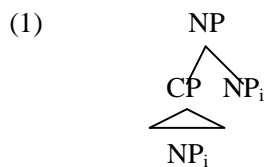


Chapter 6: Adjunction Structures and Derivations

The study of Chinese relative constructions revealed numerous empirical generalizations not previously noted in the literature. Such generalizations led us to adopt an NP-raising relativization process operating on an adjunction structure. Though empirically supported, it raises many theoretical questions.

First of all, if Kayne's Antisymmetry approach to word order and phrase structure is correct, we seemingly have a structure that requires an illicit operation. We have an adjunction structure with the Head raised from the relative clause, repeated as (1) here:



According to Kayne, the CP must antisymmetrically c-command the NP in (1) in order for it to appear on the left side. In other words, the NP cannot c-command the CP. If the NP does not c-command the CP, it cannot c-command the trace within the CP derived by Head-raising. This raises the question of whether such a movement is licit.

Another question concerns what is generated and raised in the Head-raising process. The Head-raising process we proposed for Chinese relative constructions is NP raising. Head-raising moves an element from within the relative clause to the Head position. In the case of argument relativization, the nominal expression in an argument position is raised to the Head position. NP Head-raising, therefore, means that an NP can be generated in an argument position in a relative clause in this language, a point which was argued against by Borsley (1997), as discussed in chapter 4 concerning DP raising in English. Why is it that Chinese allows NP raising but not English?

Still another question that arises concerns the strategies available to derive relative constructions in Chinese. In an earlier part of the discussion we indicated that relativization in Chinese involves a process of raising an NP Head. In chapter 4, we argued that English and LA relative constructions are derived not only by raising the Head (the promotion analysis) but also base-generating the Head in its surface position where it enters into an agreement/predication relation with an operator in a relative clause (operator movement/matching analysis). Is an operator movement/matching analysis also available for Chinese relative constructions?

We answer these questions in the following sections. We will show that the proposed movement of an NP out of a seemingly adjoined CP is licit if the structural condition on movement is cast in terms of the extension condition applied in the process of derivation, rather than a c-command relation applied to representations. Moreover, we will establish that what makes NP-raising possible in Chinese relativization is the internal structure of nominal expressions in Chinese, which is manifested in the composition of *wh*-words and the distribution of the plural/collective morpheme *-men* in this language. Finally, we will demonstrate that an operator movement process is available to derive Chinese relative constructions. Support comes from the facts regarding reconstruction, adjunct relativization, island effects, the "resumptive" use of some *wh*-expressions etc. Through these discussions, additional interesting empirical generalizations will be revealed. Many of these generalizations have rarely, if ever, been discussed in the literature

and would in any case be a mystery according to the previous analyses available in the literature. These facts lend further support to our analysis.

6.1. Derivation

Let us consider how movement can apply to a structure like (1). Such a derivation is not unexpected if we hold the view that the structure of trees is built up step by step and conditions on movement are checked derivationally, in line with the working of the Minimal Link Condition discussed in Chomsky 1995 (in particular, cf. p. 264; also see the relevant discussions in chapter 2, section 2.4.1) or Hornstein (2001), among others.

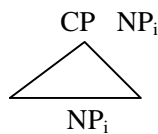
Consider, first, how a relative construction in Chinese can be derived. The reconstruction facts noted in the previous chapter, repeated below, argue for the existence of an NP Head-raising process.

- (2) i. Reconstruction is possible with cases containing anaphors or bound pronouns in the Head.
- ii. Reconstruction is unavailable with cases containing a Head QP interacting with another QP inside the relative clause for scope interpretations.
- ii. The Head can be an idiom chunk related to the other part of the idiom within the relative clause.

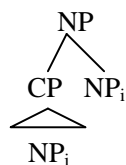
Further note that Chinese must not allow DP movement; otherwise, it is unexpected that reconstruction is not available in the cases concerning scope interaction with a QP Head of a relative construction.

The derivation may, therefore, proceed as follows, based on the earlier claim that a relative clause is adjoined to its Head.

- (3) i. A CP is generated.
- ii. A CP is merged with an NP. The NP can be a copy of an NP inside the CP:



- iii. NP projects



This shows the derivation of NP-raising and captures all the facts in (2). Importantly, however, in order for this derivation to be licit, we must establish that (i) the structural condition on movement (such as the head c-commanding the tail in a movement chain) is not violated, (ii) an NP can occur in an argument position so that it can be generated and undergo movement, and (iii) DP movement does not take place even though a DP can be generated in an argument position. We discuss these issues in the following subsections.

6.1.1. Licit movement

Movement generally is considered to obey a c-command requirement. However, if we adopt a c-command definition incorporating the notion of segments (May 1985, Chomsky 1986), the CP is in fact not c-commanded by the 2-segment NP in (3): the adjunction creates a two-segment category NP. The CP is not dominated by the NP category because it is not excluded by the NP (one segment of the NP dominates the CP). In fact, the CP c-commands the NP. When the CP c-commands the NP, the Head (the lower NP segment) cannot c-command the trace inside the CP.¹ In other words, the moved phrase fails to c-command the trace generated by movement. Without a c-command relation, is the movement licit?

We suggest below that such a movement can be licit if we recast the c-command requirement on movement in terms of a derivational notion of "extension." A derivational notion of extension not only allows the movement in question but also has the benefit of unifying substitution and adjunction processes under the same umbrella of extension, in contrast to Chomsky (1995, pp.190-191), who makes adjunction an exception to the extension requirement.

Chomsky (1995, pp. 190-191), in his discussion of the role of "extension," "strict cycle," and cases of licit and illicit movement, claims that operations (Generalized Transformation (GT) or Move α) require a "substitution" site to be *external* to the targeted phrase marker K (movement and GT are taken to be substitution operations). For adjunction such as in ((4)a-b) below, Chomsky states that "adjunction need not extend its target. For concreteness, let us assume that the extension requirement holds only for substitution in overt syntax, the only case required by the trivial argument for the cycle." (p. 191).

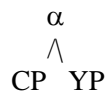
- (4) a. [X Y X]
 b. [XP YP XP]

However, adjunction need not be an exception, if we determine the "extension requirement" derivationally. Suppose the following derivational steps are taken:

- (5) i. establish a structure (a set of phrase markers) which is CP
 ii. target CP, insert \odot external to CP, forming a phrase marker α :



- iii. Substitute YP for \odot , which can be a copy identical to a phrase inside a CP (move) or a new copy.



- iv. Determine the projection of α : does CP or YP project? If CP projects, YP is an adjunct; if YP projects, CP is an adjunct.

¹ The failure of the Head to c-command the relative clause is a welcome result with respect to Kayne's LCA: the one occurring on the right should be c-commanded by, not c-command, the phrase on the left.

The procedure in (5) creates an adjunction structure. This derivational procedure can be identical to the one for true substitution cases (vs. adjunction) if CP is replaced with, for instance, C' (or C):
²

- (6) i. establish a structure (a set of phrase markers) which is C' (or C).
 ii. target the C' (or C), insert \ominus external to C' (or C), forming a phrase marker α :



- iii. Substitute YP for \ominus , which can be a copy identical to a phrase inside a C' (or C) (move) or a new copy.



- iv. Determine the projection of α : does C' (or C) or YP project? If C'/C projects, YP is a specifier/complement; if YP projects, C'/C becomes a maximal projection, which will then be, like (5), an adjunction structure.

Note that for both derivations, each step is licit. The “extension” requirement is satisfied because the position \ominus is created before α is labeled; i.e., before it is determined which element is projected. Because of the derivational approach, the “extension” requirement is blind to the distinction of adjunction and substitution. Both processes can be viewed as substitution, if the position indicated by \ominus in (5)-(6) is created first in order for the YP to replace it. Alternatively, both processes can be viewed simply as merge (including a resulting adjunction structure), if the position indicated by \ominus in (5)-(6) is not created first in order for the YP to replace it.³ Indeed, at the stage where the two phrase markers YP and CP/C' are combined, it is not relevant to distinguish adjunction from substitution. It is at the stage where α is labeled that the distinction between substitution and adjunction matters. Since the extension condition applies at the stage when the two phrase markers are merged, the distinction between substitution and adjunction is irrelevant.

After the phrase markers are derived and all the nodes labeled, linearization can take place. At this point, α has been labeled and, if α is YP, CP is not c-commanded by YP. This allows the Antisymmetry approach to linearization to remain intact but, at the same time, movement is licit. It also enables us to accommodate both substitution and adjunction under the same extension condition, rather than making adjunction an exception (see the proposal concerning sideward movement by Nunes 1995, 2001).

Having established the legitimacy of a movement process, we next show that what is moved indeed can be an NP, which is supported by the morpho-syntactic properties of *wh*-words in this language and other related phenomena concerning the placement of quantifiers and restrictions.

6.1.2. NP movement

As mentioned in chapter 4, questions regarding NP movement in relative constructions were first raised by Borsley (1997) against Kayne's (1994) NP-raising approach to relativization. Recall

² In contrast to Kayne (1994) who equates Specifiers with Adjuncts, Chomsky (1995) distinguishes the two.

³ The distinction between adjunction and substitution lies in the projections and labeling of α : is it a projection of a maximal projection or of a non-maximal projection?

that Kayne suggests that a relative clause without *wh*-words in English is derived by moving an NP directly to the Spec of CP position:

- (7) [DP the [CP picture_i [C' that [IP Bill liked t_i]]]]

Borsley argued that what moves cannot be an NP because it would require an NP-trace to occur in a position where one would expect a DP and because such an NP movement behaves like a DP movement (see section 4.1.3.4 of chapter 4). Accordingly, in Bianchi (1999) and her (2000b) reply to Borsley's objections against NP movement, the proposal was made that what is moved is not an NP, but a DP with an empty D. The empty D needs to be licensed. It is licensed by being incorporated into the external D of the relative construction.

The problem, however, is that Chinese does allow NP movement, whose trace can enter into binding or control relations with a DP in the relative clause. For instance, the following examples contain the NP conjunctive *jian*, which indicates that the conjunct complex nominals are NPs (and the Head is an NP). The binding of an anaphor or PRO by the relativized nominal is acceptable. The acceptability of (9) also shows that the Head containing the reflexive must be reconstructed in order to be bound by the subject 'I'. In other words, the Head must be moved from within the relative clause 'I can trust x'. Yet, such a complex nominal can still be conjoined with another one by *jian*, an indication of NP conjunction.

- (8) wo xiang zhao yi-ge [[e_i neng zhaogu ziji_ijiating] de zhufu_i] jian
 I want find one-Cl can care self family De housewife and
 [e_j neng zhudong shefa PRO_i chuang shiye de] nu qiang ren_i].
 can initiate attempt create business De female strong person
 'I want to find a housewife that can take care of self's family and strong woman that can take initiatives to try to create business (an individual that is a capable housewife and creative strong woman).'
- (9) Wo xiang gei ta zhao yi-ge [[ta_i neng xinlai e de] [ziji_i fumu hui xihuan de nu pengyou]]
 I want for him find one-Cl I can trust De self parent will like De girl friend
 jian [[e neng bangmang PRO zhaogu fumu de] taitai].⁴
 and can help care parents De wife
 'I want to find a girl friend for him that self's (his) parents like that he can trust and wife that can help care for parents (a girl that is likable and trustworthy and has filial piety).'

These examples show that, even though relativization in Chinese is clearly a process of NP movement, the trace generated by NP movement can still bind a reflexive or a PRO. How is this to be reconciled with the claim made by Borsley and Bianchi that relativization must be DP movement? A clue to the solution can be found in the special properties of the nominal to be relativized.

Note that, even though Bianchi's revision concerning what moves solves the problems raised by Borsley, it must stipulate that the D of the nominal to be relativized (referred to as the internal D) is null. This raises the question of why the internal D must be empty.⁵ The determiner of a

⁴ Examples of this type are not easy to construct because, as mentioned in the previous chapter, *jian* expresses two properties of one individual.

⁵ D must be empty when there is no relative *wh*-pronoun. According to Kayne (1994), such relative pronouns are in D.

complex nominal phrase must be external to the Head and the relative clause -- the external determiner hypothesis. Under this view, it is equivalent to saying that the complex nominal phrase minus the external determiner is just like an NP:⁶

- (10) a. D [Head [Relative Clause]]
 b. D [NP]

The relation shown in (10) and the peculiar properties of the internal D make it plausible to entertain the option that the Head is an NP and the relativization process moves an NP, if it is possible to allow an NP to be generated in an argument position and behave like an argument. The postulation of an empty D as the internal D is for the sake of making the representation well-formed because an argument position requires a DP. Further note that even when the Head is a DP with a lexical D, the NP associated with the internal lexical D still needs to be preposed to be interpreted with the external D, according to Kayne and Bianchi. This refers to the cases of [*wh*-NP], which have a lexical *wh* in the D position. When the D is *wh*, the NP associated with this D still needs to be moved to the Spec of D position in order to be associated with the external D. In other words, regardless of whether the internal D is empty or lexical (*wh*), the NP in the Head position needs to be interpreted via the external D. From the perspective of NP licensing, the internal D is not sufficient to license the NP of the nominal phrase to be relativized. This NP still enters a licensing relation with the external D. This amounts to saying that the internal D alone is inadequate to license the nominal to be relativized. The NP needs to wait for licensing until it is raised and enters a licensing relation with the external D. In terms of interpretation, the nominal inside the relative clause cannot be interpreted based on the internal D. The external D plays a crucial role. This leads to the following conclusion: it is possible to claim that the DP-like properties of the raised Head (such as (11) below) are obtained AFTER the relativized nominal is interpreted with the external D.

- (11) a. the man that t_i thought he_i saw a UFO.
 b. the man that t_i tried PRO_i to fool everybody.
 c. the book that Bill criticized t_i without reading pg_i.
 d. *the man that it seems t to know the answer.

The external D is responsible for the DP properties of the relativized nominal. There is no reason not to allow relativization to be derived by NP movement, if we can show that an NP can be generated in an argument position.

Indeed, it is possible to show that an NP can be generated in an argument position in Chinese. Moreover, such a conclusion has already been independently argued for. Evidence comes from the behavior of *wh*-phrases and the behavior of the plural/collective marker *-men* in this language.

Recall our discussion of the composition of *wh*-expressions in chapter 3. We argued that, in contrast to an English *wh*-word, which consists of (Question) Quantification and Restriction, Chinese allows these components to be generated in different positions. Most importantly, Chinese allows *wh*-phrases to be simply a Restriction. For instance, the following *wh*-words are interpreted as existential or universal when bound by the existential quantifier in a conditional clause or by the universal quantifier *dou* respectively.

⁶ We set aside any possible intervening functional projections here, such as a number projection. What matters is the position of D.

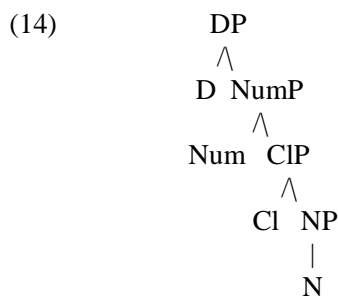
- (12) a. ruguo ni xihuan shei, wo jiu ba ta jieshao gei ni.
 if you like who, I then BA him introduce to you
 'If you like someone, I will introduce him to you.'
- b. shei dou lai le.
 who all come Le
 'Everyone came.'

Note that such "Restriction only" *wh*-words can occupy argument positions. Moreover, these *wh*-words still behave like a quantificational DP with respect to binding and control in relation to another DP:

- (13) a. shei_i dou bu gan ba ziji_i/ta_i de yisi shuo chulai.
 who all not dare BA self/he De intent speak out
 'Nobody dares to speak out self's/his intent.'
- b. shei_i dou xiang [PRO_i qu].
 who all want go
 'Everyone wants to go.'

In other words, the behavior of *wh*-words in this language indicates that NPs (Restriction) can occupy an argument position and be interpreted with a quantifier in a separate position.

That an NP can be generated in an argument position in Chinese can be further supported by the facts concerning the plural/collective morpheme *-men* in this language. In order to account for the distribution of *-men* and its interaction with the ordering options among the various constituents within nominal expressions, Li (1998) suggests that the plural/collective marker *-men* occupies the head position of a Number projection. This marker is only realized on an element that has undergone movement through an empty Classifier to D. This is because of the interaction of the Chinese nominal structure and the Head Movement Constraint. Recall that a full nominal in Chinese has the following structure:



A noun is generated in N; a classifier in Cl; the plural marker in Num and a demonstrative or proper name or pronoun in D. If a Classifier is not lexically filled (i.e., if a classifier is not present), an N can be raised to Num, combine with *-men* and then be raised to D to check the definite feature in D:⁷

⁷ Note that, although N-to-D raising takes place in Chinese to derive definite nominals, adjectives, possessors or other modifiers never occur post-nominally, in contrast to, for instance, what is reported about Italian in Longobardi (1994). In Longobardi (1994), it is suggested that an adjective or a possessor, which is in the Specifier position of a projection between N and D (or the Specifier of N), can occur post-

- (15) laoshi dui **xuesheng-men** hen hao.
 teacher to student-MEN very good
 'The teacher is nice to the students.'

If the Classifier is filled lexically (a classifier is present), an N cannot be raised and combine with the plural marker in Num (the Head Movement Constraint), which accounts for the unacceptability of the following expressions:

- (16) *laoshi dui (**zhe/na**) **san-ge xuesheng-men** tebie hao.
 teacher to these/those three-Cl student-MEN especially good
 'The teacher is especially nice to (these/those) three students.'

An N can also just move up to Number when D is occupied (by a demonstrative, for instance) and the Classifier is not lexically filled. This captures the contrast in grammaticality between the following *-men* phrases:

- (17) a. laoshi dui **zhe/na-xie xuesheng-men** tebie hao.
 teacher to these/those student-MEN especially good
 'The teacher is especially nice to these/those students.'
- b. *laoshi dui **zhe/na ji-ge xuesheng-men** tebie hao.
 teacher to these/those several-Cl student-MEN especially good
 'The teacher is especially nice to these/those couple of students.'
- c. *laoshi **dui zhexie/naxie ge xuesheng-men** tebie hao.
 teacher to these/those Cl student-MEN especially good
 'The teacher is especially nice to these students.'

In (17)a), the D is occupied by the demonstrative but the Classifier is empty. The noun can move up to Number and realize the plural feature *-men*. In (17)b-c), the Classifier is occupied, so N-to-Num movement is blocked by the intervening Classifier (the Head Movement Constraint) and the *-men* form is not possible. Importantly, however, bare nouns with *-men* must be interpreted as definite. Citing Rygaloff (1973) and Yorifuji (1976), Iljic (1994) wrote that "N-*men* always refers to the definite. As a rule, one can neither posit nor negate the existence of N-*men*."

- | | | |
|------|---|------------------------------------|
| (18) | a. *you ren-men
have person+MEN
'there is/are some person(s)' | cf. you ren
have person |
| | b. *mei you ren-men
not have person+MEN | cf. mei you ren
not have person |

nominally. Thus, word order facts of this type are used to support the existence of N-to-D Raising in Italian. In Chinese, the equivalent expressions are the so-called *de*-expressions, which are quite free in ordering except that they must occur pre-nominally. We have argued in section 5.3 of the previous chapter that they are adjoined structures, not occupying the Specifier of certain functional projections. If we adopt the proposal by Sportiche (1988) that modifiers (adjuncts) must be in a sister relation to their modifiee overtly, the word order is captured. The difference between a Chinese type language and an Italian type language vis-à-vis the distribution of modifiers lies in the difference of whether functional projections for the various modifiers are projected (Italian-type language) or whether modification is accomplished via adjunction alone (Chinese-type language).

'there is nobody'

- (19) ta hui dai xuesheng-men hui jia.
he will bring student-MEN back home
'He will bring the students back home.'
*'He will bring (some) students back home.'

As mentioned, a definite *N-men* is derived by moving N through an empty Classifier, and through Number to D which has a [+definite] feature. The definiteness requirement on *N-men*, however, does not follow straightforwardly from the movement account: if *N-men* is possible as long as there is no classifier present and if an indefinite noun has a full nominal projection [D + Num + Cl + N] with the D hosting an existential quantifier (Longobardi 1994), N in this case can still be raised to Num to combine with *-men* and obtain an indefinite interpretation (cf. (17)a). The only difference between (17)a) and an indefinite *N-men* would simply be the different contents of D. But this would be wrong, as *N-men* must always have a definite interpretation.

A solution to the problem of the definiteness requirement of *N-men* is as follows. It is suggested that D should simply be a projection for [+Definite], not hosting an existential operator as suggested by Longobardi (1994).⁸ An indefinite noun can simply be projected as an NP, not a DP. It is licensed by existential closure (via the existential closure adjoined to VP discussed in Diesing (1992)) or other available quantifiers in the contexts, conforming to the general tendency in Chinese that Restriction can be generated separate from Quantification, as illustrated by the behavior of *wh*-words in this language. It should be noted again that indefinite NPs can still function like DPs with respect to binding and control:

- (20) wo zhao xuesheng; [PRO_i ba ziji_i de jiaren qing lai]
I find student Ba self De family ask come
'I will find students to ask self's family to come.'

In brief, the morphological composition of *wh*-words and the distribution of *-men* in Chinese indicate that an NP can be generated in an argument position, as long as the NP is not a definite expression (recall that definite expressions require the generation of a D with [+Definite]). Returning to relativization, we note that the relativized nominal inside a relative clause is not a definite expression. Even when it is a proper name or a pronoun, it does not refer to the unique individual normally referred to by the proper name or the pronoun. Instead, it functions like a common noun:

- (21) ta xinshang de Bali/ni yijing bu fu cunzai le.
he appreciate De Paris/you already not again exist Le
'The Paris/you that he appreciates no longer exists.'

⁸ It is interesting to note that 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. This would straightforwardly follow as a consequence of the suggestion in the text whereby D is always [+Def]. However, the picture might be much more complicated. We will return to this issue when discussing all the options to derive relative constructions in different languages, where we propose that the composition of *wh*-words are indicative of the nominal structures. See section 7.2 of the next chapter.

When an argument allows an NP, relativization in Chinese can be a process of NP movement. That is, the nominal inside a relative clause to be relativized is an NP. The licensing/interpretation of the NP can be delayed until it is combined with any external structures (external D or the intervening external Classifier etc.).⁹ NP movement is a process allowed in languages like Chinese which tends to generate Quantification and Restriction in separate positions and allows an indefinite nominal to be projected as an NP.

Having shown that NP movement is indeed licit, we turn next to the issues on the strategies available to derive relative constructions. We have shown that NP Head-raising is one option. In the following section, we consider base-generation and movement, or resumption and gaps, which will provide further evidence for the existence of both Head-raising and operator movement for relativization (see section 4.1 of chapter 4).¹⁰

6.2. Base generation

Recall that we mentioned in section 5.1 of the previous chapter that, just as in English, which allows the Head to be an idiom chunk related to the matrix and not the relative clause (cf. *He pulled the strings that got him the job*), Chinese allows such constructions as well (the idioms along with the relative marker are bold faced):

- (22) a. ta laoshi ai **chi** [[ren shou-bu-liao **de**] **cu**].
 he always like **eat** let people receive-not-complete **De vinegar**
 'Lit: He always likes to eat vinegar that cannot be put up with.'
 'He always likes to be jealous to such a degree that is beyond what can be put up with.'
- b. ta zhi hui **you** [[ting-de-dong **de**] **mo**].
 he only can **hu-** nobody listen-De-understand **De -mor**
 'Lit: He can only hu- the -mor that nobody understands.'
 'He can only say humor that nobody can understand.'

Such a distribution of idioms suggests that direct NP movement is not the only option to derive relative clauses, unless the assumption that an idiom is generated as a unit is abandoned. It must, therefore, be the case that the Head is not moved from within the relative clause. It can be base-generated. It is not surprising that base-generation of the Head is available to derive relative constructions. The NP in the second step of the derivation outlined in (3) can do without the statement "The NP can be a copy of an NP inside the CP." That is, the NP need not be a copy of an NP inside the relative CP. It can be a different lexical item in the numeration; therefore, base-generation is available.

Independently of the considerations involving idioms, there is evidence suggesting that the Head of a relative clause is not always derived by movement. In the following examples, an overt pronoun occurs where the Head is interpreted in the relative clause; i.e, the overt pronoun is a resumptive pronoun in the relative clause:

⁹ This does not mean that English relativization also moves an NP, rather than an NP with an empty D. Languages may differ in whether D is obligatorily generated with the NP. As noted, English does not allow D to be generated separately from NP; thus, an empty D needs to be postulated. For more details, see section 7.2 of the next chapter.

¹⁰ Another question is why Chinese relative constructions cannot be derived by DP movement, which would have made Chinese similar to English/LA in allowing the full-range of reconstruction effects. We return to this issue in the next chapter where cross-linguistic variations are discussed.

- (23) a. *wo xiang kan [[ni shuo meigeren_j hui dai ta_i hui lai de] [ziji_j de pengyou]_i]
 I want see you say everyone will bring him back De self De friend
 'I want to see self's friend that you said that everyone would bring back.'
- b. *wo xiang kan [[ni shuo meigeren_j hui dai ta_i huilai de [wo jieshao-guo gei ta_j de pengyou]_i]
 I want see you say everyone will bring back over De I introduce-Asp to him De friend
 'I want to see the friend that I have introduced to him that you said everyone would bring back.'

Reconstructing the Head back to the relative clause is not available, as indicated by the unacceptability of the binding of the anaphor or the bound pronoun by the QP within the relative clause. This contrasts with the following cases where an empty category replaces the overt pronoun and reconstruction becomes available:

- (24) a. wo xiang kan [[ni shuo meigeren_j hui dai \emptyset_i huilai de] [ziji_j de pengyou]_i].
 I want see you say everyone will bring back De self De friend
 'I want to see self's friend that you said that everyone would bring back.'
- b. wo xiang kan [[ni shuo meigeren_j hui dai \emptyset_i huilai de] [wo jieshao-guo gei ta_j de pengyou]_i].
 I want see you say everyone will bring back De I introduce-Asp to him De friend
 'I want to see the friend that I have introduced that you said everyone would bring back.'

(23), involving resumptive pronouns, can be made acceptable by not forcing the reconstructed interpretation; i.e., if reconstruction does not apply. Thus, if the index of the resumptive pronoun is changed to a different one, such as *k*, the sentences are acceptable; so is the following sentence which does not contain an anaphor or a bound pronoun.

- (25) wo xiang kan [[ni shuo Zhang hui dai ta_i huilai de] [xiaohai]_k].
 I want see you say Zhang will bring him back De child
 'I want to see the child that you said that Zhang would bring back.'

Moreover, the Head can be related to a resumptive pronoun in a position inaccessible to movement, such as inside an island.

- (26) a. wo xiang kan [[ni [yinwei ta_i bu hui lai] hen shengqi de] [na-ge xuesheng]_i].
 I want see you because he not will come very angry De that-Cl student
 'I want to see the student that you are angry because he would not come.'
- b. wo xiang kan [[ni yaoqing [dai ta lai de ren] lai zher de] [na-ge xuesheng]_i].
 I want see you invite bring him over De person come here De that-Cl student
 'I want to see the student that you invited the person over that brought him over.'

The acceptability of sentences like (26)a-b) requires a base-generation strategy to derive the relative construction. In other words, the following representation, where the pronoun is base-generated, is available to relative constructions:

- (27) [[_{CP} ... pronoun_i ...] [Head_i]]¹¹

¹¹ Anticipating the derivation by operator movement, it is also possible to have the base-generation structure involving an operator coindexed with a resumptive pronoun.

In brief, we have shown that a gap in a relative clause allows reconstruction; whereas a resumptive pronoun does not allow reconstruction. The latter construction bears great similarity to the indefinite relative in LA: both use a resumptive pronoun and do not display reconstruction effects. The LA indefinite relative is base-generated and involves an operator, an analysis which is supported by the distribution of strong pronouns and *wh*-phrases inside the relative clause in that language; in the same way, Chinese relatives with resumptive pronouns not only disallow reconstruction, they also disallow a *wh*-interrogative inside the relative. The (a) sentence in (28) and (29) shows that a *wh*-interrogative phrase can occur inside a (non-resumptive) relative clause and be interpreted as having matrix scope when relativization leaves a gap (Head-raising). The occurrence of a resumptive pronoun eliminates this possibility, as indicated in the (b) sentences of (28) and (29). Replacing the *wh*-interrogative with a name makes the sentences acceptable, as in (c) of (28) and (29). These contrasts follow straightforwardly if the occurrence of a resumptive pronoun precludes the possibility of deriving the relative construction by Head-raising, and instead involves a *wh*-operator, creating a *wh*-island.

- (28) a. shei xihuan [[shei dasuan qing \ominus_i lai yanjiang de] zuojia_i]?
 who like who plan ask come talk De author
 'Who likes the author that who planned to ask \ominus to come to talk?'
 b. *shei xihuan [[shei dasuan qing ta_i lai yanjiang de] zuojia_i]?
 who like who plan ask him come talk De author
 'Who likes the author that who planned to ask him to come to talk?'
 c. shei xihuan [[Zhangsan dasuan qing ta_i lai yanjiang de] zuojia_i]?
 who like Zhangsan plan ask him come talk De author
 'Who likes the author that Zhangsan planned to ask him to come to talk?'
- (29) a. shei kandao-le [[shei shuo \ominus_i mingtian yao biaoyan de] yanyuan_i]?
 who saw who say tomorrow will perform De actor
 'Who saw the actor that who said would perform tomorrow?'
 b. *shei kandao-le [[shei shuo ta_i mingtian yao biaoyan de] yanyuan_i]?
 who saw who say he tomorrow will perform De actor
 'Who saw the actor that who said he would perform tomorrow?'
 c. shei kandao-le [[Zhangsan shuo ta_i mingtian yao biaoyan de] yanyuan_i]?
 who saw Zhangsan say he tomorrow will perform De actor
 'Who saw the actor that Zhangsan said he would perform tomorrow?'

We therefore conclude that when a resumptive pronoun occurs, the structure is base-generated and involves a (base-generated) operator; when a gap appears, it is derived by movement of the Head. The distinction is supported by reconstruction possibilities. Is this correlation always true? For instance, we noted in chapter 4 that a gap can be the result of operator movement in LA and English. The operator is in a predication/agreement relation with a base-generated Head. In such structures, reconstruction of the Head is not available although a gap appears in the relative clause. We showed above that instances containing resumptive pronouns such as (28) and (29) support the existence of a relative operator.¹² We show further in the next section that operator movement

must be available to derive relative constructions in Chinese, based on evidence from relativization of an adjunct.

6.3. NP vs. adjunct

In Chinese relative constructions, an adjunct as well as an argument can be relativized. Just as English relativization has the possibilities in (30), Chinese has the same paradigm (31). That is, Chinese relatives have all the counterparts of the English *wh*-relatives.

- (30) a. the man **who** came here
b. the work **which** he did
c. the way (?*)**how/that** he fixed the car¹³
d. the reason **why** he left

- (31) a. lai zher de ren
come here De man
'the man who came here'
- b. ta zuo de gongzuo
he do De work
'the work which he did'
- c. ta xiu che de fangfa
he fix car De way
'the way that he fixed the car'
- d. ta likai de yuanyin
he leave De reason
'the reason why he left'

For argument relativization, we demonstrated that the examples in (31)a-b) can be derived by NP-movement to the Head position. For adjunct relativization, however, what is relativized is not an NP category. It is a PP or Adv, as indicated by the following corresponding non-relative cases:¹⁴

- (32) a. ta **yong na fangfa** xiu che.
he with that method fix car
'he fixed the car in that way'
- b. ta **yinwei nage yuanyin** likai

¹² An important question that arises is why a relative operator is necessary in the case of resumption. Suppose a relative construction needs to be licensed and two ways of licensing are allowed: by direct Head-raising or by establishment of a predication relation between a base-generated Head and a relative operator. Because resumption cannot involve Head-raising, it must involve a relative operator. See chapter 7 for further discussions on the licensing of relative constructions.

¹³ Ning (1993, 53) states that *the way how* is only acceptable in some dialects.

¹⁴ Although time and place expressions often occur with the marker *zai* 'at', it is not clear that time and place expressions are true PPs and behave like adjuncts. Native speakers' judgments are uncertain. We will therefore only use the canonical adjunct expressions 'how' and 'why' to distinguish adjunct from argument NPs.

he because that-Cl reason leave
'He left because of that reason.'

Note that the Head in the adjunct relativization examples is a nominal expression, not an Adv or a PP (see section 4.5 in chapter 4). An Adv cannot become an NP after movement. Moreover, PPs cannot be moved directly to the NP Head position. It cannot be correct that the object of P is moved directly to the Head position and the P is deleted subsequently. As noted in Ning (1993), there is an interesting contrast between topicalization and relativization in Chinese with respect to the distribution of prepositions. In contrast to the acceptable relativization of the object of P in cases like (31)c-d), topicalization of the same cases is not acceptable without the P as demonstrated by the contrast in the following pairs of sentences:

- (33) a. *na-ge fangfa, ta xiu hao le na-bu che.
that-Cl way he fix well Asp that-Cl car
'That way, he fixed that car'
cf.
a'. ta xiu hao na-bu che de fangfa
he fix well that-Cl car De way
'the way he fixed that car'
- b. *na-ge yuanyin, ta bu xiu che.
that-Cl reason he not fix car
'That reason, he does not fix cars.'
cf.
b'. ta bu xiu che de yuanyin
he not fix car De reason
'the reason he does not fix cars'
- (34) a. wei na yuanyin, ta bu xiu che.
for that reason he not fix car
'For that reason, he does not fix cars.'
- b. yong na-ge fangfa, ta xiu hao le nabu che.
use that-Cl way he fix well Asp that-Cl car
'In that way, he fixed that car'

Because of such a contrast between relativization and topicalization, Ning (1993) argues that topicalization is derived by directly raising the topic phrase, which can be a PP, to the peripheral position. When the adjunct is a PP, adjunct topicalization requires the entire PP to appear in the peripheral position. Relativization, on the other hand, is not derived by direct XP movement. It is derived by movement of a null operator as proposed in Chomsky (1977). The operator is equivalent to a *wh*-operator in English. That is, with respect to adjuncts, the operator can be the equivalent of a PP, as evident in English question/answer pairs involving *how* and *why*:

- (35) a. **How** did you do it? **With care**.
b. **Why** did you do it? **For you**.

The operator is moved to the Spec of Comp position of the relative clause and the Head is base-generated in its surface position. The operator is then interpreted with the Head via some interpretive mechanism, such as predication. Alternatively, the operator is licensed by being in an agreement relation with the Head: the two agree in phi-features and most likely, some substantive

features such as [+human], [+place], [+time] etc., which captures the strict co-occurrence of matching Head and operator expressions: *the person who, the thing which, the reason why...* (see section 4.4 of chapter 4).

(36) $[[_{CP} OP_i [_{IP} \dots t_i \dots] Head_i]$

In this representation, the trace is derived by movement of a null operator, not by movement of the Head, which is base-generated in its surface position.

In short, if the Head is directly moved from the relative clause, the Head and the gap in the relative clause must be of the same category. Because the Head is an NP, it indicates that what is moved is an NP and consequently the gap is an NP. Clearly, an NP is not a PP or Adv. In contrast, an operator moved to the Spec of Comp can be the equivalent of a PP or Adv. Accordingly, when the gap is equivalent to a PP or Adv, it cannot be derived by NP movement to the Head position. It is derived by operator movement to the Spec of Comp position, which was the focus of discussion in section 4.4-4.5 of chapter 4. That is, even though NP-relativization and PP/Adv relativization both derive a gap in the relative clause, the gaps in these two constructions behave differently with respect to reconstruction although in both cases the Head is an NP. With NP relativization, the gap in the relative clause is the trace derived by NP movement to the Head position. Reconstruction of the relative Head is available. In contrast, the gap in the PP/Adv relativization cases is not a trace derived by NP movement to the Head position, but is instead a trace of the moved *wh*-operator. Therefore, reconstruction of the Head to the gap position should not be available. These structures and derivations are summarized below:

(37) NP relativization

$[[_{CP} [_{IP} \dots [_{NP} t_i] \dots] [_{Head} NP]_i]$
 ---direct NP movement to Head
 ---reconstruction of the Head to *t* possible

(38) Adjunct relativization

$[[_{CP} OP_i [_{IP} \dots [_{PP} t_i] \dots] [_{Head} NP]]$
 ---Head base-generated, OP movement to Spec of Comp
 ---reconstruction of the Head to *t* impossible

The distinction with respect to reconstruction availability is indeed true. In contrast to the argument relativization cases in (31)a-b) which allow reconstruction, the adjunct relativization cases in (31)c-d) do not show reconstruction effects:

(39) a. relativization from the subject position

wo yijing kandao le [[meige xuesheng_i dou renwei zui hao de] ni gei ta_i de liwu].
 I already see Le every student all think most good De you give him De present
 'I already saw the present that you gave to him that everyone thought was the best.'

b. relativization from the object position

ni hui kandao [[wo xiwang meige xuesheng_i dou neng dai lai de] wo gei ta_i de liwu].
 you will see I hope every student all can BA his book bring come De I give him De present
 'You will see the present that I gave to him_i that I hope every student_i will bring.'

c. relativization of 'how' expressions

*[[wo xiwang meigeren_i dou neng xiu-hao che de] wo jiao ta_i de fangfa]
 I hope everyone all can fix-well car De I teach him De method

'the way that I taught him that I hope everyone can fix the cars'

c'. wo xiwang meigeren_i dou neng yong wo jiao ta_i de fangfa xiu-hao che.
I hope everyone all can use I teach him De method fix-well car
'I hope everyone will use the method that I teach him to fix cars.'

c''. [[wo xiwang ta neng xiu-hao che de] (na-ge) wo shi-guo de fangfa]
I hope ta can fix-well car De that-Cl I try-Asp De method
'the way that I tried before that I hope he can fix the cars'

d. relativization of 'why' expressions

*[[wo yiwei meigeren_i dou bu neng lai de] ni gaosu ta_i mama de yuanyin]
I thought everyone all not can come De you tell his mother De reason
'the reason that you told his mother that I thought everyone cannot come'

cf.

d'. meigeren_i dou yiwei wo hui yinwei ta_i mama bu yunxu bu lai.
everyone all think I will because his mother not permit not come
'Everyone thought I would not come because his mother did not permit to.'

d''. [[wo yiwei ta bu neng lai de] (na-ge) ta mama zhidao de yuanyin]
I thought he not can come that-Cl he mother know De reason
'the reason that his mother knows that I thought he cannot come'

On the other hand, we expect the derivations in (37) and (38) to be subject to island conditions because they are derived by movement. This is also true. The following examples show that adjunct relativization cannot leave a gap inside an island, even though a long-distance dependency is allowed:

(40) a. zhe jiu shi [[ta renwei [ni yinggai t_i/(zenme_i) zuo zhejian shi de] fangfa]_i]¹⁵
this exactly is he think you should do this matter De method
'This is the way that he thinks you should do this work.'

b. zhe jiu shi [[ta renwei [nimen t_i/(weishenme_i) yinggai likai] de] yuanyin]_i
this exactly is he think you should leave De reason
'This is the reason why he thinks you should leave.'

(41) a. *zhe jiu shi [[[[ta xihuan [t_i zuo zhjian shi] de] ren] de] fangfa]_i
this exactly is he like do this matter De person De method
'This is the way that he likes the person that does the work (how).'

c. *zhe jiu shi [[[ruguo ta t_i shengqi] ni hui bu gaoxing] de] yuanyin]_i
this exactly is if he angry you will not happy De reason
'This is the reason(x) that you will not be happy if he gets angry (because of) x'

For those cases with an argument gap, even though there are instances which may suggest that relativization does not obey island conditions, the violation always involves an island in the subject position (or a topic position, see Gasde and Paul 1998).

¹⁵ See section 6.5 for the in-situ adjunct *wh*-phrases.

- (42) a. [[[t_i chuan de] yifu] hen piaoling de] nage ren_i
 wear De clothes very pretty De that-Cl person
 'the person_i that the clothes he_i wears is pretty.'

When the island is in the object position, the effect of island conditions reappears:

- (43) *[wo xihuan [[t_i chuan de] yifu] de] nage ren_i
 I like wear De clothes De that-Cl person
 'the person_i that I like the clothes he_i wears.'

Certainly, we do not want to claim that island conditions are relevant in some cases but not in some others. The acceptability of (42) should be due to some derivation other than movement. This is exactly what Huang (1982) argues. He claims that Chinese allows an empty *pro*, which is subject to an identification condition: *pro* must be identified by the most local c-commanding antecedent. In (42), the most local c-commanding antecedent is the relative Head. In (43), the most local c-commanding antecedent is the subject of the relative clause. A *pro*, thus, is properly identified in (42) but not so in (43). The contrast between (42) and (43) argues for the relevance of island conditions when movement applies and the existence of a properly-bound *pro* when movement does not apply.

Furthermore, a *pro* is a nominal category, not a PP/Adv category. It is not surprising that adjunct relativization does not allow an empty form in any island context, including a position that falls under the subject condition:

- (44) a. *zhe jiu shi [[[ta e_i xiu che] hen rang women gaoxing] de fangfa_i] .
 this exactly is he fix car very let us happy De method
 'This is the method that it makes us happy that [he fixed the car (with it)].'
 b. *zhe jiu shi [[[ta e_i nian-wan shu] hen zhongyao de] yuanyin_i]
 this exactly is he read-finish book very important De reason
 'This is the reason that it is important that he finishes his studies (there).'

Summarizing, relativization can be derived by movement of an NP directly to the Head position. Reconstruction of the Head is available in such cases. In the case of adjunct relativization, direct movement to the Head is not available because of categorial mismatch. Such a structure is derived by operator movement to Spec of Comp, which is interpreted with the Head via some interpretive mechanism (such as predication/agreement). There is no movement relation between the Head and the gap in the relative clause. Reconstruction of the Head to the gap position inside the relative clause therefore is not available. The NP and adjunct relativization cases in (37) and (38) do share one similarity, however: they are subject to island conditions, because they are both derived by movement.

6.4. Null operator, null Head

The different relative constructions and their properties, thus, may be summarized as follows:

- (45) NP relativization
 a. [[_{CP} [IP ... [NP t_i]...] [_{Head} NP]_i]
 ---direct NP movement to Head
 ---reconstruction of the Head to *t* possible
 ---sensitive to island conditions

- b. $[[_{CP} \quad [_{IP} \dots [_{NP} \text{pronoun}_i] \dots] \quad [_{Head} NP]_i]$
 ---Head base-generated, an operator in Spec of Comp coindexed with a resumptive pronoun
 ---reconstruction of the Head to RP impossible
 ---RP acceptable within an island
- (46) Adjunct relativization
 $[[_{CP} OP_i [_{IP} \dots [_{PP} t_i] \dots] \quad [_{Head} NP]]$
 ---Head base-generated, OP movement to Spec of Comp
 ---reconstruction of the Head to *t* impossible
 ---sensitive to island conditions

Although we draw the main distinction as being NP relativization versus adjunct relativization according to what is relativized, another possible division is between ((45)a) on the one hand and ((45)b) and (46) on the other. The former involves direct movement of the relativized expression to the Head position (Head-raising) and the latter involves an operator. This distinction is supported by a number of quite interesting facts which have never been discussed in the literature. First, these two groups can be distinguished by the availability of reconstruction, as shown earlier.¹⁶ Secondly, they can also be distinguished by the relevance of a *wh*-island effect. Thus, just as the use of a resumptive pronoun creates a *wh*-island, in contrast to the lack of such an island when a relative construction is derived by Head movement, as illustrated in (28) and (29), adjunct relativization also exhibits island effects. This is illustrated by the sentences in (47)a) and (47)c) below which are not quite acceptable when a *wh*-phrase occurs inside a relative clause in the cases of adjunct relativization, in contrast to the acceptable examples of a *wh*-phrase occurring inside a relative clause in the cases of argument relativization (47)b, d):

- (47) a. ??ta xihuan [[ni zai nar xiu che de] fangfa]
 he like you at where fix car De method
 'He likes the way you fixed the car where'
- cf.
 b. ta xihuan [[ni zai nar xiu de] che]
 he like you at where fix De car
 'He likes the car you fixed where'
- c. ??shei tingdao-le [[ni jiao shei xiu che] de yuanyin]?
 who heard you ask whom fix car De reason
 'Who heard the reason you asked whom to fix the car?'
- cf.
 d. shei kandao-le [[ni jiao shei xiu] de che]?
 who saw you ask whom fix De car
 'Who saw the car you asked whom to fix?'

A third interesting difference is reflected in a contrast which has important implications with respect to how null Heads of relative constructions should be analyzed: relative constructions derived by Head movement allow the Head to take a null form but those involving an operator do

¹⁶ It is interesting to note that the literature on relativization in Chinese seems to lack any discussion on reconstruction, not to mention the contrast in the availability of reconstruction.

not.¹⁷ That is, cases of adjunct relativization and resumption do not allow a null Head. The following examples illustrate the NP/adjunct contrast:

- (48) a. lai zher de ⊙
 come here De
 'the one that came here'
- b. ta zuo de ⊙
 he do De
 'the thing that he did'
- c. *ta xiu che de ⊙
 he fix car De
 'the (way) that he fixed the car'
- d. *ta likai de ⊙
 he leave De
 'the (reason) that he left'

The following examples illustrate the unacceptability of a null Head in relatives with resumption:

- (49) *wo xiang kan [[ni shuo Zhang hui dai ta_i huilai de] ⊙_i]
 I want see you say Zhang will bring him back De
 'I want to see the one that you said that Zhang would bring back.'
- (50) a. *wo xiang kan [[ni [yinwei ta_i bu lai] hen shengqi de] ⊙_i].
 I want see you because he not come very angry De
 'I want to see the one that you are angry because he would not come.'
- b. *wo xiang kan [[ni yaoqing [dai ta_i lai de ren] lai zher de] ⊙_i].
 I want see you invite bring him over De person come here De
 'I want to see the one that you invited the person over that brought him over.'

Note that it is not the case that expressions of *how* and *why* (cf. (48)c-d) cannot take a null form. As long as a relative clause does not occur, a modifier can precede an empty Head:

- (51) a. [[ta xiu che de] fangfa] bi [[wo xiu che de] fangfa] hao.
 he fix car De method compare I fix car De method good
 'The way he fixes cars is better than the way I fix cars.'
- b. *[[ta xiu che de] fangfa] bi [[wo xiu che de] ⊙] hao.
 he fix car De method compare I fix care De good
 'The way he fixes cars is better than the (way) I fix cars.'
- c. [[ta xiu che de] fangfa] bi [[wo de] ⊙] hao.

¹⁷ To account for relative constructions with an empty Head, there have been on-and-off claims in the literature that the Head NP can be moved away from the relative clause. There have also been proposals that the Head can simply be deleted. The unacceptability of an empty Head in the cases of PP relativization and resumption argues against such analyses.

he fix car De method compare I De good
 'The way he fixes cars is better than mine.'

The acceptability of (51)c) contrasts with the unacceptability of (51)b): when the modifier is a nominal phrase, not a relative clause, the modified Head can take a null form. The following examples are further illustrations:

- (52) a. [[ta bu neng lai de] yuanyin] wo zhidao le; [[ni bu neng lai de] yuanyin] ne?
 he not can come De reason I know Le you not can come De reason Q
 'The reason that he cannot come, I know; how about the reason you cannot come?'
- b. *[[ta bu neng lai de] yuanyin] wo zhidao le; [[ni bu neng lai de] ⊙] ne?
 he not can come De reason I know Le you not can come De Q
 'The reason that he cannot come, I know; how about the (reason) you cannot come?'
- c. [[ta bu neng lai de] yuanyin] wo zhidao le; [[ni de] ⊙] ne?
 he not can come De reason I know Le you De Q
 'The reason that he cannot come, I know; how about yours?'

Because the unacceptable cases are those involving an operator, it is possible that such a contrast is due to requirements on the relative operator: a relative operator needs to be identified in the sense that some content (restriction) need to be provided for the operator to be interpreted. A null form does not have enough content to identify the null operator. Alternatively, under the Matching analysis (the operator and the Head match in features), the operator needs to match the Head with respect to phi-features (person, number etc.) and substantive features such as [human], [place], [time]. However, an empty Head does not have lexical content and does not have all of these features (at least, not substantive features). In contrast, for relatives derived by NP movement, a null form (not an operator) can be base-generated and moved to the Head position. No operator needs to be identified. A null Head, therefore, is acceptable in such cases. Similarly, a null Head is acceptable in cases where the modifier is not a relative clause and, therefore, no operator is involved and no matching/identification of the operator is required, as shown in (51)-(52).

6.5. Resumptive adjuncts

There is further evidence showing that relativization in Chinese indeed can be derived by operator movement. This comes from constructions with an in-situ *why* inside the relative clause, the relative Head being the noun 'reason'. To a certain degree, *how* also behaves alike.¹⁸

There is an interesting usage of *weishenme* 'why' and *zhenme* 'how' in Chinese relatives. They can occur "resumptively" within the relative clause when the Head is *yuanyin/liyou* 'reason' for 'why', *fangfa* 'method', or *yangzi* 'manner' for 'how'. This contrasts with other *wh*-words which cannot be so used.

- (53) a. ?ta **ruhe/zenme**, xiu che de fangfa, meiren zhidao.
 he how fix car De method nobody know
 'Nobody knows the way (how) he fixed the car.'

¹⁸ The judgements concerning 'how' fluctuate more with different speakers, much like the fact that its acceptability in various non-interrogative usages also fluctuates.

- b. ta **weishenme**_i bu lai de yuanyin_i, meiren zhidao.
 he why not come De reason nobody know
 'Nobody knows why he fixed the car.'
- c. ni kandao ta_i/*shei_i mama de xiaohai_i
 you see he/who mother De child
 'the child whose mother you saw'
- d. *ni zai shenme shihou_i lai de shihou_i
 you at what time come De time
 'the time when you came at what time'

These in-situ *wh*-words can be related to the Head noun across clausal boundaries:

- (54) a. ?zhe jiu shi [[ta juede [ni yinggai **ruhe/zenme**_i xiu che] de] fangfa_i].
 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.'
- b. zhe jiu shi [[women yiwei [ta **weishenme**_i 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.'

However, it is not acceptable to have such in-situ *wh*-words within an island:

- (55) a. *zhe jiu shi [[[ruguo ta **weishenme**_i shengqi] ni hui bu gaoxing] de] yuanyin_i].
 this exactly is if he why angry you will not happy De reason
 'This is the reason that you will not be happy if he gets angry why'
- b. *zhe jiu shi [[[ruguo ta **zenme**_i xiu che] ni hui bu gaoxing] de] fangfa_i].
 this exactly is if he how fix car you will not happy De method
 'This is the way that you will not be happy if he fixes cars how'

What is such an in-situ *wh* and why is it only restricted to *weishenme* 'why' and also *zenme* 'how' to a certain extent? We suggest below that the *wh*-words that can stay in-situ are those that less easily behave as an indefinite pronoun (or an indeterminate Kuroda 1965, Kitagawa 1990, Cheng 1991, Li 1992, Tsai 1994).

As mentioned in chapter 3 and earlier in this chapter, a *wh*-word in Chinese generally is not inherently an interrogative. It can have non-interrogative interpretations, such as existential or universal readings according to the contexts. It was therefore proposed that a Chinese *wh*-word is interpreted according to its licenser, which can be a universal quantifier, an existential quantifier or an interrogative. The following sentences illustrate the versatility of *shenme* 'what' in various contexts.

- (56) a. ta mei zuo shenme.
 he not do what
 'He did nothing.'
- b. ni zuo le shenme ma?
 you do Le what Q
 'Did you do something.'

- c. wo yiwei ta zuo le shenme.
I thought he do Le what
'I thought he did something.'
- d. ruguo ni xihuan shenme, wo jiu ba ta mai-xia-lai.
if you like what I then Ba it buy-down
'If you like something, I will buy it.'
- e. ni xihuan shenme, wo jiu mai shenme.
you like what, I then buy what
'I will buy what you like.'

However, 'why' and to a certain extent 'how', do not occur in such contexts as easily.

- (57) a. *ta hui weishenme hen hao ming ma?
he will why very good fortune Q
'Will he get lucky for some reason?'
- b. ??ta hui zenme xiu che ma?
he will how fix car Q
'Will he fix cars in some way?'
- (58) a. *ruguo ta weishenme hao ming, ni jiu hui yinwei na-ge yuanyin hao ming.
if he why good fortune you then will because that-Cl reason good fortune
- b. *ruguo ta zenme xiu che, ni jiu yinggai yong na-ge fangfa xiu che.
if he how fix car, you then should use that-Cl method fix car

Probably the bare conditional contexts (see Cheng and Huang 1996) illustrated in (56)e) are the most acceptable:

- (59) a. ta weishenme shengbing, wo jiu weishenme shengbing.
he why get-sick I then why get-sick
'I got sick for the same reason he got sick.'
- b. ta zenme xiu che, ni jiu yinggai zenme xiu che.
he how fix car, you then should how fix car
'You should fix cars in the same way he fixes cars.'

The *wh*-phrases in cases like (56)a-e) are viewed as variables or polarity items bound/licensed by some quantifier in the context. The much narrower distribution of *weishenme* (*zenme*) indicates that such *wh*-words are the least variable-like among all the *wh*-words in Chinese. That is, they are more like operators (quantificational elements) than variables (although they still need to have a variable status in some cases, such as those in (59), which makes them ambiguous, possessing a dual status).¹⁹

¹⁹ We do not understand why the "variable" status is limited to the contexts in (59) among the cases discussed.

Taking *weishenme* (*zenme*) to be operators, they undergo movement at LF to the Spec of Comp position of the relative clause (the *wh*-operator movement analysis).²⁰ This accounts for the locality condition on the distribution of such *wh*-words as in (54)-(55). The other *wh*-phrases (except 'how', which seems to be in between the two groups) are never operators themselves. They, therefore, do not have the same distribution as 'why', and 'how' and do not undergo movement at LF. 'Why' and 'how' inside a relative clause are therefore more like in-situ relative operators, as found in Hindi.

The existence of such constructions provides clear support for the existence of operator movement to derive a relative clause. The locality condition is indicative of movement. The lack of reconstruction in such cases argues against movement to the Head position directly:

- (60) *[[wo yiwei meigeren_i dou yijing zhidao ni weishenme_j likai de] [gen ta_ide yiyang de yuanyin]_j]
 I think everyone all already know you why leave De with his same De reason
 'the reason that was the same as his that I thought everyone already knew you left why'

Moreover, the Head in these *wh*-operator cases cannot be null, either (see the previous section). The operator needs to be identified/agree with a head that has phi-features and substantive features.

- (61) a. ?ta **ruhe/zenme**_i xiu che de ⊙, meiren zhidao.
 he how fix car De nobody know
 'Nobody knows the (way) (how) he fixed the car.'
 b. ta **weishenme**_i bu lai de ⊙, meiren zhidao.
 he why not come De nobody know
 'Nobody knows the (reason) why he fixed the car.'

This pattern, therefore, is just like the adjunct relativization cases discussed in the previous sections. Both are derived by operator movement to the Spec of Comp.

6.6. Gapless structures

To complete the discussion on the strategies to derive relative constructions, we would like to briefly discuss the so-called gapless relative structures in Chinese --- those without a gap or even a resumptive pronoun in the relative clause. This is illustrated by the following examples:

- (62) a. zhe jiu shi [[ta kao-shi de] jieguo]
 this exactly is he take-exam De result
 'This is the result of his exam-taking.'
 b. zhe jiu shi [[ta chang-ge de] shengyin]
 this exactly is he sing-song De voice
 'This is his singing voice.'
 c. zhe jiu shi [[ta zuo-e de] houguo]
 this exactly is he do-evil De consequence
 'This is the consequence of his evil-doings.'

²⁰ This, of course, raises the question of why the movement must be at LF, because Chinese does not allow *how/why* to occur in the peripheral operator position of a relative clause. We leave this issue for further research.

- d. zhe jiu shi [[ta sha zhe-ge xiaohai de] jiama]
 this exactly is he kill this-Cl child De price
 'This is the price for him killing the child.'

In such instances, the relative Head cannot be related to any position within the relative clause. Interestingly, such relative clauses are much more limited. The Head noun must be related to the entire relative clause; it cannot just be related to an embedded clause. Therefore, ((63)a) is not acceptable because 'the voice' is unable to be related to the embedded clause within the relative clause. Neither is ((63)b) acceptable because the consequence is unable to be related to the embedded clause.

- (63) a. *zhe jiu shi [[wo xihuan [ta chang-ge] de] shengyin]
 this exactly is I like he sing-song De voice
 'This is the voice of my liking him singing.'
- b. *zhe jiu shi [[wo tingshuo [ta zuo-e] de] houguo]
 this exactly is I hear-say he do-evil De consequence
 'This is the consequence of my hearing him do evil.'

This type of "relative clause" in fact may not be the typical relative clause that we are familiar with. To be more concrete, we note that this pattern, rather than being a counterpart of the English [Head + Relative clause], is more like a Head noun with a preposition and XP (a PP) in English, such as [*the price* [*for him killing the boy*]], [*the sound* [*of his singing*]], [*the consequence* [*of his evil doings*]] etc. Just like these English cases where the entire PP bears a direct relation to the Head noun, the Head noun in (62)-(63) must also be related to the entire "relative clause," rather than a subpart of it (such as an embedded clause, as in (63)).²¹ It is a direct modification relation. ((63)a-b) can be contrasted with ((64)a-b), which also contain embedded clauses but are acceptable. They are acceptable because the voice is related to the voice of my imagination (of his singing) and the consequence is related to my liking him to do evil:²²

- (64) a. zhe jiu shi [[wo xiangxiang ta chang-ge de] shengyin]
 this exactly is I imagine he sing-song De voice
 'This is the sound of my imagining him singing.'
- b. zhe jiu shi [[wo xihuan ta zuo-e de] houguo]

²¹ It is not surprising that the Chinese counterpart of the English [NP [P XP]] is [XP de NP]. The prepositions in question are generally quite empty: *the result of his exam*, *the consequence of his evil doing* etc. Chinese rarely uses such empty prepositions within nominal expressions (except for *dui* that occurs with some complements, see Fu 1994). Chinese always has modifiers to the left of N, in contrast to English which may have modifiers to the right of N. *De* appears after a modifier within a Chinese nominal expression. A question, of course, is whether the prenominal modifier is a tensed clause or a gerundive expression. The distinction is not easily made in such cases. See Fu (1994) for relevant discussions.

²² Murasugi (1991) notes a locality condition on "gapless" relative clauses in Japanese, which is similar to the one for Chinese. She and some other Japanese linguists have taken such relative clauses as the basic construction and tried to derive the other relative clauses by resorting to the same mechanism of non-movement and aboutness licensing (see chapter 7 for details). In contrast, we claim that the so-called gapless relative clauses are different from the other relative clauses and should be analyzed separately (for more discussions on Japanese relative clauses, see the next chapter).

this exactly is I hear-say he do-evil De consequence
 'This is the consequence of my liking him to do evil.'

The direct modification relation is not the same as the complementation structure. Recall that we showed the fixed ordering of the pre-nominal clauses in the deverbal nominal structures is because the deverbal noun has a thematic relation with the pre-nominal elements. If there is complementation of an N in Chinese, then deverbal nominal structures are the best candidates. In contrast, the gapless relatives discussed in this section allow freedom of ordering:

- (65) a. ta sha Zhangsan de na-ge daijia tai gao le.
 he kill Zhangsan De that-Cl price too high Le
 'The price of his killing Zhangsan is too high.'
- b. na-ge ta sha Zhangsan de daijia tai gao le.
 that-Cl he kill Zhangsan De price too high Le
 'The price of his killing Zhangsan is too high.'
- (66) a. ta guyi hai ta de na-ge houguo tai kongbu le.
 he intentionally harm him De that-Cl consequence too horrible Le
 'The consequence of his harming him intentionally is too terrible.'
- b. na-ge ta guyi hai ta de houguo tai kongbu le.
 that-Cl he intentionally harm him De consequence too terrible Le
 'The consequence of his harming him intentionally is too terrible.'

6.7 Chain binding?

Having discussed the properties of different types of relative constructions, we are now ready to show that the reconstruction facts manifested in Chinese relative constructions must be correlated with NP-movement (vs. DP movement) and cannot be due to other non-movement strategies such as chain binding (Barss 1986, Cecchetto and Chierchia 1999).

Recall that Chinese relative constructions exhibit reconstruction effects with respect to binding but not scope. Such a discrepancy has been noted in the literature for different constructions in other languages and a proposal based on the notion of chain binding has been made. Cecchetto and Chierchia (1999) noted that certain inconsistency exists in reconstruction effects in clitic-left dislocation constructions in Italian. They noted the following contrast regarding the availability of reconstruction:

- (67) *A casa di **Leo**, *pro* (ci) va volentieri
 To the house of Leo (he) there goes with pleasure
- (68) In qualche cassetto, Leo ci tiene ogni carta importante $\exists\forall$ but $*\forall\exists$
 In some drawer, Leo there keeps every important paper
 'Every important document Leo keeps in some drawer.'

(67) shows that reconstruction must take place since it interacts with Binding Theory (Binding Principle C in this case) and (68) shows that reconstruction does not take place for scope interaction. Cecchetto and Chierchia's account for PP dislocation in such cases involves base-generation of the PP in its surface position which is related to a clitic. The distribution of the clitic is subject to certain locality conditions in relation to the PP. The clitic must move to a

sentence initial position in order to be interpreted. This is what derives the locality constraints on the distribution of such clitics. To account for the principle C effects with PP dislocation, they appeal to the concept of chain-binding, adapting ideas developed in Barss (1986). Chain is defined as (Cecchetto and Chierchia 1999: 140):

(69) A CHAIN $\langle \beta_1, \dots, \beta_n \rangle$ is a sequence of nodes sharing the same θ -role such that for any i , $1 \leq i \leq n$, β_i c-commands and is coindexed with β_{i+1}

and chain-binding, roughly as follows (Cecchetto and Chierchia 1999: 139):

(70) In a chain $\langle XP_1, \dots, XP_n \rangle$ when a phrase YP c-commands a link XP_i of the chain, it counts for the purposes of Binding Theory as if it c-commanded every link of the chain.

Cecchetto and Chierchia account for the contrast between (67) and (68) by appealing to the assumption that chain-binding interacts with Binding Theory but not with scope. If this were true, the reconstruction facts concerning Chinese relative constructions would not argue for the distinction between NP movement and DP movement, as we proposed.

Choueiri (2001), however, argues that Cecchetto and Chierchia's generalizations are not quite correct. She observes that the cases where chain-binding seems to interact with Binding Theory are actually based on incorrect assumptions about the structural position of the relevant elements. When the correct structural positions are clarified, chain-binding in fact does not interact with Binding Theory. For reasons of space, we do not repeat Choueiri's arguments and examples here (interested readers are referred to her work, chapter 2). Instead, we would like to claim that different reconstruction effects manifested in various Chinese relative constructions provide strong empirical evidence against a chain-binding account.

Recall that relative constructions derived by different processes exhibit different reconstruction effects. Whereas relative constructions in Chinese derived by Head-raising exhibit reconstruction effects with respect to binding but not scope, those derived by operator movement (such as those involving adjuncts or resumptive pronouns) do not show any reconstruction effects at all. Nonetheless, a chain is still formed in cases derived by operator movement, according to Barss and Cecchetto & Chierchia, in addition to the formation of a chain when movement applies. Were chain-binding to interact with Binding Theory, the contrast in reconstruction effects between those derived by Head-raising and those derived by operator movement cannot be accounted for.

6.8. Summary

In this chapter, we have argued that an NP-raising relativization process operating on an adjunction structure is licit if the condition on movement applies derivationally, which has the advantage of not making adjunction an exception to the extension condition. Such a derivational view of movement constraints argues for the necessity of a derivational grammar, in addition to the necessary role of representations discussed in part I. In other words, some conditions apply in the process of derivations and others apply to representations. Both are necessary to the grammar.

Moreover, our analysis demonstrates that an NP (Restriction) in Chinese can be generated in an argument position. This possibility is not only supported by reconstruction facts concerning relative constructions but is also supported by the behavior of *wh*-phrases and the distribution of the plural marker *-men* in this language. The relativized NP is interpreted when it is associated to the external D as in English and L or Cl, as in Chinese.

The types of derivations possible can be summarized according to what is relativized: NP relativization versus adjunct relativization. We also established that gapless structures differ from NP and adjunct relativization structures in locality conditions.

(71) NP relativization

a. $[[_{CP} \quad [_{IP} \dots [_{NP} t_i] \dots] \quad [_{Head} NP]_i]$
 ---direct NP movement to Head
 ---reconstruction of the Head to t possible
 ---sensitive to island conditions

b. $[[_{CP} \quad [_{IP} \dots [_{NP} pronoun_i] \dots] \quad [_{Head} NP]_i]$
 ---Head base-generated and coindexed with an operator related to a base-generated RP
 ---reconstruction of the Head to RP impossible
 ---RP acceptable within an island

(72) Adjunct relativization

$[[_{CP} \quad OP_i \quad [_{IP} \dots [_{PP} t_i] \dots] \quad [_{Head} NP]]$
 ---Head base-generated, OP movement to Spec of Comp
 ---reconstruction of the Head to t impossible
 ---sensitive to island conditions

(73) gapless structures

$[[gapless \text{ clause}] \text{ de Head }]$
 --- no gap or RP
 --- strict locality conditions (Head cannot be related to only an embedded clause)

Among these patterns, NP-movement to the Head directly contrasts with relatives involving an operator. These distinctions are manifested in reconstruction (un)-availability, the (lack of) manifestation of *wh*-island effects, and the (un)-acceptability of a null Head (section 6.4). The contrast in reconstruction effects also argues against a chain-binding approach to the difference in the availability of reconstruction with respect to binding and scope.

The available patterns and derivations also demonstrate that Chinese relativization confirms the conclusion reached in chapter 4: both a Head-raising process and an operator movement process must be available to derive relative constructions. That is, such a conclusion holds in both Head-initial languages with a complementation structure such as English and LA and in Head-final languages with an adjunction structure such as Chinese. Nonetheless, there are significant differences between Chinese on the one hand and English/LA on the other: Head-raising in the former is NP movement but DP movement in the latter. Clearly, both options cannot apply equally in these two types of languages; otherwise, the differences in reconstruction effects we have discussed in the previous two chapters would not be accounted for. Why is there such a difference in NP versus DP movement? How does a language decide on the options it takes? How should language variation be defined? We turn to the issues regarding language universals and variations in the next chapter.