (1986) for a similar treatment in terms of *wh*-feature percolation). Consequently, there is no need to reject S-structure Subjacency under Mahajan’s analysis since no movement is involved in assigning scope to the adjoined *wh*-phrase.
This approach, though plausible in its own right, is incompatible with the checking mechanism developed in Chomsky (1993), where selectional restrictions are satisfied in a Spec-head configuration. A simple way out, as we might expect from the discussion at the beginning of this section, is to claim that operator features are weak in Hindi. Consequently, overt wh-movement is blocked by the principle of procrastination. When Move-does apply in LF, it induces a strong Subjacency violation since two barriers (i.e., DP and CP) are crossed. We then have a compatible account within the Minimalist framework.

Another related fact comes from CED effects associated with extraposed complements: As Mahajan (1990) observes, a finite clausal complement always extraposes in Hindi (and hence is located to the right of the main verb), and an extraposed clause does not allow an in-situ wh-phrase, as shown by (66a):\(^17\)

\[(66)\]
\begin{align*}
\text{a.} & \quad \text{raam-ne} \, t_i \, \text{socaa} \, \text{[cp \, ki \, mohan-ne \, kis-ko \, dekhaa]}, \quad \text{Ram-erg thought that Mohan-erg who saw} \\
& \quad \text{‘Who did Ram think Mohan saw?’} \\
& \\
\text{b.} & \quad \text{kis-ko}, \, \text{raam-ne} \, t_i \, \text{socaa} \, \text{[cp \, ki \, mohan-ne} \, t_j \, \text{dekhaa]}, \quad \text{who Ram-erg thought that Mohan-erg saw} \\
& \quad \text{‘Who did Ram think Mohan saw?’}
\end{align*}

To make the question licit, the wh-phrase must undergo overt fronting, as shown by (66b). In contrast, when a clausal complement does not extrapose (i.e., remaining to the left of the main verb), as is the case of the infinitival of (67), wh-in-situ is allowed:

\[(67)\]  
\text{raam-ne} \, \text{[pro} \, kis-ko \, \text{dekhnaa]} \, \text{caahaa} \\
\text{Ram-erg who to see want} \\
\text{‘Who did Ram want to see?’}

First consider (66b). Since the extraposed clause is an ungoverned domain, it is unlikely for the embedded subject kis-ko ‘who’ to move after extraposition, in violation of the CED (Huang (1982)) or Subjacency (Chomsky (1986b)). Therefore, wh-fronting must have preceded extraposition in (66b).\(^18\) In case wh-fronting does not apply at all, as in (66a), the wide-scope construal is blocked. This deviance is totally expected because, under our approach, Subjacency effects show up in exactly the same way in LF as they do in overt Syntax. The procrastinated LF movement in (66a) is thus ruled out. On the other hand, since the infinitive complement is still L-marked by the verb caahaa ‘want’ in (67) (recall that extraposition of
infinitivals is not obligatory), LF movement does not induce any CED effect. The procrastination analysis thus makes the right prediction again.\textsuperscript{19}

6. An Overview

So far we have sketched three basic proposals: First, Merger enjoys intrinsic priority over Chain formation. Second, only nominals, but not adverbs, are subject to unselective binding. Third, languages vary in regard to the strong/weak status of their operator features. Now we can see how these three could combine to derive the linguistic variations at issue, not only across languages but also across categories. Addressing the last point first, we may group Hindi and Chinese together in terms of the status of their operator features: Since operator features are weak in these two languages, \textit{wh}-movement procrastinates until LF. In contrast, their English and Japanese counterparts are strong (though the observation is still subject to debate for Japanese), hence overt movement of \textit{wh}-phrases in English and of empty \textit{wh}-operators in Japanese, as illustrated below:

\begin{tabular}{|c|c|c|c|c|}
\hline
Operator features & English & Japanese & Chinese & Hindi \\
\hline
LF \textit{wh}-movement & no & (?) & yes & yes \\
\hline
\end{tabular}

On the other hand, as we have demonstrated throughout section 2.3, Chinese and Japanese should be grouped together with respect to their relatively high maneuverability of unselective binding. Namely, both Japanese and Chinese allow long-distance indefinite construals of \textit{wh}, as exemplified in \textit{mo}-conditionals and \textit{dou}-conditionals respectively, but only Chinese allows bare conditionals, as summarized in the following table:

\begin{tabular}{|c|c|c|c|c|}
\hline
non-quantificational & English & Japanese & Chinese & Hindi \\
\hline
\textit{wh} & no & yes & yes & no \\
\textit{mo} / \textit{dou}-conditionals & (?) & yes & yes & (?) \\
\hline
bare conditionals & no & no & yes & no \\
binding construals of operator-variable pairs & lexical & phrasal & sentential & lexical \\
\hline
\end{tabular}

It is instructive to note that (69) provides only a general outline of patterning and contrasting, and there do exist some overlaps among these languages. For instance, English \textit{no matter} constructions bear partial resemblance to
mo- and dou-quantification, in that they license only E-type pronoun construals in consequent clauses. The difference is that mo and dou may take scope over either DPs or CPs (hence quantifying over either individuals or situations) while no matter takes scope only over CPs, quantifying over propositions or situations.

The interaction between the above two sets of factors thus produces the now familiar pattern of interrogative construals in regard to locality effects:

\[(70)\]

<table>
<thead>
<tr>
<th>Single Wh-questions</th>
<th>English</th>
<th>Japanese</th>
<th>Chinese</th>
<th>Hindi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wh-island effects</td>
<td>yes</td>
<td>(?)</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Complex NP effects</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>yes</td>
</tr>
</tbody>
</table>

Since English wh-phrases are neither subject to procrastination nor subject to indefinite construals above the X\(^0\) level, overt wh-movement applies and locality conditions are observed strictly. Hindi follows similar patterns except that wh-movement applies in LF due to the weak status of its operator features. Like Hindi, Chinese wh-movement applies only in LF. But unlike Hindi, it applies only on the part of wh-adverbs, which cannot introduce variables in-situ and therefore are not subject to binding. Japanese, on the other hand, displays mixed behavior, owing to the structural position of its Q-operator (i.e., the Spec of DP/PP). This allows the evasion of Complex NP islands, but not wh-islands.

On the empirical front, the LCH has proved itself to be a feasible hypothesis in characterizing a number of A'-dependencies, e.g., negative quantification (Huang (1997)), distributive quantification (Lin (1997)), wh-quantifier interaction (Watanabe (1997)), and existential quantification (Tsai (1998)). The correlation between the absence of island effects and the presence of bare conditionals has also been established on independent grounds, based on evidence from two Formosan languages, Seediq and Tsou (Tsai (1997c)). It is hoped that this study will shed some light on the way we look at cross-linguistic variations. That is, languages may appear to specialize in some specific type of operation (hence the traditional distinction between syntactic and abstract wh-movement languages). Nevertheless, they all share the basic design as to where and how an operator-variable pair should be constructed, diverging only because of the tension between syntax and morphology, and idiosyncracies resulting from historical changes and language contacts.
* This paper is developed from the first chapter of my dissertation. I would like to thank Jim Huang and Mamoru Saito for their unfailing encouragement and invaluable comments. I also benefited tremendously from discussions with Lisa Cheng, Noam Chomsky, Peter Cole, Chris Coolins, Daniel Fox, Irene Heim, Gabby Hermon, Masa Koizumi, Audrey Li, Alec Marantz, Kuang Mei, Howard Lasnik, Masayuki Oishi, David Pesetsky, Rint Sybesma, Jane Tang, Hiro Ura, and Akira Watanabe.

1 Note that our regard for Economy here is more in line with the notion “local economy”, as developed in Collins (1997), than the original “global” formulation by Chomsky (1993, 1995). While global economy requires derivations to converge with as few operations as possible (cf. Kitahara (1995)), local economy enforces economy conditions locally and derivationally and does not concern itself with whether a particular derivation eventually converges. Under this view, the need for Numeration is eliminated, and the comparison between (1a,b) is carried out locally and derivationally.

2 A JEAL reviewer provides a rationale for the settings in question: Japanese Q-operators pattern with their Chinese counterparts in not being affixal, but they need to be checked for [-V], hence merging into nonverbal categories such as PP and DP. Also note that (4a–c) only refer to (pure) operators involved in merge operations such as (1a). Ordinary adverbs, interrogative or not, appear according to their semantic status, in particular, their scopes of modification, e.g., manner adverbs merging into VP, temporal adverbs merging into TP, and so on.

3 Here we may well regard Subjacency as an instantiation of Economy of derivation, in the sense that crossing more than one bounding node in forming one Chain-link is considered too costly.

4 See also Li (1992), Aoun and Li (1993a, 1993b), and, to some extent, Cheng (1991) for proposals in the same vein. Also note that there is substantial evidence showing that unselective binding does not observe relativized minimality, as indicated by the lack of inner island effects in (ib):

(i) Akiu bu xiang chi shenme.
   Akiu not want eat what
   a. Akiu doesn’t want to eat anything.
   b. What doesn’t Akiu want to eat?

As shown above, the indefinite wh-construal (ia) is not obligatory, and negation does not block the interrogative reading of (ib). On the other hand, unselective binding does observe semantic principles such as the specificity condition (Fiengo and Higginbotham (1981)), as originally noted by Huang (1982):

(ii) *[\text{CP} na-ben [\text{CP} shei xie] de keben] bijiao hao?
    that-CL who wrote PNM textbook more good
    ‘Who is the person x such that the book which x wrote is better?’

Furthermore, unselective binding can be reduced neither to referential binding (i.e., long wh-movement) in Rizzi’s (1990) sense, nor to A’-bound pro construals in Cinque’s (1990) sense. For detailed discussion, see Tsai (1994b, chapter two).

5 Similar intuitions have been pursued as early as Chomsky (1964), Katz and Postal (1964), and Klima (1964), where who and what are analyzed as [WH+someone] and [WH+something] respectively. See also Kuroda (1965).

6 As Howard Lasnik (p.c.) observes, free relative constructions like (i) do not fall under the category discussed here:

(i) I’ll eat what you cook.
The usage of the free relative what in (i) is considered to be definite by C. L. Baker (1989), in contrast to the indefinite usage exemplified by (13a). The distinction can be illustrated by the following paraphrase of (i):

(ii) I'll eat the food that you cook.

It follows that there may well be a (non-overt) definite counterpart of-ever associated with the relative wh in question. As noted by Howard Lasnik, our treatment bears close resemblance to that of Chomsky (1975, p. 434), where who is taken to be [WH+(s)he], what [WH+it], and so forth. Consequently, there seem to be empirical bases for both the [WH+pronominals] and [WH+indefinites] analyses. If our proposal presented below is correct (cf. (14a) and (19)), the difference between the definite and indefinite usages then lies in the different operators involved in the internal structures of wh-words.

7 Another possibility, as entertained by Noam Chomsky (p.c.), is to assume that English does not allow Q-operators at all. This proposal, though stipulative in nature, is not further complicated by the tension between morphology and syntax. For a similar view, see Tsai (1997b), where the presence of Q-operators in Chinese is correlated to the positive setting of the null topic parameter in Huang’s (1984) sense.

8 Another piece of evidence comes from the following group of adverbs of quantification: all, always, already, and also. They too can be analyzed as miniature operator-variable pairs, in that they are all prefixed by al-, a reduced form of all. Interestingly, each of them corresponds to one of the usages of Chinese sentential adverbs dou ‘all’. For detailed discussion, see Tsai (1994b).


10 By incorporating the notion of tripartite structure into the Parallelism Constrain on Operator Binding (PCOB) in Safir’s (1985) sense, Cheng and Huang proposes the following principle further to capture the identity condition on the pair(s) of wh-in-situ:

(i) Revised PCOB:
    In a tripartite structure of quantification, Q [A] [B], [x\_1, x\_2, \ldots , x\_n], where n ≥ 1, are variables in A. For every variable in A, there must be an identical variable in B.

11 One might notice that the readings given in (24) and (25) do not exhaust all the logical possibilities. For some reason, it is difficult to get the following readings from (24) and (25):

(i) a. Who are the persons x, y such that if x defeats y, then x/y must pay for the treat?
    b. Who are the persons x, y such that if x/y wins, then each must treat the other?

The absence of the two readings might result from pairing two uneven dependencies, i.e., one involving a multiple wh-dependency and the other a single one.

12 The j-indexed reading of matrix shei ‘who’ in (41) is marginally acceptable when it is construed as interrogative, as illustrated by the following interpretation:

(i) ?Who is the person x such that whoever comes to visit, x will flush?

13 See Cheng (991) for a cross-linguistic survey of the architectures of wh-phrases and wh-particles (i.e., C\_1\_wh), which seems to be consistent with our conjecture. Particularly of interest here is the descriptive generalization that if a language has a wh-particle, the language always uses it (cf. Cheng 1991, p. 28). We will return to this issue later.

14 The possibility of distinguishing nominal wh-phrases from non-nominal ones in regard to their extraction behavior has actually been entertained by Huang (1982) along with the argument-adjunct distinction. He argues that where and when are actually nouns (vs. adverbs
such as how and why), hence their patterning with arguments in regard to LF locality effects.

Based on Huang’s initiative, Tsai (1994a) further explores the distinction, though still within the tradition of “all-out” movement analyses.

See also Huang (1982, pp. 241–253) for original discussions of indefinite wh-construals under negation, A-not-A questions, conditionals, and don–quantification.

Here we do not concern ourselves with constructions with the scope marker kyaa ‘what’ (or wh-expletive in Mahajan’s (1996) terms), where long-distance wh-scrambling is actually possible. Similar construals are also found in German partial wh-movement. For detailed comparison of the two languages, see Beck and Berman (1996), Dayal (1996), Fanselow and Mahajan (1996), and Mahajan (1996).

As noted by a reviewer, the landing site of wh-fronting should be lower than the adjunct site of the clausal complement in (66b). Otherwise, the strict cyclicity would be violated.

Mahajan (1993) provides further evidence to his conclusion here. He points out that it is possible to replace the CP trace in (66b) with an expletive yah ‘it’, as exemplified by (i), in which case no extraposition is involved:

(i) ??? kis-ko ramm-ne yah, socaa [t_t ki mohan-ne t dekhaa],
who Ram-erg IT thought that Mohan-erg saw

‘Who did Ram think Mohan saw?’

Consequently, there is no way for kis-ko ‘who’ to escape from the CED/Subjacency in terms of overt fronting, hence the deviance of (i).

For pros and cons of extending Watanabe’s (1992a, 1992b) invisible wh-movement analysis to Hindi, see Tsai (1994b).

REFERENCES


Nishigauchi, Taisuke (1986) Quantification in Syntax, PhD dissertation, University of Massachusetts, Amherst.
Ross, John (1967) Constraints on Variables in Syntax, PhD dissertation, MIT.

Received: May 13, 1998
Revised: July 1, 1998

National Tsing Hua University
Graduate Institute of Linguistics
Hsinchu 30043
Taiwan
E-mail: wtttsai@faculty.nthu.edu.tw