

Chapter 7: Typology of Relative Clauses

We have discussed the structures and derivations of various types of relative constructions in English, LA and Chinese. We noted that relative constructions in different languages and even within one specific language exhibit different reconstruction effects: DP reconstruction, NP reconstruction or no reconstruction at all. Such differences in empirical generalizations require different analyses of the relevant constructions: the derivation of relative constructions can differ both within a language, and cross-linguistically. They differ in the presence or absence of movement; they differ in what is moved; and they differ in where the moved element lands: in the spec of CP or adjoined to NP. Moreover, following the essence of the analysis by Kayne/Bianchi of Head-initial relative constructions, we adopted a complementation structure [_{DP} D CP] for Head-initial relative constructions in English and LA. The Head-final relative construction in Chinese, on the other hand, was shown to have an adjunction structure.

Clearly, the structures and mechanisms to derive relative constructions are not uniform across languages or within a language. These discussions raise the following important theoretical questions: is there such a notion as a universal relative construction in Universal Grammar? If there is, what are the universal properties of such a construction? Moreover, given the various options in the grammar (complementation vs. adjunction, the variations on what moves where), how and/or why does a language adopt certain options? This chapter seeks to answer these questions. We will approach these questions from the two areas that have been the focus of our discussions: structure and derivation. It will be shown in section 7.1 that, at least with the theoretical mechanisms currently available or some further refined analyses, the different empirical generalizations among the various relative constructions cannot be captured by a uniform structure. Nor can it be captured by a uniform derivational process (section 7.2). The variations, however, are not random. They follow from the general morphological and syntactic properties of the individual languages and constructions, which are also reflected in the variations in forming *wh*-interrogatives. At this point, more languages of different types will be considered to help define the range of variation.

7.1. Universal structures?

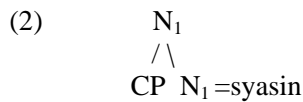
As mentioned, English relative constructions have been argued to instantiate a complementation structure: D taking a CP complement. Furthermore, even though the CP is labeled DP in LA (Choueiri 2001), the essence of the complementation structure remains intact in this language. We showed in chapter 5, however, that, for Chinese relative constructions, not only is there no positive evidence for the complementation structure, there is direct evidence for the need to adopt a different structure: an adjunction structure.

Now, if Chinese cannot simply adopt the complementation structure, can we address the issue of universal structures from the reverse perspective and claim that the adjunction structure is universally available for relative constructions? This is, in fact, the attempt made in Fukui and Takano (1999) arguing that a language with a Head-initial relative construction such as English and a language with a Head-final relative construction such as Japanese both have the same structure for relative constructions. They purportedly differ only in the presence or absence of N-to-D movement. Below, we first lay out the proposal made by Fukui and Takano and then show that a universal adjunction structure, even with modifications of the mechanisms to implement such an analysis, faces challenges when the full range of variation in English, LA and Chinese relative constructions is considered.

7.1.1. A universal adjunction structure?

A major claim of Fukui and Takano's (1999) work is that the ordering between a relative clause and the Head modified by the relative clause is due to the absence or presence of D and the subsequent movement of N to D when D is present. Adopting Kayne's proposal that only left-adjunction is allowed in the grammar, Fukui and Takano claim that a relative clause is always left-adjoined to the Head: [CP N].¹ A Japanese relative construction, illustrated in (1), has the structure in (2) after the relative clause is left-adjoined to the Head.

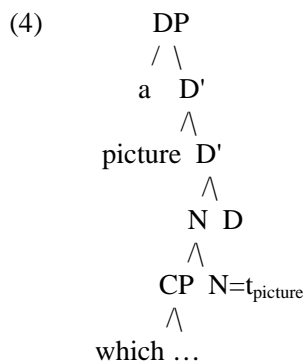
- (1) John-ga kinoo mita syasin
 John-Nom yesterday saw picture
 'the/a picture that John saw yesterday'



Because a Japanese nominal phrase does not contain a D projection or other functional categories according to Fukui and Takano, (2) will not merge further and it is the full representation for the relative construction illustrated in (1). A slight modification of (2) has been made by Fukui and Takano: the relative clause should be an IP (TP), not a CP, a claim to which we will return shortly.

In contrast, an English nominal phrase must project a D. A phrase marker like (2) must further merge with a D in order to generate a well-formed nominal structure in English. After D is merged with the phrase markers, N-to-D raising must take place in order for the N to check the features in D. An English relative construction as illustrated in (3), therefore, has the structure in (4).

- (3) a picture which John saw yesterday.²



The following generalization thus emerges given Fukui and Takano's theory: the word order [relative clause + relative Head] indicates that N-to-D raising has not applied and the reverse

¹ Fukui and Takano (1999) label the Head N and the relative clause CP. Left adjunction of the relative clause to the Head NP, thus, is [CP N]. Such an account does not distinguish complementation structures from adjunction structures, as a complement XP is also a sister of N so a complementation structure is also [XP N].

² Fukui and Takano (1999) assume with Takano 1996 that a complement is generated to the left of a head.

order [relative Head + relative clause] indicates that N-to-D raising has applied. The former is illustrated by Japanese and the latter by English.

Fukui and Takano note further that there is a cluster of differences between English type and Japanese type languages which can "fall out in a simple and elegant fashion, based solely on the single parametric difference between the languages: English exhibits N-to-D raising, while Japanese does not (simply because the latter language lacks the category D)." (abstract).³ The differences discussed are briefly described in the following subsections.

7.1.1.1. Relative pronoun

According to the two authors, the absence of a relative pronoun (as in Japanese), or its possible presence (such as *which* in (3)) can be derived from the structural contrast between (4) and (2). Assuming that a relative pronoun must be bound by a relative Head, they claim that a relative pronoun in a structure like (4) in English is legitimate because in this structure, the relative Head (the raised N) c-commands the relative pronoun *which*. The relative pronoun *which* is, therefore, properly bound and thus, English allows a relative pronoun in a relative clause. In contrast, because N_1 has two segments in (2), the relative Head does not c-command CP, if the definition of c-command in May (1985), Chomsky (1986), and Kayne (1994) is adopted, which incorporates the notion of segments and exclusion.⁴ If the relative Head does not c-command the relative clause CP, it cannot c-command a relative pronoun in the CP. In order for (2) to be well-formed, the relative clause cannot contain a relative pronoun since such a relative pronoun would not be c-commanded and properly bound by the relative Head. Consequently, Japanese does not and cannot have a relative pronoun in its relative clause. The contrast between the structures in (4) and (2) captures the contrast between the existence of a relative pronoun in English and the lack of one in Japanese.

7.1.1.2. Operator movement

The lack of a relative pronoun, according to Fukui and Takano, indicates that a Japanese relative clause is not "operator-oriented." It is not licensed as a modifier of the relative Head through the mediation of a relative pronoun functioning as an operator creating an open position within the relative clause. Instead, it is licensed by an "aboutness" relation between the relative clause and the relative Head. They claim that such an aboutness condition is not peculiar to the licensing of the Japanese relative clause. It can also be seen in the licensing of certain topic constructions in Japanese and English:

³ Fukui and Takano's proposal requires N-to-D movement to apply in all cases in English. This contrasts with, for instance, the analysis of Chierchia (1998) or Longobardi (1994) which does not raise N to D when an article occurs (at least overtly). In these analyses, an article occupies the D position and N stays in the N position, N being a property-denoting, predicate type of expressions. Fukui and Takano place the definite article *the* in a position higher than the Spec of D position which hosts the raised N, N-to-D raising being a substitution process. See section 7.1.2.2. for further discussions.

⁴ The definition adopted in Fukui and Takano is this:

- (i) X c-commands Y iff X excludes Y and every element that dominates X dominates Y.
- (ii) X excludes Y iff no segment of X dominates Y.

The two-segmented category $[N_1, N_1]$ is the relative Head. The Head does not exclude CP. The upper N_1 , a segment of $[N_1, N_1]$, dominates the CP.

(5) sakana-wa tai-ga ii
fish-Top red-snapper-Nom good
'As for fish, a red-snapper is the best.'

(6) As for sports, I like baseball best.

Attributing the insight to Kuno (1973) and Murasugi (1991), Fukui and Takano argue that this aboutness condition licenses relative clauses in Japanese. Thus, in the following example, the relative clause can be interpreted as being about a picture.

(7) John-ga kinoo mita syasin
John-Nom yesterday saw picture
'the/a picture John saw yesterday'

Being in an aboutness relation with the relative Head, the relative clause is properly licensed.

Furthermore, because there is no operator movement in Japanese relativization and an aboutness condition is sufficient to license a relative clause, it follows that gapless relative clauses are possible in this language, such as (8) and relativization is not subject to island conditions as demonstrated in (9), where the relativized nominal has originated from within a complex NP.

(8) [syuusyoku-ga taihen na] buturigaku
employment-Nom difficult is physics
'physics (that) finding a job is difficult'

(9) [pro kiteiru yoohuku-ga yogoreteiru] sini
is.wearing suit-Nom is.dirty gentleman
'the/a gentleman who the suit that (he) is wearing is dirty'

7.1.1.3. Relative complementizer

Another contrast that Fukui and Takano claim follows from the proposed structural and movement differences is that a relative clause in Japanese, unlike an English one, has a TP structure, rather than a CP structure. Japanese relative clauses do not need a CP: because of the lack of N-to-D raising, Japanese relative clauses must not be operator-oriented. The fact that an operator is not needed makes the Spec of CP unnecessary. Following Diesing's (1990) suggestion that a functional category is present in a structure only when it is necessary, Fukui and Takano claim that a CP is not necessary in a Japanese relative clause and thus is not projected. The lack of a CP projection means the lack of a C to host a complementizer. This captures the fact that Japanese does not have the counterpart of the complementizer *that* in the English relative clause *a picture that John saw yesterday*.⁵ A relative clause, accordingly, is not a CP in Japanese. It is a IP/TP (Murasugi 1991).

⁵ Their argument is not easy to follow here. Even though an operator in the Spec of a CP is not needed, it does not mean that the head is not needed and therefore it does not mean that a CP projection is not needed. Consider the English example (i):

(i) That he is here is important.

In this sentence, there is no requirement of the presence of an operator in Spec of CP. Nonetheless, the complementizer *that* must be present. The fact that a Spec of CP is not needed does not mean that the head C is also not needed.

7.1.1.4. Internally Headed Relative Clause

Finally, Fukui and Takano note that only languages of the Japanese type allow Internally Headed Relative Clauses (IHRC). Following Cole's (1987) proposal that an IHRC has a Head that is a null pronominal co-referential with the internal Head, they note that if the English structure (4) were to instantiate an IHRC, it would violate Binding Principle C because the Head *pro* would be co-indexed with, and c-command the internal Head. In contrast, a *pro* in the relative Head position does not c-command the internal Head in (2), the proposed structure for Japanese. Consequently, only Japanese allows an IHRC.

Briefly summarizing Fukui and Takano's claims, the contrast between the English structure (4) and the Japanese structure (2), as manifested in the different ordering between a relative clause and a relative Head, derives the different properties of English and Japanese relative clauses with respect to the availability of a relative pronoun, operator movement, a complementizer and an internally headed relative clause. The lack of operator movement is related to the availability of an aboutness condition licensing a relative clause, which does not obey island conditions. The lack of operator movement and the availability of licensing by an aboutness condition also make a gapless relative clause possible.

Though not discussed in Fukui and Takano, a number of other Japanese linguists have also made the observation that Japanese relative clauses do not involve operator movement. Saito (1985), for instance, shows that the lack of operator movement is manifested in the absence of long-distance relativization of reason/manner adjuncts. Such relativization is clause-bound (Murasugi 2000):

- (10) a. [[Mary-ga e_i kaetta] riyuu_i]
Mary-Nom left reason
'the reason_i Mary left e_i'
- b. *[[Mary-ga [John-ga e_i kaetta to] omotteiru] riyuu_i]
Mary-Nom John-Nom left C think reason
'the reason_i Mary thinks [that John left e_i]'
- c. [[Mary-ga e_i mondai-o toita] hoohoo_i]
Mary-Nom problem-Acc solved method
'the method_i Mary solved the problem e_i'
- d. *[[Mary-ga [John-ga e_i mondai-o toita to] omotteiru] hoohoo_i]
Mary-Nom John-Nom problem-Acc C think method
'the method_i Mary thinks [that John solved the problem e_i]'

Murasugi (1991) argues that the relativization of manner/reason adjuncts is not true relativization given that a true relative clause contains a gap. She argues the expressions in (10) do not contain a gap and that the acceptable expressions in (10)a, c) are just like other gapless cases:

- (11) [[sakana-ga yakeru] nioi]
fish-Nom burn smell
'the smell that a fish burns (the smell of fish-burning)'

The interpretation of (10)a), for instance, parallels the English (12) (see the relevant discussion on gapless relatives in Chinese in section 6.9 of chapter 6). Such examples are derived by base-

generation.

(12) the reason for John's leaving

The unacceptable examples in (10)b,d) cannot be base-generated with a *pro* in place of the adjunct gap 'e' in the embedded clause, because a *pro* appears only in argument positions. Indeed, a stronger claim has been made: Japanese relative clauses simply are not derived by any type of movement. The following example from Hoji (1985, discussed in Murasugi 2000) shows the lack of reconstruction in cases involving an anaphor:

(13) *_{[NP} [John_i-ga e_J taipu-sita] [zibun_i-no ronbun]_J]
John-Nom typed self-Gen paper
'self_i's paper that John_i typed'

These observations support the claim that Japanese relative clauses are not derived by movement of any kind and do not contain an operator.

7.1.2. Problems with the universal adjunction structure

The proposal made by Fukui and Takano relating word order differences to differences in N-to-D raising, which is the result of projecting or not projecting a D for a nominal phrase, would be quite elegant, if it were to work adequately. Under their proposal, all languages have an adjunction structure for relative constructions. Fundamentally, the existence of D plays the crucial role of determining a head-initial language and the absence of a D determines a head-final language with respect to order in relative constructions. If D is projected, N-to-D raising takes place and a Head-initial relative construction is derived. If D is not projected, N-to-D raising is not available and a Head-final relative construction is derived. The absence or presence of N-to-D movement is correlated with other properties concerning the derivation of relative constructions. The universal adjunction structure, coupled with N-to-D raising, describes different types of relative constructions.

We demonstrate below, however, that this proposal is not adequate when a wider range of data from English, LA and Chinese is considered. We will, however, return to the importance of D in determining the structure of relative constructions when we consider the projection of D and the properties of D in relation to the relative clause.

7.1.2.1. Problems with Chinese relative constructions

As discussed in Li (2000), despite the attractiveness of the proposal outlined above, the account for the distinction between Japanese and English relative constructions does not seem to extend to Chinese relatives. At first glance, Chinese relative constructions look exactly like their Japanese counterparts on the surface: neither require determiners; both are Head-final; neither have clear candidates for complementizers or relative pronouns; and both have gapless relative constructions. Chinese even has a well-formed sentence corresponding to (9), the Japanese example used by Fukui and Takano to argue for the irrelevance of island constraints in relative constructions, and therefore, for the lack of movement.

Closer examination of the Chinese relative constructions, however, reveals the inadequacy of the proposed account.

Let us begin with the issue of whether locality conditions are relevant in the derivation of Chinese relative constructions. As discussed in section 6.5 of chapter 6, even though there appear to be some instances where an empty category related to the Head noun occurs inside an island, it is

due to the presence of an empty pronoun (a *pro*) that the relative structure is acceptable. A *pro* needs to be identified. When it is not properly identified by the Head noun, the relative structure manifests the effects of island conditions. We therefore claimed that relativization in Chinese obeys island conditions. The conclusion was made that, other than the instances involving a properly identified *pro*, a relative clause containing a gap is derived by movement in Chinese. The movement can be NP movement to the Head, as evidenced by reconstruction effects, or operator movement to the Spec of CP as in the cases of adjunct relativization. The latter is supported by the facts concerning the failure of reconstruction of the relative Head, the distribution of in-situ *wh*-phrases such as *weishenme* 'why' and *zenme* 'how' and the relevance of locality conditions.

When operator movement applies to derive relative constructions in Chinese, the relative clause must still be a CP, rather than a TP, in order for the operator to occupy Spec of CP position. Because relative operators are available, the licensing of a relative clause need not resort to a vague "aboutness" relation. Not resorting to the vague "aboutness" relation to license a relative structure and not equating topicalization with relativization have the following merits:

First, relativization and topicalization ARE different in Chinese. The licensing by an "aboutness" condition for both constructions fails to account for the contrasts between them. As shown in section 6.5 of the previous chapter, topicalization requires the presence of P when a PP is topicalized, whereas relativization allows the "disappearance" of the P. That is, there are instances where relative constructions are allowed, but not the topicalization counterparts:

- (14) a. **zhe chechang, ta bu xiu che.*
 this garage he not fix car
 'This garage, he does not fix cars.'
- cf.
 a'. *ta bu xiu che de chechang*
 he fix car De garage
 'the garage where he fixed cars.'
- b. **nage fangfa, ta xiu hao le nabu che.*
 that way he fix well Asp that-Cl car
 'That way, he fixed that car'
- cf.
 b'. *ta xiu hao nabu che de fangfa*
 he fix well that-Cl car De way
 'the way he fixed tha car'
- c. **nage yuanyin, ta bu xiu che.*
 that reason he not fix car
 'That reason, he does not fix cars.'
- cf.
 c'. *ta bu xiu che de yuanyin*
 he not fix car De reasons
 'the reason he does not fix cars'

Many of the so-called gapless relatives also do not have a topicalization counterpart:

- (15) a. *ta bu nian shu de houguo*
 he not read book De consequence

'the consequence of his not reading books'

- a'. *zhe-ge houguo, ta bu nian shu
this-CI consequence he not read book
'This consequence, he does not read books.'
- b. ta chang liuxing ge de shengyin
he sing popular song De voice
'the sound of him singing popular songs'
- b'. *zhe-ge shengyin, ta chang liuxing ge.
this-CI voice he sing popular song
'This voice, he sings popular songs.'

There are also instances where topicalization is possible but not the relativization counterpart:

- (16) a. yu, wo xihuan chi xian yu.
fish I like eat fresh fish
'Fish, I like to eat fresh fish.'
- b.*wo xihuan chi xian yu de yu
I like eat fresh fish De fish
'the fish that I like to eat fresh fish'

Moreover, within relative constructions, the proposal based on "aboutness" licensing fails to account for an observed difference in distribution between gaps and resumptive pronouns: the distribution of gaps is sensitive to islands but the distribution of resumptive pronouns is not (modulo the distribution of pro). In addition, as noted in chapters 5-6, the availability of reconstruction differs among the various patterns, a fact which fails to be accommodated by an "aboutness" approach. Relative constructions with gaps in an argument position exhibit the effects of reconstruction. Those with gaps in an adjunct position or a resumptive pronoun do not allow reconstruction. Were the "aboutness" condition the only requirement to license a relative clause, it is not clear at all why there are such differences among these different relative constructions.

Finally, evidence for the Fukui/Takano analysis based on internally headed relative clauses is absent in Chinese. Such a construction simply does not exist in this language.⁶ At most, it can only be assumed that a language with a Head-final relative construction can, but need not, have an internally headed relative construction. The correlation between the Japanese type of relative constructions and the existence of an internally headed relative clause does not always hold. No analysis can be predicted based on the absence of such a relative construction in Chinese.

In brief, the seemingly very appealing correlation of properties that would occur as a consequence of the availability of the projection of a D and the accompanying N-to-D raising, and which

⁶ In fact, there is some debate as to whether such a construction exists even in Japanese. Kuroda (1976) claims that Japanese has head-internal relative clauses. However, Murasugi (2000) argues that what has been called a head-internal relative clause in Japanese is not a relative clause at all. It is a circumstantial adverbial phrase. Kuroda (1999) again argues for the existence of head-internal relative clauses, which cannot be derived by movement.

distinguishes English (illustrating Head-initial relative constructions) from Japanese (illustrating Head-final relative constructions), does not exist in Chinese.⁷ In fact, Chinese seems to share more important characteristics with English than it does with Japanese even though Chinese and Japanese both have Head-final relatives: Chinese and English, but not Japanese, can derive relative structures by movement. In both these languages, the distribution of gaps is sensitive to island conditions and internally headed relative clauses do not exist. Is it possible, then, to extend the proposal by Fukui and Takano and claim that Chinese is indeed more like English along the lines predicted by their approach? Suppose, for instance, N-to-D raising somehow also applies in Chinese, which in turn allows operator movement, in contrast to Japanese, which does not allow such movement. Such a revised proposal can be articulated as follows: English requires overt N-to-D raising; therefore, operator movement is allowed and the word order is Head-initial. Chinese is like English in allowing N-to-D movement but differs from English in word order. Chinese, thus, requires N-to-D raising (which licenses operator movement under this proposal) to apply covertly, placing the N in a position c-commanding the relative clause covertly. This allows operator movement while maintaining the Head-final word order. Japanese, on the other hand, does not allow N-to-D raising either overtly or covertly. Therefore N never occurs in a position c-commanding the relative clause and operator movement is never available. This revised proposal would keep Fukui and Takano's analysis for Japanese and English and extend it to Chinese.

Even this alternative, however, is unfortunately not adequate, in addition to the obvious loss of the merit of Fukui and Takano's analysis of correlating N-to-D movement with word order. First of all, it has been argued that N-to-D raising is not always available in Chinese. As briefly presented in section 6.3 of the previous chapter regarding nominal structures in Chinese, there is evidence that N-to-D raising exists in Chinese in some instances. However, this process necessarily derives a definite bare noun (a noun without a demonstrative, number and classifier). For indefinite nominals and those with a demonstrative or a classifier expression, N-to-D raising is not available. The unavailability is due to the Head Movement Constraint in cases containing classifiers and the lack of a D projection in cases of indefinites. If N-to-D raising is not available in such cases, the revised analysis of Fukui and Takano would predict that such relative clauses should be just like their Japanese counterparts in allowing only base-generated Heads. However, this is false. A classifier, for instances, can occur and a relative clause can still be derived by movement. We simply list two examples here: one with NP reconstruction and the other with long-distance relativization of reason adjuncts. The only possible word order is Head-final.

- (17) wo zai zhao [na-ben [[Zhangsan, xie e de] [e miaoshu ziji, fumu de] shu]].
 I at seek that-Cl Zhangsan write De describe self parents De book
 'I am looking for the book that describes self's parents that Zhangsan wrote.'
- (18) [na-ge [[ni yiwei Zhangsan (weishenme) bu neng lai de] liyou]]
 that-Cl you think Zhangsan (why) not can come De reason
 'the reason that you thought Zhangsan could not come (why)'

⁷ The only correlation that we have not discussed concerns the complementizer. In Chinese, it is not clear that a complementizer does not exist in a relative clause. Some linguists have proposed that *de*, which always follows the relative clause, is a good candidate for a complementizer in a relative clause (see Simpson 1997; also see Li 1990 chapter 2 for relevant discussions). However, there is also a proposal that it is a determiner (Simpson and Wu 1997). It can also be an inserted marker to mark an adjunction (modification) structure, but not heading a projection itself (see note 12 of chapter 5). According to the coordination tests in chapter 5, it is clear that *de* must be part of the relative clause syntactically.

In short, relative constructions in Chinese can be derived by movement even in contexts where N-to-D raising does not take place, contrary to the predictions made by an extended analysis in the spirit of Fukui and Takano.

In addition to the question of whether the existence of movement can be related to the presence of N-to-D movement, there are other differences between English and Chinese relative constructions which are too significant to allow a grouping of the two languages in the same category with the minimal difference being only when N-to-D raising takes place (in the overt or covert syntax). Recall that Chinese does not require a relative construction to be projected as a DP, while English does. This is illustrated by the contrast between the following sentences in English and Chinese:

- (19) a. *He is an actor that wants to do everything and producer that wants to please everyone.
b. He is an actor that wants to do everything and a producer that wants to please everyone.
- (20) a. wo xiang zhao yi-ge fuze Yinwen de mishu **jian** jiao xiaohai de jiajiao.
I want find one-Cl charge English De secretary and teach kid De tutor
'I want to find a secretary that takes care of English (matters) and tutor that teaches kids.'
b. wo yao dang yi-ge neng yin shi de shiren **jian** neng hua huar de huajia.
I want be one-Cl can sing poem De poet and can draw painting De painter
'I want to be a poet that can sing poems and painter that can paint paintings.'

Such a contrast suggests a fundamental structural difference between relative constructions in the two languages. In addition, as noted in chapter 4, English shows the full range of reconstruction effects of the relative Head, while Chinese does not reconstruct for the interpretation of scope. Again, this is another indication of important differences.

In brief, there are substantial differences between English and Chinese relative constructions. If, for the sake of allowing movement to derive relative constructions in these two languages, both languages require a D so that N-to-D raising applies, which in turn licenses operator movement, it is not clear why English would require a DP for a relative construction but not Chinese and why English exhibits the full-range of reconstruction effects but Chinese is more limited. Chinese, in light of the facts and analyses for English and Japanese, presents a serious challenge to the proposal of Fukui and Takano which couples a "universal" adjunction analysis with N-to-D raising to capture language variation. The "universal structure" approach fails to account for why Chinese differs from Japanese and English in the ways it does.

7.1.2.2. Problems with English and LA relative constructions

In addition to the problem of accommodating Chinese type languages, further generalizations are not captured by Fukui and Takano's adjunction analysis which relies on the existence of N-to-D raising to account for the syntax of Head-initial relative constructions. In this section, we consider such problems in English and LA.

First of all, the adjunction analysis for Head-initial relative constructions fails where the complementation structure succeeds --- namely, it is unable to capture the close dependency between the external determiner and the relative clause. As shown in section 4.4 of chapter 4, a very close relation exists between D and the relative clause in English and LA. The close relation is expressed in terms of selection in a complementation structure: D selects the relative clause. This contrasts with the Head-final relatives in Chinese (as well as in Japanese), which do not show such a dependency between D and the relative clause. Moreover, a universal adjunction

analysis fails to account for why English and LA complex nominals must be projected as a DP, in contrast to the Chinese counterparts which can be an NP.

In addition, contrary to the claim of Fukui and Takano's adjunction analysis that a Head-initial relative clause necessarily involves N to D movement for Head-initial relatives, English and LA behave more like a language that does not move N to D overtly. This observation is based on the empirical evidence adduced for those languages that do allow N to D raising overtly. It has been widely shown that an analysis of overt N-to-D raising can be supported by the order of N relative to determiners or adjectives. The relevant observations and proposals have been made, for example, for Semitic, (see, Borer 2000, Ritter 1986, 1989, Ouhalla 1988, Fassi Fehri 1989, Siloni 1989, 1990, among others), Scandinavian (see, for instance, Delsing 1988, Taraldsen 1990, Homberg 1992) and Romance languages (see, for instance, Longobardi 1994). As quoted in Longobardi (1994, 611), Taraldsen (1990) analyzes the following Norwegian paradigm in terms of N-raising: the N can occur before the determiner.

- (21) a. hans bØker om syntaks
his books about syntax
- b. bØkene hans om syntaks
book-s-the his about syntax

Indeed, a common alternation in Scandinavian and Romanian (cf. Grosu 1988, Dobrovie-Sorin 1987) languages is for an indefinite article to precede a noun and a definite article to be suffixed to a noun: 'a book' vs. 'book-the' (Longobardi, 1994, 611). That is, N can be raised to D in definite expressions; whereas the raising does not take place in indefinite expressions (at least not overtly).

In Italian, common nouns do not normally raise to D overtly, whereas pronouns and proper names may be base-generated in D or generated in N and raised to D (Longobardi 1994: 637). The raising of proper names is illustrated by the following sentences: when the definite article does not occur, the proper name must be raised to fill the D position.

- (22) a. E'venuto il vecchio Camerese.
came the older Camerese
- b. *E'venuto vecchio Camerese.
came older Camerese
- c. E'venuto Camerese vecchio.
came Camerese older

Indeed, based on an extensive range of data from Semitic, Scandinavian, Romanian and Romance languages, Longobardi 1994 proposes the following generalization: (p. 640, his (64))

- (23) *N-Raising Generalization*
In languages and constructions where raising of the head noun to the D position substitutes it for the article, only proper names are allowed to raise; in languages and constructions where raising adjoins (prefixes) the noun to the article, common nouns also may be allowed to raise to D.

This generalization highlights the role of the distribution and ordering of articles and nouns in establishing the empirical basis for N-to-D raising. Importantly, the process of N-to-D raising does not occur across the board in languages with articles: not all Ns are raised to D even in languages with consistently Head-initial relative constructions.

Returning to English with the preceding discussion in mind, we see it differs from Italian in the availability of N-to-D raising. (22) in Italian contrasts with (24) in English:

- (24) a. Old John came in.
b. *John old came in.

Accordingly, Longobardi (1994: 641) concludes:

- (25) N raises to D (by substitution) in the Syntax in Italian but not in English.

In short, according to the distribution of common nouns, proper names, etc. in relation to articles in a wide range of languages, generalizations such as (23) and (25) emerged. These conclusions clearly contradict the claim made by Fukui and Takano that N-to-D raising always occurs overtly in English, even with common nouns and indefinite nominals, so that they can derive the consistent Head-initial relative construction in this language.⁸

The proposal of adjunction with N-to-D raising fails to accommodate not only the English facts but also the relevant facts in other languages, such as some Semitic and Scandinavian languages, which show evidence of overt N-to-D raising only in some cases but relative constructions are consistently Head-initial. Take LA as an illustration. It has definite and indefinite relative constructions. Both are consistently Head-initial. Definite relatives can occur in construct state nominals where N-to-D raising can apply. However, the relatives can also occur in free-state nominals. It is not clear that N-to-D raising must always apply in such nominals.

7.1.3. Summary

The discussions so far showed that a universal adjunction structure [Relative Clause + Head], coupled with a parametric difference in N-to-D raising, cannot accommodate all relative constructions. There are many languages which have Head-initial relative constructions exclusively and yet N-to-D raising applies only in some nominal expressions. Indeed, English, which has been used by Fukui and Takano to argue for the correlation between overt N-to-D movement and Head-initial relative constructions, crucially does not have overt N-to-D raising.

Is it possible, then, to de-couple the notion of a universal adjunction structure and the application of N-to-D raising in order to account for the varieties of relative constructions? An alternative, for instance, would be to revise the parametric difference, while retaining a universal adjunction structure. The parameter would not lie in the presence or absence of N-to-D raising but, for example, in the direction of adjunction: left-adjunction for Head-final languages and right-adjunction for Head-initial languages. Whereas this would have significant implications as to how universal phrase structures should be formulated (recall the prohibition against right-adjunction proposed by Kayne 1994), the more important drawback of such an approach is that it loses some important empirical generalizations, such as the close dependency between D in the

⁸ Fukui and Takano (1999) assume that the landing site of N, after N-to-D raising, is the Spec of D. The article *the* needs to occur in a higher Spec position to derive the order of *the* preceding N. Pre-nominal adjectives probably also occur in a Spec position between the raised N and the determiner. It is not clear what the full nominal structure is for English in this analysis.

relative in English/LA but not in Chinese/Japanese and the fact that a relative construction is necessarily a DP in the former languages but not in the latter. An adjunction structure alone for all languages, no matter how the parameters are formulated, seems difficult to maintain.

In summary, then, let us recapitulate the problems facing a typology of relative clauses and further discuss some issues of adopting universal structure(s), either an adjunction structure or a complementation structure or both, for all languages.

The syntax of Chinese relative constructions provides evidence against adopting a complementation structure as a necessary or sufficient universal structure for relative constructions. In Chinese, an adjunction structure should be adopted for relative constructions because there is no evidence for the complementation structure and there is direct support in favor of an adjunction structure based on the facts concerning coordination and reconstruction discussed in chapter 5.

On the other hand, adopting a complementation structure for English and LA is well-justified. Assuming an adjunction structure for English or LA misses important empirical generalizations in these languages such as the close dependency between D and the relative and the fact that a relative construction is necessarily a DP.

Thus, we must conclude that both an adjunction structure and a complementation structure are necessary to account for relative constructions cross-linguistically. (26)-(27) summarize the main structural properties of relative constructions in these two types of languages

- (26) English and LA (Head-initial relative constructions) --- complementation structure
- i. The external determiner and the relative clause have a close dependency, which is expressed as a relation of selection in a complementation structure.
 - ii. The complex nominal must be projected as a DP.
 - iii. N-to-D raising does not always apply, if it does at all in some cases. Nonetheless, a relative construction is consistently Head-initial.
 - iv. A complementation structure [D + Relative clause] should be adopted.
- (27) Chinese (Head-final relative constructions) --- adjunction structure
- i. No evidence exists for a close relation between a relative clause and a determiner (such as a demonstrative).
 - ii. The complex nominal can be projected as an NP.
 - iii. N-to-D raising does not always apply, although it does in cases of definite bare nouns. Nonetheless, a relative construction is consistently Head-final.
 - iv. An adjunction structure [Relative clause + Head] should be adopted.

These generalizations show that both complementation and adjunction structures should exist in Universal Grammar. If both structures are available, does a particular language use both structures or just choose one structure? If the latter, what determines the choice?

With respect to Chinese, it is clear that a complementation structure is not available. Recall that a relative clause and the external Head N (i.e., the relative construction without the external determiner) cannot be a CP, as illustrated by the coordination facts in section 5.2 of chapter 5. The complementation structure available for English or LA [D CP], therefore, simply cannot be adopted for Chinese. The only option left is for the external Head to be outside the relative clause altogether. In other words, if a complementation structure is available for Chinese relative constructions at all, the relative clause must be complement of N: [_{NP} CP N] (ordering irrelevant).

A relative clause in Chinese, however, is not a complement of the nominal Head. That is, it is not represented as $[_{NP} CP N]$. Rather, it is adjoined to a nominal Head as in $[_{NP} CP NP]$, as evinced by previously discussed facts concerning coordination and reconstruction.

On the other hand, the adjunction structure available in Chinese is not available in English or LA. Otherwise, we would expect a relative clause in English or LA to be able to adjoin to an NP and a relative construction could simply be an NP, which is not the case. The presence of a relative clause requires the projection of a DP in these languages.

We, thus, may draw the conclusion that a specific language does not use all the cross-linguistically available structures (adjunction structures and complementation structures) for relative constructions. It only chooses a subset of the available structures. What determines the choice? In the discussion of English and LA, we saw the prominent role played by the determiner in the formation of relative constructions. By contrast, the role of the determiner is non-existent in the formation of relative constructions in Chinese. It has also been proposed in the literature that a relative clause is generated as part of a determiner in English (Smith 1967): a D node is expanded to an article (determiner) and a relative clause. For instance, the following phrase structure rule and transformation (in the framework of the time) was proposed for English relatives:

(28) $[_{NP} [_{Det} the + S] N] \rightarrow [_{NP} [_{Det} the] N S]$

The insight here is that the structure of a relative clause and the existence and choice of an article (determiner) are closely related. A determiner selects a relative clause. It is, therefore, quite plausible to speculate that the obligatory projection of a D within a nominal phrase provides a clue that a complementation structure should be chosen: a relative clause is a complement which bears a relation with D. This is the case with English and LA.⁹

The absence of an obligatory D projection (especially for indefinite nominal expressions) in a language like Chinese (and Japanese) provides a clue to an adjunction structure. The difference in word order can be derived from the difference in complementation vs. adjunction structures. If only left-adjunction is available (Kayne 1994), adjunction structures, without further complications, derive a head-final structure; whereas a complementation structure derives a head-initial construction. The prediction of this speculation is that one should not find the following type of language: one that obligatorily projects a D for all its nominal expressions and requires a dependency relation between the relative clause and D; moreover, such a language exhibits a head-final pattern in relative constructions along with a general head-final pattern in other areas.¹⁰ Hindi might provide some support for this speculation. In Hindi, according to Mahajan (2000 and personal communication), a definite relative generally requires a demonstrative (which can

⁹ This raises the question of why Swedish has an N-CP complementation structure as proposed by Platzack (2000). A relative construction is also required to project to a DP in Swedish, according to Platzack. What led Platzack to an N-complementation proposal was the fact that Swedish relative constructions do not exhibit any reconstruction effects. We may reinterpret such facts as indicating that Swedish relative constructions only use the strategy of operator movement. Head-raising does not apply. It is possible that Head-raising, which raises a DP with an empty D to the Head position, is not available because of the failure of the empty D to be licensed (see the discussion on English and LA indefinite relative constructions). It is plausible that the need to check the features of the complementizer *som* by the external D plays an important role, a fact that Platzack discussed in his work. However, because of our lack of understanding of the finer details of Swedish, we will not venture to speculate on a solution here.

¹⁰ Of course, it does not matter whether N-to-D raising applies, as discussed earlier in the text.

be considered an obligatory projection of D¹¹) and an indefinite relative has a number expression (which is also projected as a DP, cf. LA definite and indefinite relatives). In other words, the occurrence of a relative clause requires a DP to be projected. Significantly, even though this language requires objects to occur before the verb (it is head-final within VPs), the relative construction is essentially Head-initial.¹² Further research, however, is needed in order to establish the reliability of the prediction in the text.

7.2. Derivation

The previous section entertains the possibility of universal structures for relative constructions, a possibility which is then rejected. Languages may adopt different structures for their relative constructions. Head-initial languages and Head-final languages differ from each other and among themselves. Head-initial English and LA relatives are quite different from Head-final Chinese and Japanese relatives. Chinese also differs from Japanese significantly. The relevant facts and proposed derivations discussed so far can be summarized below:

- (29) English (Head-initial)
 - i. full range of reconstruction effects exhibited in non-*wh*-relatives (DP reconstruction)
 - ii. no reconstruction exhibited in *wh*-relatives or adjunct relatives
- (30) LA (Head-initial)
 - i. full range of reconstruction effects exhibited in definite relatives
 - ii. no reconstruction exhibited in indefinite relatives or adjunct relativization
- (31) Chinese (Head-final)
 - i. reconstruction of the Head (NP-reconstruction) for binding but not scope for argument relativization
 - ii. no reconstruction exhibited in adjunct relativization or relativization with resumption
 - iii. long-distance relativization of adjuncts acceptable
- (32) Japanese (Head-final)
 - i. Reconstruction unavailable

¹¹ The D can be a Demonstrative node in Hindi. In such languages, there does not seem to be much empirical significance in distinguishing a Determiner node from a Demonstrative node.

¹² A relative clause in Hindi can be either postposed or preposed to clause-peripheral positions, creating more variations (even though it is controversial whether the postposed and preposed ones are true relatives). Moreover, quite limitedly, a relative clause may occur pre-nominally in Hindi. However, such a relative clause must be in the participial form, which is exactly what a complementation structure predicts, according to Kayne (1994, chapter 8). Indeed, it seems to be the case that, when a language essentially has a Head-initial relative construction, the Head-final variation is often restricted to participials. On the other hand, a language like Chinese, which allows only Head-final relative constructions, does not show such limitations on pre-nominal relatives.

Amharic has a relative clause preceding a determiner and is N-final (see Kayne 1994, who also quotes Gragg 1972). Kayne suggests that such relative clauses are not CPs. For lack of detailed data regarding reconstruction, long-distance relativization, adjunct relativization etc., we will not try to provide an analysis of relative constructions in Amharic. Our conclusion, however, still holds: left-adjoined Head-final relative clauses are full-fledged CPs. Kayne's analysis of Head-final relatives by a complementation structure and subsequent raising of an IP applies to those cases where the pre-nominal relative is not a full-fledged CP.

ii. long-distance relativization of adjuncts unacceptable

We showed in chapter 4 that relative constructions not exhibiting reconstruction effects in English and LA can be derived by operator movement. The same is true for Chinese relatives without reconstruction, as discussed in chapters 5-6. In Japanese, the lack of long-distance relativization of adjuncts shows a lack of operator movement. Base-generation is available in all languages especially in contexts which disallow movement. The following table summarizes these languages with the various strategies used ("DP movement" used in the table as an abbreviation of movement of a DP with an empty D):¹³

(33)

	English	LA	Chinese	Japanese
NP movement	no	no	yes	no
DP movement	yes	yes	no	no
Op movement	yes	yes	yes	no
base-generation	yes	yes	yes	yes

Why do these languages behave the way they do and why do they have or lack the various sub-patterns? What are the determining factors that derive the similarities and differences among these relative constructions? We touched upon these issues in the previous chapters. In this section, we will focus on the point made earlier that, in principle, all strategies are available to each language. However, some option(s) may not be realized because of independent morpho-syntactic considerations. We will systematically examine all the options in the languages in question. We will show that the availability of Head-raising, operator movement (and base-generation) is dictated by the morpho-syntactic properties of the phrases to be relativized. Such morpho-syntactic factors are reflected in *wh*-interrogatives. That is, the properties of *wh*-interrogatives are indicative of the strategies available for relativization. In what follows, we will first bring into focus the behavior of *wh*-expressions in these languages and then proceed to discuss the availability of the various options based on the parallelism between the formation of *wh*-interrogatives and relative constructions.

7.2.1. *Wh*-interrogatives

We mentioned in the previous chapters that *wh*-phrases behave differently in the languages in question. Importantly, there are three different types of *wh*-expressions with respect to their morphological composition, which are manifested in English/LA, Japanese and Chinese respectively. As shown in Chapter 3, section 3.4, the traditionally understood *wh*-words should be de-composed into three parts: Question, Quantification and Restriction. What separates English and LA on the one hand and Chinese on the other hand is that a *wh*-word simply represents the restriction part in Chinese but it contains the quantification and restriction in English and LA. Accordingly, even though Chinese and LA both allow *wh*-phrases to remain in-situ in *wh*-interrogatives (English for multiple *wh*-questions only), such in-situ *wh*-phrases have different compositions: the former does not have a quantification part but the latter does. These two types of languages also differ in the availability of overt *wh*-movement: *wh*-phrases can undergo overt *wh*-movement to form questions in English/LA but not in Chinese. This possibility in English/LA may be understood as the generation of Question, Quantification and Restriction all as one unit, undergoing movement to form questions.

¹³ An operator can also be a DP, such as *who* in English. The terms DP movement and Operator movement are convenient terms to distinguish between movement of a DP with an empty D and movement of a DP with a quantificational D, such as *who* in English.

Regarding Japanese, according to the lines of analysis of its *wh*-interrogatives proposed by Watanabe (1992), Hagstrom (1998), and Miyagawa (2001), it has been argued that a question particle is generated together with the *wh*-expression but it undergoes overt movement independently to check the appropriate feature in C. More precisely, a *wh*-question in Japanese typically contains a *wh*-phrase in situ and a question/quantification¹⁴ (Q) particle at the end.

- (34) Taroo-ga nani-o katta no?
 Taroo-Nom what-Acc bought Q
 'Taroo bought what?=What did Taroo buy?'

The Q-particle may take "the form of *no*, or *ka*, in formal style and in all indirect questions." (Miyagawa 2001:311). In a *wh*-question, the Q-particle, which is an existential quantification according to Miyagawa, originates within the same constituent as the *wh*-phrase and is raised to C, "being attracted by the Q-feature on C...Q-particle movement in Japanese ostensibly unifies Japanese *wh*-questions with English *wh*-questions: both exhibit overt movement, to C (Japanese) or to [Spec CP] (English)" (Miyagawa 2001:314). That is, English and Japanese differ in the fact that the Q can be moved away from the restriction but English requires the two to move as a unit.

Miyagawa further notes that all *wh*-phrases in Japanese are separated from the Q in questions. The in-situ *wh*-phrases in *wh*-interrogatives do not have a *wh*-quantificational interpretation without the clause-final Q-particle. This is supported by the fact that only the presence of the Q-particle allows the following readings which are typical of *wh*-quantifiers:

An exhaustive interpretation is available only if the Q-particle occurs:

- (35) Hanako-ga pikunikku-ni nani-o mottekita ???(no)? (also see Yoshida and Yoshida 1997)
 Hanako-Nom picnic-to what-Acc brought Q
 'Hanako brought what to the picnic?'

A pair-list interpretation is available only if the Q-particle occurs:

- (36) Dare-ga nani-o katta *(no)?
 who-Nom what-Acc bought (Q)
 'Who bought what?'

A functional interpretation is available only if the Q-particle occurs:

- (37) Dare-o_i minna-ga t_i aisiteiru *(no)?
 who-Acc everyone-Nom t love (Q)
 'Who does everyone love?' Answer: 'His mother'.

Why is not a well-formed question without the Q-particle:

- (38) Hanako-ga naze iku?*(no)? (Yoshida and Yoshida 1997, Miyagawa 2001)
 Hanako-Nom why go Q
 'Why is Hanako going?'

In brief, depending on whether a language allows overt *wh*-movement of the whole *wh*-phrase to form *wh*-interrogatives and whether a language allows the movement of only the Q-part of the *wh*-phrase, the following three types of languages emerge:

¹⁴ According to Hagstrom (1998) and Miyagawa (2001), the Q-particle expresses existential quantification. This is supported by the fact that the Q-particle is required in order for the relevant *wh*-phrases to be quantificational. See the discussion regarding (35)-(38).

- (39) i. Question, Quantification and Restriction are generated as a unit and move as a unit to form questions --- English and LA *wh*-questions formed by overt *wh*-movement
 ii. Quantification and Restriction are generated as a unit --- English and LA in-situ *wh*-phrases in *wh*-questions
 iii. Quantification and Restriction are generated within a nominal expression but the Quantification part can be moved away from the Restriction. ---Japanese *wh*-questions
 iv. Restriction is generated as an independent unit. ---Chinese *wh*-questions

With this in mind, we turn to the strategies for relativization, which make use of the same morpho-syntactic information as is relevant to the formation of *wh*-questions.

7.2.2. Relativization

In this section, we will examine each option that has been proposed for relativization in English, LA, Chinese and Japanese and determine when an option is realized, based on the parallelism between *wh*-interrogation and relativization. Before we proceed, however, we would like to point out the fact that, inherently, there are differences between the two constructions:

- (40) Relative clauses need to be interpreted in the context of a complex nominal
 whereas
wh-interrogatives are interpreted by themselves.

The interpretation of a relative clause, i.e., the relation between a relative clause and the Head, is established when

- (i) the Head is directly moved from within the relative clause (i.e., the Head is an argument within the relative clause). Two sub-cases exist:
 a. a DP with an empty internal D is moved to the peripheral position of a relative clause which is complement to an external D that licenses the internal empty D. The DP in the CP provides an NP to be interpreted with the external D, or
 b. an NP Head is raised from within a relative clause, forming a complex NP with the relative clause, or
 (ii) an operator occurs to establish the relation between the relative clause and the Head. An operator in the peripheral position of a relative clause bears a predication/agreement relation with the nominal Head (the two need to agree in all features, including substantive features).

- (41) In cases where an external D can license an internal D, a DP with an empty internal D can occur in the peripheral position of a relative clause
 whereas
wh-interrogatives are clauses which do not have an external D to license an empty internal D.

Such inherent differences play a significant role in the formation of *wh*-questions and relative constructions. They entail that a relative construction can be formed by movement of an NP or a DP with an empty D; whereas a *wh*-interrogative cannot be so formed. Instead, a *wh*-interrogative must involve a *wh*-phrase. In the following subsections, we examine the option of NP movement, DP movement and operator movement respectively.

7.2.2.1. NP movement

It is clear from the generalizations in (39) that only Chinese allows the Restriction alone to be generated in an argument position. Indeed, we suggested in chapters 5-6 that NP movement is available only if an NP is allowed to be generated in an argument position. Evidence is based on

the formation of *wh*-interrogatives as well as the study of the plural/collective morpheme *-men*. In contrast, English, LA and Japanese do not allow the generation of Restriction separate from Quantification. Nominal expressions in these languages do not allow NPs in argument positions. The difference in the availability of an NP in an argument position accounts for the differences in the availability of NP movement.¹⁵

In brief, the composition of *wh*-phrases in different languages is indicative of the applicability of NP-raising to form a complex nominal --- relativization.¹⁶

7.2.2.2. Operator movement

Recall that English and LA *wh*-interrogatives allow a *wh*-operator to undergo movement to the Spec of CP to form *wh*-questions. In the same way, these two languages also allow a process of (possibly null) operator movement, parallel to *wh*-movement in questions, to derive their relative constructions, even though the lexical items may not be identical in all cases (for instance, LA does not use *wh*-words as relative pronouns).¹⁷ This option is, in principle, available in all cases, such as LA definite and indefinite relatives alike. However, because of the existence of other

¹⁵ Note that even in English (as well as LA and Japanese), it is possible for an indefinite nominal interpreted with a quantifier to be generated in a position separate from the quantifier (Lewis 1975, Kamp 1981, Heim 1982). For instance, the indefinites in the following sentences (from Diesing, 1990: 5) can vary in quantificational force depending on the context in which they appear.

- (i) a. A contrabassoonist usually plays too loudly.
 b. Most contrabassoonist play too loudly
- (ii) a. Cellists seldom pay out of tune.
 b. Few Cellist play out of tune.

To be noted, however, is that the indefinite noun phrases in such cases are still structurally headed by a determiner (an indefinite determiner which is *a* or null). In other words, even though, semantically, such indefinite noun phrases are interpreted as variables, their D position is occupied syntactically (the indefinite article might not have originated in D position. However, the indefinite article is in complementary distribution with other elements in D such as *the* or *this*, *that* etc). It is possible that the indefinite determiner is also generated in D directly, or is generated in a Q or Number projection and gets raised to D. Alternatively, it may be generated in, and stay in, Q or Number position but the D is occupied by a variable, to be bound by a quantifier from outside (see Borer). No matter which option is taken, D is projected in such cases. This contrasts with indefinite noun phrases in Chinese, which can be projected as NPs. The clue to such a structural distinction is the behavior of *wh*-phrases and, in the case of Chinese, also the distribution of the plural marker.

Note that such an analysis of Chinese NPs still keeps the spirit that a restriction needs to be related to a quantifier (operator). That is, even though an NP can be generated in an argument position, it is not sufficient by itself for interpretation. In this sense, a type-shifting rule in the semantic literature to change the type of NPs in Chinese from a predicate to an argument is not necessary (Chierchia 1998).

¹⁶ Bhatt (1999) proposes an NP-raising process to derive English relative constructions, instead of a DP-raising process. Such a proposal fails to account for why English and Chinese differ in the way they do and why English do not generate NPs in argument positions in constructions other than relatives.

¹⁷ As noted earlier, many languages use different lexical items to form *wh*-questions versus relative constructions. An example given was Hindi. What matters to us is not the exact form of such words. Rather, it is the morphological structure of such words that matters: whether a word expresses only Restriction or Quantification plus Restriction.

options for the same sub-pattern (for instance, existence of DP-raising to derive definite relatives), the effect of such a derivation may not be manifested (see section 4.2. of chapter 4).

There is another possibility to form *wh*-questions in LA: a *wh*-phrase may stay in-situ, licensed by a Q-complementizer. Is such an option as used in forming *wh*-questions also available in relativization? The answer, in principle, should be positive, given our claim that *wh*-interrogation and relativization are essentially derived in the same manner. However, the result of the complementizer option is not well-formed for relative constructions; otherwise, the phrase to be relativized could stay in-situ. The unavailability of this option is due to the licensing condition on relativization, particularly (40)ii), which states that the operator of the relative clause must be licensed by and interpreted with the Head of the relative construction. The licensing is successful when the Head and the operator agree in all features, including substantive features. This is why in English, for instance, when the Head is a place term, the operator must be *where*; when the Head is a time expression, the operator must be *when*; person expressions require *who*, *the reason* takes *why* but not any other *wh*-word etc. In other words, the operator must contain the appropriate substantive features, expressed in the Restriction. If a *wh*-phrase stays in-situ,¹⁸ the Restriction is not moved to the initial position in the relative clause (corresponding to the case of a Question complementizer related to a *wh*-in-situ in interrogatives) and an agreement relation cannot hold between the Head and the complementizer in the C of the relative CP. The relative clause, then, could not be properly interpreted. Relativization, thus, does not have the counterpart of Interrogation by generating a complementizer in C related to a *wh*-phrase in-situ (Restriction in-situ).

In Japanese, based on the behavior of *wh*-interrogatives which only moves the Q-particle without the Restriction, we expect relativization to also only move the Q part, leaving the Restriction in situ. However, relative constructions in Japanese cannot be derived by operator movement; otherwise, long-distance relativization (of adjuncts) would have been possible. Why, then, is such movement not available? This follows straightforwardly from what was just discussed in the previous paragraph: the so-called operator movement in Japanese is a Q movement alone, which does not carry a Restriction. Q-movement without a Restriction does not derive a well-formed relative construction due to the requirement that agreement must hold between the Head and Operator in all features, including substantive features.

The same reasoning, however, would lead us to expect that operator movement in Chinese, when it applies, cannot derive a well-formed relative construction, either. Recall our discussion of Chinese *wh*-interrogatives: *wh*-phrases are a Restriction separate from the Question/Quantification. If the Question/Quantification part moves, it moves without the Restriction. Why is it, then, that Chinese allows long-distance adjunct relativization, which can only be derived by operator movement? This, again, can be traced to the behavior of *wh*-words in this language. Even though we have claimed that *wh*-phrases in Chinese generally are just a Restriction, there are exceptions to this generalization, as shown by the existence of operators containing Restriction such as *weishenme* 'why' and *zenme* 'how' (cf. section 6.5 of chapter 6):

- (42) a. ?zhe jiu shi [ta juede [ni yinggai (**ruhe/zenme**;) xiu che] de] fangfa.
 this exactly is he feel you should how fix car De method
 'This is the way_i (how_i) he feels you should fix the car t_i.'

¹⁸ Recall that such in-situ *wh*-phrases are not raised covertly, as shown in chapter 2.

- b. zhe jiu shi [women yiwei [ta (**weishenme**) mei lai] de] yuanyin_i.
 this exactly is we thought he why not come De reason
 'This is the reason_i why_i we thought he did not come t_i.'

Evidence based on the distribution of such *wh*-phrases shows that Chinese does generate operators containing a Restriction in the cases of 'why' and 'how', which are exceptions to the general pattern that *wh*-phrases are not operators (quantificational) in this language. This observation accounts for the fact that long-distance relativization of adjuncts is acceptable in Chinese (the *wh*-operators undergo covert movement). Note that this option is not available for Japanese, as *wh*-phrases in this language are never operators (quantificational, see the discussion of Miyagawa (2001) in section 7.2.1, in particular, (38)). In other words, with respect to the option of operator movement to derive relative constructions, Chinese and Japanese only differ in the fact that Chinese, but not Japanese, has lexical items such as *weishenme* 'why', *zenme* 'how', which are themselves operators with a Restriction.

7.2.2.3. DP movement

DP movement (see note 13) is available because a DP with an empty D can be generated and licensed in relative constructions (in contrast to *wh*-interrogation which does not have an external D to license an empty D (41)). Recall that the promotion analysis proposed by Kayne/Bianchi assumes the following complementation structure:

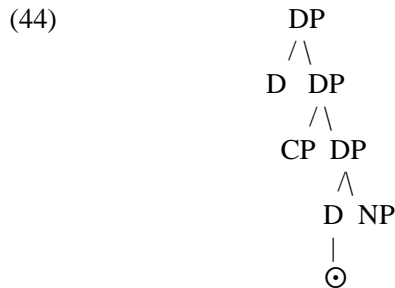
- (43) $[_{DP} D [_{CP} DP_i [C [_{IP} \dots e_i \dots]]]$
 The DP in the Spec of CP (the Head) contains an empty determiner (the internal determiner)

It is important that there is an internal determiner and that the internal determiner is empty. As discussed in chapter 4, such an empty internal determiner will be incorporated with the external determiner because it needs to be licensed. This makes the two determiners as two in one and the NP associated with the internal determiner can also be associated with the external determiner, satisfying the interpretation requirement of the external D. We saw that some English and LA definite relative constructions are derived by such a strategy. However, this strategy is not always available. It fails to apply when the empty internal D is not properly licensed. An indefinite D of an indefinite relative construction in LA, for instance, does not license another D; therefore, movement of a DP with an empty D is not available to derive an indefinite relative.

On the other hand, the lack of a full range of reconstruction effects in Chinese and the absence of any reconstruction facts in Japanese indicate that the option of DP movement is simply unavailable to derive relative constructions in these languages. Why is this strategy unavailable in these languages? One option is to claim that there is simply no DP with an empty D generated in these languages; therefore, movement of a DP with an empty D is not available. This might be understood as follows. As discussed in section 6.1.2 of chapter 6, D, when it occurs in Chinese, always contains specified features, rather than being empty. We showed, based on the study of the plural marker *men*, that D in Chinese is always [+definite], which is either filled by a definite expression or attracts a bare N to D, deriving a definite nominal expression. A D in Japanese might be always filled as well. As discussed in Hagstrom (1998) and Miyagawa (2001), a quantificational element can occupy a D (see section 7.2.1).

Another option is to consider the licensing condition for an empty D. Recall that an empty D must be licensed. It is licensed when it is adjacent to an external D in order for the two D's to be incorporated. In the complementation structure proposed for English and LA where the raised DP is in the peripheral position of the complement CP, the adjacency condition is met and the empty internal D is licensed: $[D [_{CP} [_{DP} D NP] [_{IP} \dots]]$. In Chinese and Japanese, however,

relative constructions have a left-adjunction structure. Raising of a DP with an empty D, to be licensed by an external D, would have a structure like the one below:



Such a raised DP with an empty D would not be adjacent to an external D because of an intervening relative clause. The empty internal D would not be properly licensed; therefore, such a DP movement is not available.

Whichever option is adopted, the essence is that there is no acceptable empty D in order for DP raising to succeed in relative constructions.

7.2.2.4. Summary

The different behavior of various sub-patterns of relative constructions with respect to reconstruction effects, long-distance relations, island effects etc. argues for the existence of different strategies to derive relative constructions. Specifically, the following strategies are, in principle, always available: Head-raising (NP or DP raising), and operator movement, in addition to base-generation. In reality, not all options are realized in individual languages. We argue that the choice of options is not arbitrary. It follows from general morph-syntactic properties of the relevant phrases in the individual languages, which are also reflected in the morpho-syntactic structure of *wh*-phrases forming *wh*-interrogatives. That is, the derivation of relative constructions parallels the derivation of *wh*-interrogatives, with whatever differences there are between them traced to their inherent differences (40)-(41). Because of the specific morpho-syntactic properties each language possesses, not all Head-final relative constructions are alike and not all Head-initial relative constructions are alike.

Below, we summarize the similarities and differences between *wh*-interrogative and relative constructions in English and LA (Head-initial), Chinese and Japanese (Head-final), at the same time tabulating how each relativization strategy is realized/not realized, as listed in (33).¹⁹

- (45) English:
- a. characteristics
 - i. *Wh*-phrases contain Quantification and Restriction
 - ii. A DP projection is required in an argument position, even when D is an empty category; an empty D can be licensed by an external D in certain cases
 - b. *Wh*-Question formation
 - i. Operator movement: available
Wh-interrogative pronouns undergo movement
 - ii. DP/NP movement: non-applicable
No movement of a DP with an empty D or movement of an NP because a *wh*-

¹⁹ Since base-generation is available in all languages, it will not be included in the summary below.

interrogative is not headed by D (41) (it is a clausal, not a nominal expression)

- c. Relativization
 - i. Operator movement: available
Wh-relative pronouns undergo movement
 - ii. DP movement: available
Movement of a DP with an empty D in the cases where the empty D is successfully licensed (such as when the external D is the type I determiners discussed by Carlson 1977)
 - iii. NP movement: non-applicable
NPs are not generated in argument positions
- (46) LA:
- a. characteristics
 - i. *Wh*-phrases contain Quantification and Restriction
 - ii. A Question complementizer can be generated in Comp and related to a *wh*-phrase in-situ
 - iii. A DP projection is required in an argument position, even when a D is an empty category; an empty D can be licensed by an external D in certain cases
 - b. *Wh*-Question formation
 - i. Operator movement: available
Wh-interrogative pronouns undergo movement
 - ii. In-situ strategy: available
A Question complementizer in Comp licenses an in-situ *wh*-phrase
 - iii. DP/NP movement: non-applicable
No movement of a DP with an empty D or an NP because a *wh*-interrogative is not headed by D (41) and empty D would not be licensed.
 - c. Relativization
 - i. Operator movement: available
Relative pronouns undergo movement
 - ii. In-situ strategy: non-applicable
(40)ii) is not satisfied, when the restriction is in-situ
 - iii. DP movement: available
Movement of a DP with an empty D in cases where an empty D is successfully licensed (such as in a definite relative)
 - iv. NP movement: non-applicable
NPs are not generated in argument positions
- (47) Chinese:
- a. characteristics
 - i. *Wh*-phrases are only a Restriction, except the adjunct *wh* ('why', 'how') which may contain Quantification (although they need not, as they can still occur as variables (Restriction) in donkey sentences, see section 6.5 of chapter 6, regarding (59)).
 - ii. A Restriction-only *wh*-phrase is licensed by a quantifier in a projection separate from the nominal containing the *wh*-phrase.
 - iii. An NP (Restriction only) is allowed in an argument position
 - iv. A DP with an empty D is either not generated at all in the language or is generated but is not licensed.

- b. *Wh*-Question formation
 - i. Operator movement
 - Adjuncts may also undergo movement covertly to form questions.²⁰
 - ii. In-situ strategy: available
 - An in-situ *wh*-phrase (Restriction-only) is licensed by a question marker
 - iii. DP/NP movement: non-applicable

 - c. Relativization
 - i. Operator movement for adjunct relativization
 - ii. In-situ strategy: non-applicable
 - (40)ii) is not satisfied when the restriction is in-situ
 - iii. NP movement: available
 - NPs are allowed in an argument position
 - iv. DP movement: not available
- (48) Japanese:
- a. characteristics
 - i. A *wh*-phrase is always related to a Quantification (Q-particle) within the DP projection²¹ and the Q-particle is moved without the *wh*-phrase. A *wh*-phrase itself is never quantificational.
 - ii. An NP (Restriction only) is not allowed in an argument position
 - iv. A DP with an empty D is either not generated at all in the language or is generated but is not licensed.

 - b. *Wh*-Question formation
 - i. Q-movement without Restriction
 - The Q-particle undergoes movement
 - ii. In-situ strategy: available
 - An in-situ *wh*-phrase is licensed by a Q-particle.
 - iii. DP/NP movement: non-applicable

 - c. Relativization
 - i. No Q-movement with the Restriction
 - (40)ii) is not satisfied when the restriction is in-situ
 - ii. In-situ strategy non-applicable
 - (40)ii) is not satisfied, when the restriction is in-situ
 - iii. NP movement unavailable
 - NPs are not allowed in an argument position
 - iv. DP movement not available

²⁰ It is not the case that an adjunct is always an operator and therefore always undergoes movement. Recall that an adjunct can behave like a variable in some contexts such as *donkey*-type sentences (containing a conditional clause). See Aoun and Li (1993a) for the variable status of adjuncts.

²¹ In the case of adjuncts, which are not DPs, it is the maximal projection of an adverbial category that contains Quantification and *wh*.