

COMPLEX PREDICATES IN CONTROL

1. INTRODUCTION

One of the most important results of early research in generative grammar is the discovery that superficially very similar constructions should be distinguished on the basis of whether they involve a construal rule of Control, or a movement rule of Raising. Thus, although the sentences in (1) are respectively very similar to those in (2) in their unanalyzed surface forms, it is generally agreed that they should be analyzed in different ways, as indicated below:

- (1) (a) John_i tried [PRO_i to be honest].
- (b) John persuaded Bill_i [PRO_i to be honest].
- (c) Bill was persuaded *t_i* [PRO_i to be honest].
- (d) Who did you persuade *t_i* [PRO_i to be honest]?

- (2) (a) John_i seemed [*t_i* to be honest].
- (b) John believed [Bill to be honest].
- (c) Bill_i was believed [*t_i* to be honest].
- (d) Who_i did you believe [*t_i* to be honest]?

In the examples in (1), the embedded subject is base-generated in the form of an empty pronominal, PRO, which is controlled by a matrix subject (as in (1a)), or by a matrix object (in (1b)), or the trace of a matrix object (in (1c)–(1d)). In the examples in (2), however, the embedded subject position is filled at the base by a lexical noun phrase, which may directly surface as such (as in (2b)), or it may move to a higher position by some process of movement (as in (2a) and (2c)–(2d)). The cases of (2b) and (2d) are known as Exceptional Case Marking (ECM) structures, and those of (2a) and (2c) as Raising structures; whereas the cases of (1) are known as structures of control.

In more recent literature, the ECM-raising analysis of (2) has been extended to a class of “small clause” structures (see Chomsky (1981), Stowell (1981), among others):

- (3) (a) John considered Bill stupid.
 (b) Bill was considered *t* stupid.
 (c) Who do you consider *t* stupid?
- (4) (a) John kicked the door open.
 (b) The door was kicked *t* open.
 (c) What did John kick *t* open?

Central to the small-clause analysis is the assumption that strings like *Bill stupid* and *the door open* are clausal constituents of some sort, similar to ECM-clauses like *Bill to be honest* in (2b), and that the subject of such clauses can be directly raised or WH-moved, again in a way similar to the cases of (2c)–(2d). The small clause analysis, however, has given rise to considerable controversy. Among others, Williams (1983) has argued that in constructions like (3a) the predicate *stupid* is simply juxtaposed with the object NP *Bill* in a V-NP-XP sequence within a VP, but does not form a constituent with the latter. Although *Bill* is interpreted as the subject of *stupid*, this is achieved through a rule of predication, which coindexes them in much the same way that the PRO in (1b) is coindexed with its antecedent. In fact, Williams treats control as a special case of predication (see Williams (1980)); thus, in Williams' theory the sentences in (3)–(4) are treated on a par with (1b)–(1d), those cases that are traditionally analyzed as structures of control. The current controversy is, therefore, whether sentences like (3)–(4) are to be analyzed as structures of ECM/raising, or as structures of control/predication.

In this paper I will consider a class of well known structures in Chinese, and discuss their proper analysis in the context of the control/raising controversy. These concern the various forms of the resultative complement construction:

- (5) (a) Zhangsan ku-de¹ [[c] hen shangxin].
 Zhangsan cry-DE very sad
 'Zhangsan cried till he got very sad.'
- (b) Zhangsan ku-de Lisi hen shangxin.
 Zhangsan cry-DE Lisi very sad
 'Zhangsan cried till Lisi got very sad.'

- (c) Zhangsan ba Lisi ku-de [[c] hen shangxin]
 Zhangsan BA Lisi cry-DE very sad
 'Zhangsan cried till Lisi got very sad.'
- (d) Lisi bei Zhangsan ku-de [[c] hen shangxin].
 Lisi by Zhangsan cry-DE very sad
 'Lisi was made very sad as a result of Zhangsan's crying.'

In sentence (5a), the resultative clause contains an empty subject that is coindexed with the matrix subject. It is clear that this relation of coindexing is one of control, not of raising, given that both the higher verb and the lower verb assign independent theta roles to their subjects. In (5b) the embedded subject position appears to be filled with a lexical NP. Of these various forms of the resultative complement construction, the analysis of sentences like (5c) and (5d) has received most attention in the generative literature. The common treatment of such sentences, proposed in Wang (1970) and Tang (1977) and followed in such works as Huang (1982), Li (1985), Goodall (1987, 1989), and much other work, takes these sentences to be derived from (5b) via a rule of raising. In (5c), the embedded subject *Lisi* raises to a preverbal object position in the matrix clause, following the preposition *ba*. In (5d) the embedded subject is raised to the matrix subject position. (5c) is analyzed as a case of subject-to-object raising, and (5d) a case of subject-to-subject raising. According to this analysis, then, the embedded subject position of a resultative construction can be filled by Pro (as in (5a)) or by a lexical NP (as in (5b)), or it may be filled by a trace (as in (5c) and (5d)). In these respects, then, the Chinese resultative constructions are similar to English sentences with *expect*:

- (6) (a) John expected [PRO to leave].
 (b) John expected [Bill to leave].
 (c) Bill is expected [*t* to leave].
 (d) Who do you expect [*t* to leave]?

This analysis of (5b)–(5d) is also parallel to the small clause and raising analysis of English resultatives like (4), as just described.

In this paper I re-examine this raising and ECM/small-clause analysis of Chinese resultatives like (5b)–(5d), and argue for a control/predication analysis of such sentences. In section 2 below I first point

out a number of properties of the resultative construction, properties which have been typically associated with the phenomenon of control. These properties thus suggest a control analysis of the sentences in question, though a problem still exists that provides an appealing argument for the raising analysis. In Section 3 I show that this problem is only apparent, and that a control analysis that embodies the notion of complex predicates and compositional theta-role assignment takes away the only argument for raising. A number of further positive arguments for the control analysis are presented, which draw on data concerning theta-role assignment, the existence of V^0 categories that parallel the proposed complex predicates, the distribution of idiom chunks, the interpretation of anaphors and pronouns, and the form and interpretation of certain complex Verb-Object constructions. Section 4 sums up the discussion and notes some theoretical implications.

2. RESULTATIVE CLAUSES: CONTROL OR RAISING?

Consider the following sentences:

- (7) (a) Zhangsan qi-de [[e] hen lei]
 Zhangsan ride-DE very tired
 'Zhangsan rode and got tired.'
 (Lit. 'Zhangsan rode [himself] tired.')
- (b) Zhangsan ba ma qi-de [[e] hen lei].
 Zhangsan BA horse ride-DE very tired
 'Zhangsan rode the horse and got it tired.'
 (Lit. 'Zhangsan rode the horse tired.')
- (8) (a) Zhangsan ku-de [[e] hen shangxin]
 Zhangsan cry-DE very sad
 'Zhangsan cried and became very sad.'
 (Lit. 'Zhangsan cried [himself] sad.')
- (b) Zhangsan ba Lisi ku-de [[e] hen shangxin]
 Zhangsan BA Lisi cry-DE very sad
 'Zhangsan cried and got Lisi very sad.'
 (Lit. '*Zhangsan cried Lisi sad.')

Each of these sentences contains a resultative clause whose subject is empty. The (a) sentences differ from their (b) counterparts in that the

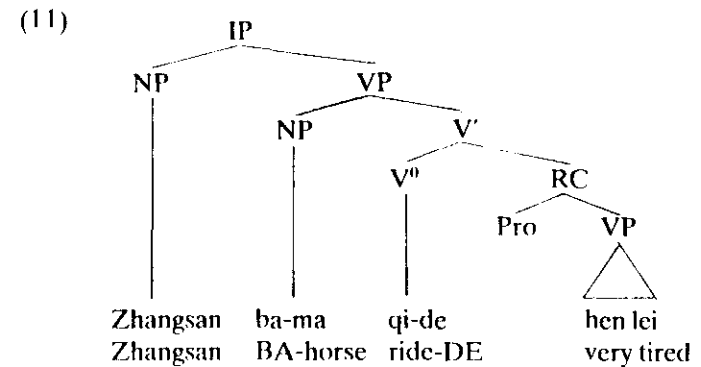
latter, but not the former, contain an NP in the preverbal object position immediately following *ba* (which we take to be a Case marker for the object NP). As the translation shows, in each (a) sentence the result clause subject is understood to be bound by the matrix subject, and in each (b) sentence it is bound by the matrix object. This state of affairs reflects a familiar pattern observed with canonical obligatory control:

- (9) (a) John tried [Pro to leave].
 (b) John persuaded Bill [Pro to go].

According to one well known syntactic account, the pattern observed in (9) follows from some version of Rosenbaum's (1970) Minimal Distance Principle (MDP) (see also Bach (1979), Chomsky (1980), Larson (1990)). Larson's version of the MDP, for example, provides that:

- (10) MDP: an infinitive complement of a predicate P selects as its controller the minimal c-commanding noun phrase in the functional complex of P.

In (9a) the subject, and in (9b) the object, minimally c-commands the complement clause, so the MDP predicts subject and object control respectively in these sentences. The pattern in the Chinese sentences (7)–(8) will also follow from the MDP if we assume that these are structures of control, i.e., that the [e] in each case is a Pro.² (7a) and (8a) exhibit subject control, since no object occurs in the matrix clause. The (b) sentences exhibit object control, since both contain a matrix object (with *ba*). Assuming that a case-marker (like *ba*) does not increase the depth of embedding in phrase structure,³ a preverbal object is closer than a subject to the resultative clause. The structure of (7b) is indicated below:



Under the same assumption, the MDP also explains the following contrasts in acceptability:

- (12) (a) ta chi-de [Pro hen bao].
he eat-DE very full
'He ate and got very full.'
(Lit. 'He ate [himself] full.')
- (b) *ta ba fan chi-de [Pro hen bao].
he BA rice eat-DE very full
(Intended: 'He ate the rice and got very full.')
- (13) (a) ta he-de [Pro zui-xunxun-de].
he drink-DE very-drunk
'He drank and got very drunk.'
- (b) *ta ba jiu he-de [Pro zui-xunxun-de].
he BA wine drink-DE very-drunk
(Intended: 'He drank the wine and got very drunk.')

The unacceptability of the (b) sentences clearly arises from a clash between their intended meanings and the MDP. The resultative clause predicates 'full' and 'drunk' denote properties that are only plausibly attributed to an eater or drinker, but the MDP forces them to be predicated of 'rice' and 'wine' respectively. Thus these sentences can only be accepted under such required, but absurd, interpretations.

There is an apparent counterexample to the claim that the interpretation of Chinese resultative constructions follows from the MDP. The following sentences each contain a matrix object but the resultative clause is uniquely controlled by the matrix subject:

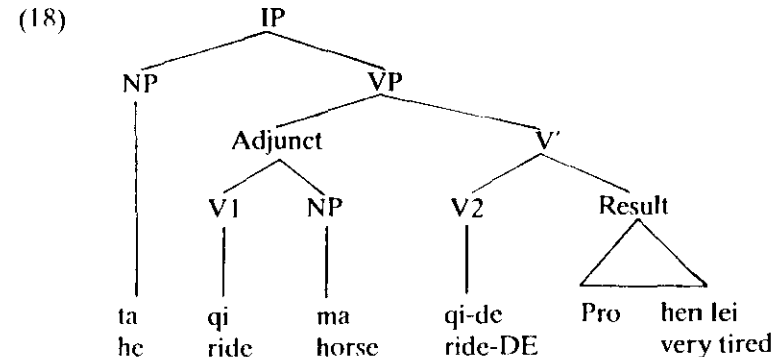
- (14) Zhangsan qi ma qi-de [Pro hen lei].
Zhangsan ride horse ride-DE very tired
'Zhangsan rode the horse and got very tired.'
- (15) Zhangsan chi fan chi-de [Pro hen bao].
Zhangsan eat rice eat-DE very full
'Zhangsan ate rice and got very full.'

There is, however, independent evidence that, in these sentences, the object NPs *ma* 'horse' and *fan* 'rice' do not c-command the resultative

clause, and thus are more distant from the latter than the matrix subject. Note that these sentences differ from the (b) sentences of (7)–(8) and (12)–(13) above, in that they each contain two occurrences of their matrix verb and that the objects follow the first occurrence of the matrix verb rather than the case marker *ba*. The necessity of verb reduplication in these cases is caused by a well known special Phrase Structure Constraint which, descriptively, prohibits the verb in modern Chinese from taking more than one kind of complement at a time. In effect, a verb cannot be followed by both an object and a resultative clause (see Huang (1982), S. Huang (1984), Li (1975) for extensive discussion):

- (16) *ta qi ma de [Pro hen lei].
he ride horse DE very tired
- (17) *ta chi fan de [Pro hen bao].
he eat rice DE very full

One way to satisfy this restriction is to repeat the verb after the object, and the results are (14) and (15), where a verb is followed by one complement at a time. Notice that, in each of (14) and (15), the second occurrence of the verb plus the following complement clause cannot be construed as a complement of the first occurrence of the verb, because in this case the verb would still be followed by two complements. Thus, the V_1 -NP- V_2 -result sequence in (14)–(15) must constitute either a conjoined VP of the form $[_{VP} [_{VP} V_1 NP] [_{VP} V_2 Result]]$ or, perhaps more likely, a structure in which V_2 is the main verb and the V_1 -NP sequence serves as a deverbalized adjunct modifying V_2 (see Huang (1982) and Li (1975) for more discussion):



In either case, the postverbal object *ma* in (14) or *fan* in (15) does not c-command the result clause, and the MDP correctly predicts subject control in these cases. (On the other hand, a preverbal object with *ba* does c-command the resultative clause, since it is not embedded within a coordinate VP or an adjunct, and *ba* is a case-marker that does not contribute to the depth of embedding.) Incidentally, sentences like (14) requiring subject control and those like (7b) requiring object control present a non-trivial difficulty to non-grammatical accounts of control such as that proposed by Ladusaw and Dowty (1988). In an event of horseback riding, both the rider and the horse seem to have an equal chance of getting tired, yet no ambiguity is discerned in either of these sentences.

The resultative clause construction thus exhibits properties that fall under the MDP defined in terms of c-command. It also exhibits effects of what is known as Visser's Generalization (Visser (1973), who attributes the relevant observation to Chomsky (1965)), which says that only object-control predicates may undergo passivization, but subject-control predicates cannot. In English the generalization is illustrated, of course, by the contrast below:⁴

- (19) Bill is persuaded [Pro to leave].
 (20) *Bill is promised [Pro to leave].

The same contrast can be seen in Chinese resultatives. We saw that (7b) and (8b) exhibit object control. These sentences can be passivized:

- (21) ma bei ta qi-de [Pro hen lei].
 horse by him ride-DE very tired
 'The horse was ridden by him until it got very tired.'
 (22) Lisi bei ta ku-de [Pro hen shangxin].
 Lisi by him cry-DE very sad
 'Lisi was made very sad as a result of his crying.'

We saw that (15) exhibits subject control, and the following shows that such a sentence cannot passivize:

- (23) *fan bei Zhangsan chi-de [Pro hen bao].
 rice by Zhangsan eat-DE very full

The subject-control sentence (14) also cannot be passivized without a change of meaning. The passive of (14) would be superficially identical in form to (21), but the latter has only the interpretation according to which the D-Structure object, 'the horse', became very tired. In other words, (21) is grammatical only if it is the passive of an object control sentence.⁵

Resultative clauses also exhibit properties that fall under "Bach's Generalization" (Bach 1979), according to which only subject-control verbs, but not object-control verbs, may omit their objects:

- (24) John promised [Pro to leave].
 (25) *John persuaded [Pro to leave].

The subject-control sentences in (14)–(15) can omit their objects:

- (26) Zhangsan qi-de [Pro hen lei]
 (27) Zhangsan chi-de [Pro hen bao]

But object-control sentences like (28) cannot omit their objects:

- (28) wo ba Lisi da-de [Pro hao-tao-da-ku].
 I BA Lisi hit-DE cry-loudly
 'I hit Lisi until he cried loudly.'
 (29) *wo da-de [Pro hao-tao-da-ku].
 I hit-DE cry-loudly

An object-control sentence may be grammatical with its object omitted, but only if the sentence is reinterpreted as involving subject-control. This is shown by the contrast between (7a) and (7b) above. (7a) might be considered to be a result of dropping the object in (7b), but (7a) does not involve object control.⁶

We have thus seen that the resultative construction in Chinese exhibits a full range of properties that are typically associated with control: effects of the MDP, Visser's Generalization, and Bach's Generalization. A control analysis of such constructions will capture these properties in a natural way.

This view of matters is, however, at variance with the more traditional view that treats (7b), (8b), (5c) and (5d) as structures of raising. One important argument for the raising analysis is that the matrix verb

of a resultative construction is often an intransitive verb that cannot, by itself, take any object. For example, *ku* 'cry' is intransitive, as indicated below:

- (30) (a) *Zhangsan ku-le Lisi
Zhangsan cry-ASP
(b) Zhangsan ku-le.
Zhangsan cry-Perf
'Zhangsan cried.'

This fact is correctly captured if the relation among (31a)–(31c) (= (5b)–(5d)) is characterized as one of raising:

- (31) (a) Zhangsan ku-de [[Lisi hen shangxin].
Zhangsan cry-DE Lisi very sad
'Zhangsan cried so much that Lisi got very sad.'
(b) Zhangsan ba Lisi ku-de [[e] hen shangxin].
Zhangsan BA Lisi cry-DE very sad
'Zhangsan cried till Lisi got very sad.'
(c) Lisi bei Zhangsan ku-de [[e] hen shangxin].
Lisi by Zhangsan cry-DE very sad
'Lisi was made very sad as a result of Zhangsan's crying.'

Similarly, the intransitivity of verbs like *han* 'shout' and *xiao* 'laugh' is correctly captured if the sentences in each set below are related by movement:

- (32) (a) Zhangsan han-de [houlong dou ya le].
Zhangsan shout-DE throat even hoarse Perf
'Zhangsan shouted until his throat even got hoarse.'
(b) Zhangsan ba houlong han-de [[e] dou ya le].
Zhangsan BA throat shout-DE even hoarse Perf
'Zhangsan shouted until his throat even got hoarse.'
(33) (a) Zhangsan xiao-de [women mo-ming-qi-miao].
Zhangsan laugh-DE we confused
'Zhangsan laughed to such an extent that we got all confused.'

- (b) Zhangsan ba women, xiao-de [[e] mo-ming-qi-miao].
Zhangsan BA we laugh-DE confused
'Zhangsan laughed to such an extent that we got all confused'.
(c) women bei Zhangsan xiao-de [[e] mo-ming-qi-miao].
we by Zhangsan laugh-DE confused
'We were confused by Zhangsan's laughs.'

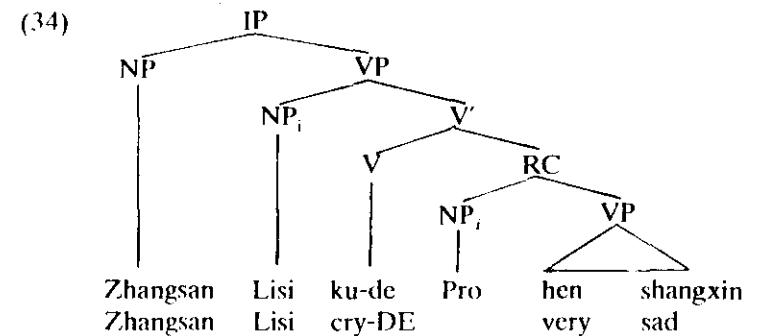
A control analysis of the (b) and (c) sentences here would entail postulating *ku*, *han*, *xiao* as transitive verbs, a hypothesis unsupported by (30).

So which of the two analyses is right – control or raising?

3. CONTROL INTO COMPLEX PREDICATES

3.1. *The Analysis*

Although sentences like those in (31)–(33) seem to provide an important motivation for raising, there is a perfectly plausible analysis of these sentences according to which the lexical subject of the result clause is represented as the *object*, not of the matrix verb alone, but of a complex predicate containing the matrix verb and the predicate of the result clause. According to this analysis, *Lisi* in (31a) is not directly represented as the subject of *hen shangxin* 'very sad', but as the object of the complex predicate *ku-de Pro hen shangxin* meaning 'cry so as to make Pro very sad'. Extending an idea from Larson's (1990) analysis of *persuade*-type sentences, I propose that the D-Structure of (31a) is something like (34):



According to this structure, V selects and theta-marks the result clause (as Result or Goal), and the V' compositionally selects and theta-marks the NP *Lisi* (as Patient or Theme), and the VP, in turn, compositionally theta-marks the subject NP *Zhangsan* (as Agent). The NP *Lisi* appears, not directly as subject of the result clause (RC), but as the Spec of VP, i.e., the external object of the V'. This external object, furthermore, controls the Pro subject of the RC, in accordance with the MDP. The D-Structure as such, however, cannot surface as a grammatical string, because *Lisi* does not occur in a Case-marked position. One way to satisfy the Case filter in this construction in Chinese is to insert the case marker *ba* directly in front of *Lisi*. This gives rise to the S-Structure (35) (which is identical in surface form to (31b)):

- (35) Zhangsan [_{VP} ba-Lisi_i [_{V'} ku-de [_{RC} Pro_i hen shangxin]]].
 Zhangsan BA Lisi cry-DE very sad

Another way to satisfy the filter is for the verb *ku-de* to move up, as an instance of head-movement, to the left of *Lisi*, case-marking the latter as Accusative (assuming with Koopman (1984) and Li (1985) that structural Case is assigned from left to right in Chinese). The result of V-movement is the S-Structure (36) (identical in surface form to (31a)):

- (36) Zhangsan ku-de [_{VP} Lisi_i [_{V'} t_v [_{RC} Pro_i hen shangxin]].
 Zhangsan cry-DE Lisi very sad

Following Larson (1990), I shall assume that V-movement raises the verb *ku-de* into the V⁰ head position of a higher "VP shell".⁷ The result of this movement is a structure in which there is no lexical material intervening between the external object and the result clause. For this reason, the surface string of (36) often gives one the impression that *Lisi* occurs in the subject position of the resultative clause. But according to the proposed analysis, *Lisi* is still represented as an external object which, according to the MDP, controls the Pro.

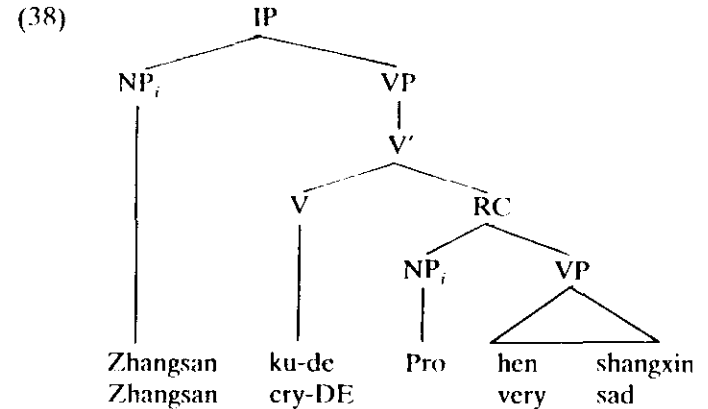
A third way for the external object in (34) to satisfy the Case Filter is for it to move to a Case position. This happens if the subject position is dethematized, as in passives. If dethematization takes place in a structure like (34), by Burzio's Generalization the V will be incapable of Case-assignment, and V-movement will not save the structure from

the Case Filter. However, the external object *Lisi* can move up to the [Spec, IP] position and receive Nominative Case there. The result is identical to (31c) in surface form:

- (37) Lisi_i bei Zhangsan [_{VP} t_i [_{V'} ku-de [_{RC} Pro_i hen shangxin]].
 Lisi by Zhangsan cry-DE very sad

The analysis of sentences like (31)–(33) thus mirrors that of standard object-control structures involving *persuade*, etc., as in Larson's modern version of the proposal made in Chomsky (1975 [1955]), Bach (1979), and others.

I have now provided an analysis for object-control sentences like (31a)–(31c), which are reproduced from (5b)–(5d), respectively. As for subject-control sentences like (5a), they differ from object control sentences in that they do not have an external object in D-Structure (i.e., no Spec of VP):



In other words, just like simple predicates, complex predicates may be transitive (as in (34)) or intransitive (as in (38)). Subject control occurs with intransitive complex predicates, and object control with transitive complex predicates. The relation between subject control and object control sentences is therefore analogous to that between *John ate* and *John ate the meat*, except for a difference in whether control is involved.

Note that the proposal that *Lisi* in (31a) is the object of a complex predicate is not inconsistent with the observation associated with (30) above that such verbs as *ku* 'cry', *han* 'shout', *xiao* 'laugh' are intransitives. While an intransitive action verb is intransitive if the action denoted by the verb does not bring about any result or involve a second participant, an action that brings about some result, as expressed in Chinese by the V+Result combination, may often involve an additional participant, regardless of whether or not the action verb is intransitive in the first place. Typically the person described by the predicate of the result clause is also the person affected by this result-causing action. In other words, although *Lisi* cannot be considered an object of the main verb alone, it can be considered the object of the verb-result combination. A given term in the argument structure of a complex predicate need not always be present in the argument structure of each of its component simplex predicates.⁸ Seen in this light, the intransitivity of verbs like *ku* 'cry' in (31) really does not provide any evidence for the raising analysis assumed in previous studies.

In the rest of this section, I will provide additional motivation for the control analysis.

3.2. Multiple Theta Roles

One positive argument for the control analysis comes from the fact that the NP said to be the subject of the result clause often can be shown to bear not only a theta role as subject of the result clause, but also the role of a patient or affected theme. Thus in the sentence (39), *Lisi* is understood to be not only the agent of 'jump up', but also a patient that suffers from *Zhangsan's* excessive noise:

- (39) *Zhangsan ku-de Lisi tiao-le qilai.*
Zhangsan cry-DE Lisi jump-ASP up
 'Zhangsan cried so loud as to make Lisi jump up.'

If *Lisi* were simply represented as the subject of the result clause in D-Structure, it would be theta-marked only as agent of 'jump up', and subsequent movement of the subject out of the clause would not make it possible for it to acquire additional theta-roles. On the other hand, the fact that *Lisi* plays two roles follows most naturally from the control analysis, since the NP, as SPEC of VP, is compositionally theta-

marked as Patient by the complex predicate *ku-de tiao-le qilai* and at the same time controls an argument Pro theta-marked as Agent.

The point being made may not be so clear from sentences like (39), because the sentence can be said to be ambiguous between an interpretation according to which *Lisi* may or may not be interpreted as Patient. That is, (39) may simply be a description of the extent to which *Zhangsan* cried, as indicated by the event of jumping in which *Lisi* is the agent, or it may be a description of what *Zhangsan* did to *Lisi* (i.e., make him jump). In the *ba*-construction and passive sentences below, however, the NP *Lisi* must be understood to be Patient:

- (40) *Zhangsan ba Lisi, ku-de [[e] tiao-le qilai].*
Zhangsan BA Lisi cry-DE jump-ASP up
 'Zhangsan cried so much as to make Lisi jump.'
- (41) *Lisi, bei Zhangsan t_i ku-de [[e] tiao-le qilai].*
Lisi by Zhangsan cry-DE jump-ASP up
 'Lisi was made to jump up by Zhangsan from his cry.'

These sentences must be understood as descriptions of what *Zhangsan* did to *Lisi* or what *Lisi* was done to, but not as mere descriptions of the extent or result of the event of *Zhangsan's* crying. This requirement of the *ba*-construction is well known in the literature on Chinese grammar. Numerous authors from Wang (1958) to Thompson (1973), Teng (1975) and more recently Cheng (1986) have made the observation that a necessary condition for the use of the *ba*-construction is that the *ba*-NP must be a Patient or affected Theme.⁹ The following *ba*-constructions are ill-formed, for example, because the *ba*-phrase is not Patient:

- (42) (a) **Zhangsan ba Lisi kanjian le.*
Zhangsan BA Lisi see ASP
 Intended.: 'Zhangsan saw Lisi.'
- (b) **Zhangsan ba Lisi xihuan.*
Zhangsan BA Lisi like
 'Zhangsan likes Lisi.'

The same point can be illustrated with a minimal pair involving the

idiomatic expression *kai dao*, literally 'open knife', which may occur with an NP with the preposition *gei* 'for' or the element *ba* in sentences like the following:

- (43) (a) Zhangsan *gei* Lisi *kai-le* dao.
 Zhangsan for Lisi open-ASP knife
 Zhangsan operated on Lisi.
 (b) Zhangsan *ba* Lisi *kai-le* dao.
 Zhangsan BA Lisi open-ASP knife
 (i) 'Zhangsan operated on Lisi.'
 (ii) 'Zhangsan fixed Lisi.'

In (43a), *kai dao* means 'to operate on', as a surgeon operates on a patient, and *Lisi* is understood to be a patient who benefits from the operation. In (43b), the meaning of a surgeon operating on someone is still available, but *Lisi* is not understood to be a Benefactor, but someone who suffers from the operation, a Patient or Affected Theme. Furthermore, (43b) has an additional figurative meaning according to which *Lisi* was fixed or punished for his wrongdoings, which is not available in (43a). The contrast between (43a) and (43b) clearly shows that the *ba*-NP must bear the role of Patient or Affected Theme.

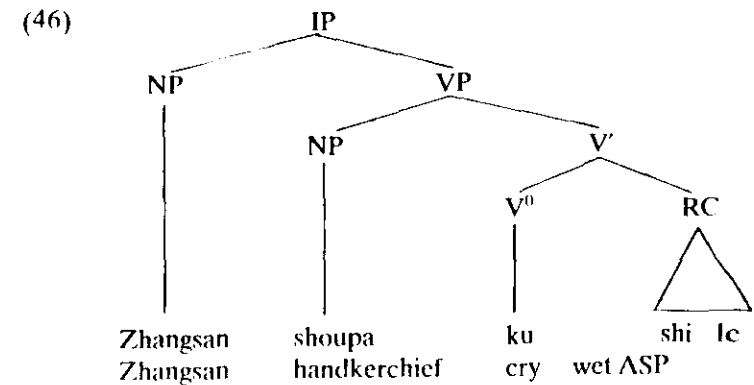
This requirement of *ba* is consistent with our intuition of all grammatical resultative constructions with *ba*. This strongly argues for the analysis proposed here. According to our analysis, although a verb like 'cry' or 'laugh' is intransitive, a *V'* containing such a verb and a resultative expression may be compositionally transitive, denoting one's action that affects someone else. In sentences like (39)–(41) *Lisi* is understood to be a Patient because it is compositionally theta-marked as such by *V'*; it is also understood to be the Agent of 'jump up', because it controls the agent subject of the resultative clause.¹⁰

3.3. Parallel *X'* Compounds

A second argument for our complex-predicate analysis of resultative constructions comes from the fact that many of the complex predicates postulated in the analysis have simple *X'* counterparts. Thus alongside the sentences in (44), in which the sequence *ku-de Pro dou shi le* 'cry until Pro became wet' forms an *X'*, we have (45), in which the sequence *ku-shi* 'cry-wet' is clearly an *X'* which theta-marks the postverbal object as affected Theme:

- (44) (a) Zhangsan *ku-de* shoupa Pro *dou shi le*.
 Zhangsan cry-DE handkerchief all wet ASP
 'Zhangsan cried so much that the handkerchief got wet.'
 (b) Zhangsan *ba* shoupa *ku-de* Pro *dou shi le*.
 Zhangsan BA handkerchief cry-DE all wet ASP
 (c) shoupa *bei* Zhangsan *ku-de* Pro *dou shi le*.
 handkerchief by Zhangsan cry-DE all wet ASP
 'The handkerchief was made all wet by Zhangsan from his cry.'
 (45) Zhangsan *ku-shi-le* shoupa.
 Zhangsan cry-wet-ASP handkerchief
 Lit.: 'Zhangsan cried-wet the handkerchief.'

In each of these sentences, there is a constant semantic relationship between 'handkerchief' and the rest of the sentence: a Patient relation in the event described. In a simplex sentence like (45), this theta-relation is standardly described in terms of theta-assignment by the transitive compound verb *ku-shi*. An analysis of (44) in terms of the transitive complex predicate *ku-de dou shi le* would capture the parallelism among (44) and (45). The existence of compounds like *ku-shi* in (45) indicates that the elements *ku-de* and *dou shi le* can also form a unit to the exclusion of *shoupa* in all of (44). The only difference between (44) and (45) is whether the predicate is lexical or phrasal. It is even reasonable to derive the verb in (45) by a process of *V' → V⁰* reanalysis from the following structure:¹¹



Since the sequence dominated by V' is short enough, it may be reanalyzed into V^0 . This in turn enables the new V^0 to raise to the left of 'handkerchief', case-marking the latter and giving rise to (45). Thus the word-order difference between (44) and (45) with respect to the position of 'handkerchief' simply follows from Case theory and general properties of movement (i.e., the principle that X^0 , but not X' , may be moved).

The parallelism between V^0 compounds and complex V' predicates further manifests itself in the fact that just as V^0 compounds can be classified according to whether they are intransitive or transitive, so can complex V' predicates. I have proposed to describe the relation between subject-control and object-control sentences as one between intransitive and transitive V' phrases. The following are examples of V^0 compounds that differ among themselves only in transitivity:

(47) (a) ta ku-xing le.
he cry-awake ASP
'He cried and became awake.'

(b) ta ku-xing-le Lisi.
he cry-awake-ASP Lisi
'He cried and awoke Lisi.'

(48) (a) ta qi-lei le.
he ride-tired ASP
'He rode and got tired.'

(b) ta qi-lei-le liangpi ma.
he ride-tired-ASP two horse
'He rode and got two horses tired.'

The difference between the two instances of *qi-lei* in (48) is one of transitivity, i.e., whether it takes an internal argument. But that is also the difference between the two instances of *qi-de hen lei* in (7a) and (7b). A distinction between intransitive and transitive V^0 s is clearly also appropriate for V' phrases. (In this case the "internal argument" refers to the external object in Spec of VP.) The essential difference between compounds and complex predicates is that whereas the former is a lexical category, the latter is a phrase. This difference shows up in their properties of control. We saw that sentences with complex predicates

exhibit control properties in accordance with the MDP. Although some compounds appear to obey the MDP (as in (47)–(48)), not all compounds need to. For example:

(49) (a) ta chi-bao le.
he eat-full ASP
'He ate and got full.'

(b) ta chi-bao fan le.
he eat-full rice Asp
'He ate rice and got full.'

(50) (a) ta he-zui le.
he drink-drunken Asp
'He drank and got drunk.'

(b) ta he-zui jiu le.
he drink-drunken wine Asp
'He drank wine and got drunk.'

This is because the internal structures of compounds are not accessible to rules or principles that apply in syntax, in particular the MDP. Phrasal counterparts of (49b) and (50b) are ungrammatical.¹²

(51) *ta chi-de fan [Pro hen bao].
he eat-DE rice very full

(52) *ta he-de jiu [Pro zui-xunxun-de].
he drink-DE wine very-drunken

The parallelism between resultative compounds and complex predicates also manifests itself in the unaccusative/causative distinction. That is, both compounds and complex predicates can be naturally classified as to whether or not they take an external argument (subject), as found between the unaccusative *break* and the causative *break*. As far as I can see, sentences of the following kind provide very compelling evidence for a complex predicate analysis along the lines suggested:

(53) zhejiang shiqing jidong-de Lisi liu-chu-le yanlei.
this matter excited-DE Lisi flow-out-ASP tears
'This matter got Lisi so excited that he came to tears.'

- (54) neichang qiu lei-de dajia mei weikou
 that ball-game tired-DE everyone no appetite
 chi-fan.
 eat
 'That ball game got everyone so tired that they had no
 appetite for dinner.'

These sentences differ from the following only in the presence of a
 Causer argument and the meaning of causativization:

- (55) Lisi jidong-de [Pro liu-chu-le yanlei].
 Lisi excited-DE flow-out-ASP tears
 'Lisi got so excited that he came to tears.'
- (56) dajia lei-de [Pro mei weikou chi-fan].
 everyone tired-DE not appetite eat
 'Everyone got so tired that they had no appetite to eat.'

This difference clearly parallels the causative-unaccusative distinction
 observed among lexical compounds as illustrated below:

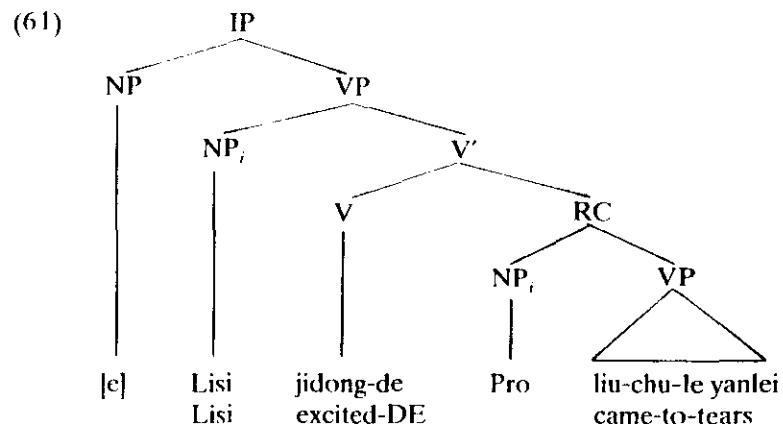
- (57) ta qi-si wo le.
 he angry-die me PERF
 'He pissed me off.'
 (Lit: 'He got me so angry as to die.)
- (58) wo qi-si le.
 I angry-die ASP
 'I was extremely angry.'
 (Lit: 'I was so angry as to die.')

A phrasal minimal pair that corresponds more closely to (57)–(58) is
 provided by (59)–(60):

- (59) ta qi-de wo [Pro quanshen fadou].
 he angry-DE me whole-body tremble
 'He got me so angry that I trembled all over.'

- (60) wo qi-de [Pro quanshen fadou].
 I angry-DE whole-body tremble
 'I got so angry that I trembled all over.'

Now, the standard analysis of (57)–(58) considers their verbs to have
 an underlying internal argument, but differ in whether they have an
 external argument or not. In (57) the verb takes two arguments, Causer
 and Patient, so we have a causative sentence. In (58) the verb only
 assigns Patient, which then raises to subject position, and we have an
 unaccusative sentence. Clearly, the phrasal causatives and unaccusatives
 are most naturally accounted for if analyzed in the same way. Thus, the
 D-Structure of (55) would be:



In this structure, an unaccusative complex predicate, V', assigns an
 internal theta-role (Patient) to *Lisi* (SPEC of VP, an object external to
 V' but internal to VP), but it assigns no external theta-role to the
 subject of IP. The Patient argument is NP-moved to the SPEC of IP
 position, and the unaccusative (55) is derived. If on the other hand the
 V' in (61) does assign an external theta-role (Causer) to SPEC of IP,
 say to the NP *zhejian shiqing* 'this matter'. Then we have a structure
 underlying the causative (53). One of several things may happen to
 assign Case to the Patient argument. First, the verb 'excited' may raise
 to the left of *Lisi* and assign it Accusative Case, giving the surface
 string of (53). Or *ba* may be inserted, keeping the Patient in pre-V' position:

- (62) zhejiang shi [VP ba Lisi [V jidong-de [RC Pro
 this matter BA Lisi excited-DE
 liu-chu-le yanlei]].
 came-to tears

Or, if the subject position is dethematized under passivization, the Patient *Lisi* may be moved there and Case-marked as Nominative:

- (63) Lisi_i bei zhejiang shi [VP *t_i* jidong-de [RC Pro
 Lisi by this matter excited-DE
 liu-chu-le yanlei]].
 came-to tears

Finally, if in the D-Structure the complex *V'* is short enough (as when we have a sequence like *qi-si* 'angry-die' in (57)), it may be reanalyzed as a *V*⁰ and the entire compound may be raised, giving simplex sentences like (57).¹³

The analysis proposed here for the causative/unaccusative pairs is particularly attractive because of the fact that predicates like *jidong* 'excited' and *lei* 'tired' do not have any causative meaning when used alone, and as such can only follow animate NPs as in (55)–(56). The fact that, in (53) and (54), these verbs precede their 'logical subjects' and follow inanimate causers, shows that they have undergone verb movement in the way I have proposed. This fact also constitutes very strong evidence for the most central idea underlying our complex-predicate analysis, that theta-roles are compositionally assigned. What I have shown is that the idea of complex predicates is well supported, in that they exhibit the range of varieties that are observed with lexical predicates: intransitives, transitives, unaccusatives and causatives. An intransitive *V'* phrase with an agent argument may add an internal argument (Patient/Theme) and turn it into a transitive. An unaccusative *V'* phrase with a Patient/Theme argument may add an external argument (Causer) and turn it into a causative, thereby internalizing what would otherwise be a surface subject.¹⁴

3.4. Anaphors Bound and Pronouns Free

Another attractive aspect of the analysis proposed here is that it provides a very simple and direct explanation for the following facts of anaphora:

- (64) Zhangsan ku-de ta hen shangxin.
 Zhangsan cry-DE him very sad
 'Zhangsan_i cried so much that he_i became very sad.'
- (65) Zhangsan ku-de ziji hen shangxin.
 Zhangsan cry-DE self very sad
 'Zhangsan cried so much as to get himself sad.'

As shown, disjoint reference is required between *Zhangsan* and the pronoun *ta*, and binding of the anaphor *ziji* is allowed. In our analysis, the pronoun and the reflexive are each taken to be the object of the matrix *V'*. In both cases the root clause is their governing category, and the relevant facts follow directly from binding theory.¹⁵

3.5. Idiom Chunks

The control analysis, but not the raising analysis, is particularly supported by an important piece of evidence regarding the distribution of idiom chunks. This is an important point to mention, because related facts have recently been used to make an opposite claim by Goodall (1989), who argues for the small-clause/raising analysis of the *ba*-construction. Goodall's examples include sentences like the following:

- (66) ta ku-de [tieshu kai-le hua].
 he cry-DE iron-tree open-ASP flower
 Lit.: 'He cried so much that even iron trees blossomed.'

The expression 'iron trees blossomed' is taken to be an idiom, meaning 'something unusual happened'. Since this is an idiom, its parts are assumed to be non-referential, and they cannot directly receive their own theta-roles. Now, the NP *tieshu* 'iron-tree' can occur preverbally with *ba*:

- (67) ta ba tieshu_i ku-de [[e_i kai-le hua].
 he BA iron-tree cry-DE open-ASP flower
 Lit.: 'He cried so much as to get the iron-trees to blossom.'

If, according to our analysis, the empty subject in (67) is a *Pro* controlled by *tieshu*, then the latter would have to receive an independent

theta-role (Patient) from the V' compositionally — an analysis ruled out if *tieshu* is part of an idiom. If the empty subject in (67) is a trace, however, as proposed in the small-clause/raising analysis, the *ba*-phrase need not be assigned an independent theta-role, and no problem arises. Thus, a strong case seems to be made for the raising, but against the control, analysis, based on a familiar type of argument that distinguishes raising from control predicates (*believe* vs. *persuade*) in English.

But this argument does not hold up upon closer examination. Goodall translates (66) as meaning that 'He cried so much that something unusual happened', but the sentence does not mean 'he cried so much that, for some x, x an unusual event, x happened'. The expression *tieshu kai-le hua* in (66) is simply an exaggerated way of indicating the extent to which he cried. In such a situation the use of the expression is literal: he cried so much that, for some x, x an iron tree, x blossomed.¹⁶ The expression might also be used figuratively about someone, but the subject *tieshu* in its figurative sense must be understood to be referential, unlike a normal idiom chunk. For example, (66) and (67) might be said of someone's father, who we all know is an iron-hearted person. In this case (66) and (67) would mean that he cried so much that his father was finally moved. To the same extent that (67) can be used, it is also possible to say (68):

- (68) *tieshu gandong-de [Pro kai hua le].*
 iron-tree excited-DE open flower ASP
 'The iron-tree was so excited that it blossomed.'

That *tieshu* is fully referential is shown by the fact that it controls the Pro subject of 'blossomed'. The full referentiality of such an "idiom chunk" is also shown by the fact that, within the same context of reference, it can appear independently as object of *quan* 'urge, try to persuade', and receive an independent theta-role:

- (69) *ta quan-le tieshu ban tian, keshi tieshu jushi*
 he urge-ASP iron-tree half day but iron-tree just
bu kai hua.
 not blossom
 'He made a lot of effort to persuade the iron tree, but the tree just wouldn't blossom.'

If (66) and (67) are uttered without a clear reference to some such iron-hearted person, then the listener can always inquire: *shei shi tieshu ya?* 'Who is the iron tree?', again showing that the so-called idiom chunk can occur as an independent argument.

There are some sentences, not considered by Goodall, that may better qualify as true idioms whose parts are not referential:

- (70) *Zhangsan xia-de [huli lu-chu-le yiba].*
 Zhangsan scare-DE fox reveal-ASP tail
 'Zhangsan was so scared that he revealed all his secrets.'

This sentence may mean that Zhangsan was so scared that the property of a fox revealing its tail became true of him. In this interpretation, 'the fox' need not be considered referential, and Zhangsan need not be identified as any fox or sly person. That is, the bracketed-clause 'the fox revealed its tail' may be taken as a true idiom phrase, one denoting the meaning of an idiomatic predicate, which may be related to a non-idiomatic subject.¹⁷ Crucially, note that under this interpretation, the sentence (i) does not have a *ba*- or Passive counterpart.¹⁸ A sentence that does have such a counterpart is (71):

- (71) *Zhangsan wen-de huli lu-chu-le yiba.*
 Zhangsan ask-DE fox reveal-ASP tail
 Lit.: 'Zhangsan interrogated so (e.g., persistently) that the fox revealed its tail.'

This sentence has the meaning that as a result of Zhangsan's interrogation, some very sly person (other than Zhangsan) revealed his secrets. Under this interpretation, the sentence has a *ba*-counterpart and may be passivized:

- (72) (a) *Zhangsan ba huli wen-de lu-chu-le yiba.*
 Zhangsan BA fox ask-DE reveal-ASP tail
 (b) *huli bei Zhangsan wen-de lu-chu-le yiba.*
 fox by Zhangsan ask-DE reveal-ASP tail.

Though this might be taken to be evidence for the raising analysis, notice that *huli* is fully referential in these sentences. Upon hearing sentences like (71)–(72), one may ask (73a), to which another may quietly reply with (73b):

- (73) (a) *shei shi huli?*
 'Who is the fox?'
 (b) *Pro jiu zuo zai ni houmian.*
 just sit at you behind
 '[He] is sitting right behind you.'

This shows that we are not dealing with non-referential true idiom chunks in these cases. These sentences seem not very different in nature from English sentences like 'He finally persuaded those dogs in City Hall to stop barking at each other'. More importantly, what appears to be a non-referential true idiom chunk in (70) must become referential in a *ba*- or passive construction. Thus, an apparent piece of evidence for the raising analysis turns out to argue for the control analysis.

3.6. Complex Verb-Object Constructions

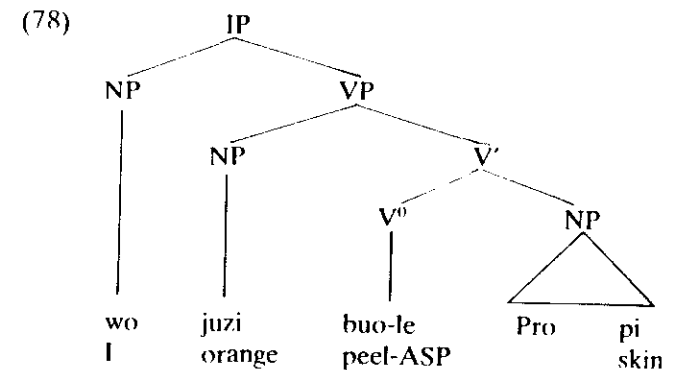
Finally, an important argument for our control analysis is that it can be extended to account for a whole range of other constructions not involving resultative clauses. I have in mind "complex V-O constructions" like the following:

- (74) *wo ba juzi buo-le pi.*
 I BA orange peel-ASP skin
 'I peeled the orange.'
 (75) *Zhangsan ba Lisi daduan-le tui.*
 Zhangsan BA Lisi break-ASP leg
 'Zhangsan broke Lisi's legs.'

I call these sentences "complex V-O constructions" because they each involve two objects, for example 'orange' and 'skin' in (74). These sentences are often related to those in which the *ba*-NP appears in the genitive position of the postverbal object:

- (76) *wo buo-le [NP juzi de pi].*
 I peel-ASP orange 's skin
 'I peeled the orange's skin.'
 (77) *Zhangsan daduan-le [NP Lisi de tui].*
 Zhangsan break-ASP Lisi 's leg
 'Zhangsan broke Lisi's legs.'

One plausible analysis (e.g., Goodall (1987)) takes the relation between (74)–(75) and (76)–(77) to be one of movement, according to which the possessive phrases may be preposed under NP-movement, in violation of the Left Branch Condition, to a preverbal position. This analysis thus claims that the theta-role of the *ba*-phrase in (74)–(75) is simply that of a Possessor. But this claim is not correct, because in (74)–(75) the *ba*-phrase is a Patient in addition to being a Possessor. These sentences are more properly understood, not merely as descriptions of what I or Zhangsan did, but of what I did to the orange or what Zhangsan did to Lisi. This state of affairs follows from an analysis according to which the *ba*-NP in (74) is postulated as the object of the V' phrase *buo-le pi* 'peel the skin', as in (78), where 'orange' is the other object of V', and 'skin' is the inner object of V⁰.¹⁹



If the inalienably possessed noun 'skin' selects a possessive subject position (Pro), then the external object 'orange' is correctly predicted to be associated with two theta-roles: the Patient role it receives from the V', and the Possessor role it controls in accordance with the MDP.

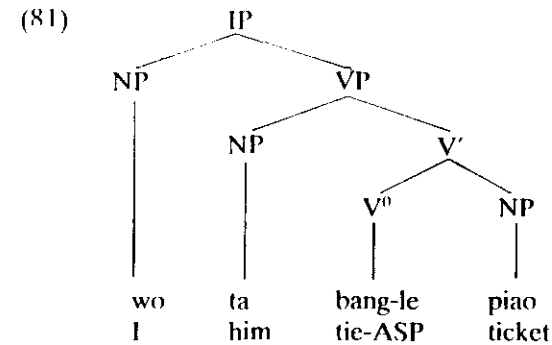
This analysis can, furthermore, be extended to constructions where no plausible possessive relation can be established between the *ba*-phrase and the postverbal inner object. The sentences in each group below are thematically synonymous:

- (79) (a) *wo ba ta kai-le dao.*
 I BA him open-ASP knife
 'I operated on him.'
 (Lit. 'I opened the knife on him.')

- (b) ta bei wo kai-le dao.
'He was operated on by me.'
(Lit.: 'He was opened a knife by me.')
- (c) wo kai-le ta dao.
'I operated on him.'
(Lit.: 'I opened him a knife.')
- (d) wo kai-le ta de dao.
'I operated on him.'
(Lit.: 'I opened his knife.')

- (80) (a) wo ba ta bang-le piao le.
I BA him tie-ASP ticket ASP
'I kidnapped him.'
(Lit.: 'I tied a ticket of him.')
- (b) ta bei wo bang-le piao.
'He was kidnapped by me.'
(Lit.: 'He was tied a ticket by me.')
- (c) wo bang-le ta piao.
'I kidnapped him.'
(Lit.: 'I tied him a ticket.')
- (d) wo bang-le ta de piao.
'I kidnapped him.'
(Lit.: 'I tied his ticket.')

As the translation shows, these sentences involve idiomatic phrases that express the meaning of a transitive verb taking a Patient as its logical object. Although the object 'him' may occur in the genitive position of a noun that is part of an idiom (as in the (d) sentences), it is clear that there is no genuine possessive relation between 'his' and 'ticket' or 'knife' in (79d) and (80d). (These sentences are on a par with English examples like *I pulled his leg* under its idiomatic interpretation.) Numerous examples of this sort can be duplicated in Chinese. In cases such as these it would be impossible to analyze the *ba*-phrases in (a) as originating from a D-Structure genitive position. But these examples fall readily under our complex predicate analysis. According to this analysis, the D-Structure of (80) is:



In this structure, V^0 has an inner object 'ticket' with which it forms an idiomatic V' phrase, which compositionally takes 'him' as its outer object and 'I', in turn, as its subject. Unlike the cases with resultative clauses, there is no control from the outer object into a genitive position of the inner object 'ticket'. This is because, with the possible exception of inalienable possessions, nouns do not admit a PRO or pro subject, given **John like PRO book*, and the fact that *Zhangsan xihuan shu* can only mean Zhangsan likes books, not that he likes his books.

As before, the outer object may be Case-marked if *ba* is inserted (80a), or if it is moved to the subject position under passivization (80b). Or the V^0 may be raised to the left of the object, Case-marking it as Accusative (80c). In this case, since the result of verb movement leaves the outer object linearly adjacent to the inner object, the outer object may be reanalyzed with the inner object into an NP and receives Genitive Case from the latter, and we have the sentence (80d). Thus, according to the proposed analysis, the thematic outer object does have the possibility of forming an NP constituent with the inner object, but only phonetically or Case-theoretically so, in a way that has little consequence to its semantics.²⁰ Finally, for some underlying V' phrases, the possibility exists for them to undergo $V' \rightarrow V^0$ reanalysis, giving sentences like (82):

- (82) wo hen dan-xin ta.
I very carry-heart him
'I very much worry about him.'

As in the case with resultative constructions, the outer object in examples like (79d) and (80d) exhibit binding properties indicating that the Genitive NP in them has the root clause as its governing category:

- (83) Zhangsan, kai-le ta, *_i de dao
Zhangsan open-ASP he 's knife
- (84) Zhangsan, bang-le ta, *_i de piao.
Zhangsan tie-ASP he 's ticket

(This fact is also on par with *John pulled his leg*, where disjoint reference is required under the idiomatic meaning.) If the genitive pronoun is represented at every stage as part of the object NP, then coreference of *ta* with *Zhangsan* should be possible, on a par with *John saw his mother*. Facts like this follow from our analysis, again, because the genitive NPs occur at every point prior to reanalysis as a constituent outside of the inner object NP, and therefore their governing category is the root clause.²¹

4. CONCLUSION

Summarizing, I have argued for the existence of complex predicates as syntactically well motivated entities by showing that they exhibit characteristic properties and interact among themselves in the same way that lexical verbs do. The analysis enables us to show that Chinese complex sentences with resultative clauses behave just like simple intransitive, transitive, unaccusative and causative constructions. The same analysis also enables us to account for parallel properties in many complex V-O constructions involving "inner" and "outer" objects. In addition, considerations of binding theory, thematic theory and the relevant idiom-chunk facts strongly argue for a control analysis of these constructions, an analysis from which their other properties also follow — in particular, those properties that fall under the MDP, Visser's Generalization, and Bach's Generalization.

This analysis of the resultative constructions in Chinese thus argues for the resurrection of an old idea involving complex predicates that dates back to Chomsky (1955). The idea was semantically well motivated, as many scholars have noted, but was often considered syntactically unmotivated. An analysis based on the old idea had to explain why the outer object postulated in the D-Structure cannot surface at a position following its *V'* predicate, but must move to a position between the verb and the result clause. However, as is clear from the discussion above, these surface word order facts follow completely on independent grounds, in particular from Case theory and the theory of head-movement. There is then no reason to hesitate to adopt the semantically better motivated analysis.

This conclusion is also clear from Chomsky's (1986a) discussion of small clauses in English. Chomsky notes that a complex predicate analysis of (85) explains why (86) is ungrammatical:

- (85) John considered Bill a smart person.
- (86) *John considered there a smart person here.

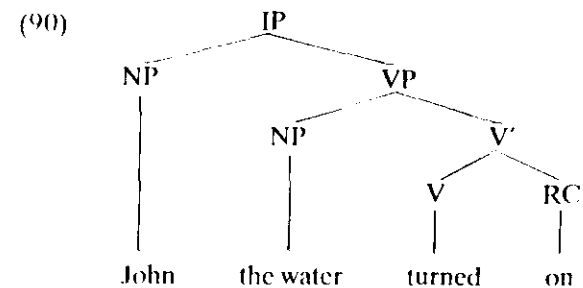
The ill-formedness of (86) follows from the assumption that the position of the outer object of a *V'* predicate is a theta-position (like any inner object position). Since *there* is not an argument, (86) is ruled out by theta theory. The following sentences are ruled out for the same reason:²²

- (87) *I consider advantage taken of John.
- (88) *I consider tabs kept on Jane Fonda.

These facts seem quite problematic for the small clause analysis proposed in Chomsky (1981), Stowell (1981) and other recent works.

One final note. An implication of the analysis proposed here is that English particle-movement constructions should be analyzed in the same way that Chinese resultative constructions are. Some verb-particle constructions clearly have the meaning of resultative constructions: *He turned on the water* means that he turned (the faucet) so that the water was on. This is on a par with examples like (45) above, meaning 'Zhangsan cried the handkerchief wet'. Furthermore, verb-particle compounds in English constitute a genuine exception to the right-headedness principle of English word formation, suggesting that it is not produced by a word formation rule, but by the rule of $V' \rightarrow V^0$ reanalysis. (88) should therefore be derived from the D-Structure (89):

- (89) (a) John turned the water on.
(b) John turned on the water.



If the *V'* is not reanalyzed as *V⁰*, then the *V⁰* *turned* is raised to the left of *the water*, case-marking the latter and giving (89a). If reanalysis takes place, then the entire *V⁰* *turned on* is raised, giving (89b). The output of these operations is subject to a surface stylistic filter that requires lighter elements to be arranged before heavier constituents:

- (91) (a) *John turned on it.
 (b) *John turned the water that had been in the pipes since they left for vacation before Christmas on.

This analysis is at variance with the then-convincing arguments of Emonds (1972) and the analysis of Huang (1977), who argued that the phenomenon of particle movement should be assimilated to that of heavy NP shift. The original arguments turned on the fact that full prepositional phrases cannot occur between the verb and its object on the surface, but this surface fact now follows from independent principles. The analysis of particle movement as a subcase of heavy NP shift should thus be replaced by the analysis that treats it, in the words of Larson (1988), as an instance of "light predicate raising".

NOTES

* The research presented in this paper was conducted in 1989 when I was supported by a John Simon Guggenheim fellowship. The material in Section 4 represents, in part, an expansion and elaboration of an analysis suggested in Huang (1988). The suggestions of several people including Robert Fiengo, Howard Lasnik and Robert May, and particularly those of Richard Larson, who acted as a commentator of the paper at the MIT Workshop on Control, have helped me greatly with the improvement of this paper. I am also indebted to the anonymous reviewer who made a number of extremely helpful suggestions.

¹ The morpheme *de* is a suffix (or clitic, depending on one's analysis) that developed historically from the full verb *de* meaning 'obtain (the result of)'. It will be simply glossed as DE in the examples below.

² Here and throughout I will not make a distinction between PRO and pro, but represent all instances of the empty pronominal as Pro. Following the proposal made in Huang (1984, 1989) and more explicitly in Borer (1989), I assume that there is only one pronominal category, Pro, and that the two empty pronominals PRO and pro postulated in Chomsky (1981) and other works are instances of a pure empty pronominal with the feature [-anaphor, +pronominal]. In Huang (1984, 1989) it is argued that the essential distributional and referential properties of both PRO and pro may be derived from a theory that subjects them to a somewhat enriched theory of control -- the Generalized Control Theory -- which eliminates the need for a featural distinction between them. The general line of approach is supported, not only on general a priori

grounds, but also by empirical considerations. Foremost among these is the fact that PRO and pro exhibit very similar properties, both in their distribution and their reference. In particular, the occurrence of PRO is restricted to the subject position, and so is that of pro in a language that exhibits subject-non-subject asymmetries. Furthermore, both PRO and pro may be shown to be obligatorily controlled in certain positions and uncontrolled in others. For example, in many languages (e.g., Japanese, Korean, Persian) a finite clause with a pro subject may be embedded in structures that exhibit obligatory control (e.g., under 'try'). Like the ungoverned PRO in the corresponding constructions in English, such a pro is obligatorily controlled. Another advantage of the Generalized Control Theory is that it eliminates the need to determine whether the empty subject of a resultative clause in Chinese should be a pro or a PRO. This question is a difficult one to answer since there is, as yet, no explicit standard criterion to distinguish 'finite' from 'non-finite' clauses in Chinese. The proposal not to distinguish PRO from pro is also motivated on learnability grounds.

³ This assumption is necessary also in the theory according to which the *ba*-phrase is brought to its surface position by movement. The case-marker *ba* must not increase the depth of embedding, so that the moved NP following it will c-command its trace.

⁴ In contrast to (20), it has been widely known that sentences like *Bill is promised to be allowed to leave* are well-formed. In addition, although *John promised Bill to leave* requires subject control, the sentence *John promised Bill to be allowed to leave* permits object control. Larson (1990) argues that the cases that are not predicted by Visser's Generalization arise out of entailments of the verbs involved. Under his analysis, the sentences with infinitival passive complements are assimilated to *Bill is promised permission to leave* and *John promised Bill permission to leave*.

⁵ A common plausible explanation for Visser's Generalization is that when a sentence is passivized, the agent phrase is either missing or demoted to a status that makes it incapable of control. A sentence that requires subject (or agent) control thus cannot be passivized. An object-control sentence can be passivized, however, since the trace of the passive subject remains in its D-Structure object position where it controls the Pro, in accordance with the MDP.

⁶ A plausible explanation for Bach's Generalization is that in a sentence like (25) there is no object to fulfill the requirement of object control. An empty object controller is out of the question here since English does not allow a pro in object position. On the other hand, it is well known that Chinese permits null objects. Given this latter fact, (29) might be expected to be grammatical, with the embedded Pro controlled by a matrix Pro object, contrary to fact. However, as I have argued in (1984, 1989), a null object in Chinese should be more properly analyzed as a null topic. Furthermore, there is independent evidence that a topic is incapable of controlling a resultative clause subject:

- (i) Lisi, Zhangsan ku-de [Pro hen shangxin].
 Lisi, Zhangsan cry-DE very sad
 (As for) Lisi, Zhangsan cried until he (Zhangsan, not Lisi) became very sad.

Thus, even if (29) is used in a discourse in which a null object is permitted, that null object (as a null topic) cannot control the Pro in (29). The ungrammaticality of (29)

is excluded because, as the head of an unaccusative predicate in the traditional sense, hence not a Case-assigner. The option excluded under some appropriate version of Buzio's Generalization has to be excluded also: *It_ithere broke of the window. The sentence is ambiguous, exhibiting both transitivity and unaccusativity (1982):

- zui-de wo [Pro zhi chuanqǐ].
 chase-DE I straight pant
 e child chased me until I kept panting.
 e child got me to chase (him) until I kept panting.

(i) the transitive reading, and (b) the causative reading. This ambiguity of interpreting (ii) as a pure intransitive or an unaccusative

- [i-de [Pro hen shangxin].
 cry-DE very sad

(ii) may be understood as Agent or as Patient/Experiencer (e.g., chase another). If NP is Agent, then the addition of a Tense head to the sentence into the transitive (ia). If NP is Patient/Experiencer, an external Causer argument would turn it into the causative (ib). Similar facts can also follow from the small-clause or raising analyses of CP-deletion and ECM. However, the ECM account provides a plausible explanation of similar binding facts observed with complex sentences like (29). See the discussion around (83)–(84) and note 21. The expression is more normally used in an exaggerative way of expressing anger. For example, the following may be said of a miser:

- ta gei ni qian, lian tieshu dou hui kai-hua le.
 he give you money, even iron-tree all will blossom!
 'Give you any money, even the iron tree will blossom.'

The use of the expression is an exaggeration and not an idiom. The function of (70) may be as follows:

- an, xia-de [Pro, [huli lu-chu-le yiba]].

controls a Pro subject or topic, to which the expression *huli lu-chu-le* is a predicate or a comment. That this representation is possible is due to the possibility of independent sentences like (ii):

- huli lu-chu yiba le.
 fox-reveal tail ASP
 property of a fox revealing its tail because true of them.'

Condition (i) is necessary, and not one in which the *huli* 'fox' is directly

represented as the subject of the result clause coindexed with *Zhangsan*, follows from binding theory. This coindexing would be ruled out by Principle C. In fact, as we just saw in the text, even a proximate overt pronoun is excluded from the subject position of the clause.

¹⁸ The *ba*-sentence below refers to someone referentially established as a sly person who was frightened by Zhangsan to such an extent as to reveal his own secrets:

- (i) Zhangsan ba huli xia-de lu-chu-le yiba.
Zhangsan BA fox frighten-DE reveal-ASP tail
Lit. 'Zhangsan got the fox so frightened as to reveal its tail.'

On this meaning (i) is on a par with (71) and (72) in the text, where *huli* is a fully referential NP that is capable of control.

¹⁹ This analysis is in the spirit of Thompson (1973).

²⁰ Reanalysis may be assumed to occur also with the resultative constructions after verb-raising. For example, one might assume that the output of V-movement given in (36) above may be reanalyzed so that *Lisi* does form a clause with *hen shangxin* 'very sad', but this may be assumed to occur only at a superficial level, in a way inconsequential to the thematic interpretation of the sentence.

²¹ One might attempt to derive the binding facts here from the small-clause or raising analysis by postulating a nominal small clause of some kind. Suppose that the object NP in (83) and (84), or *his leg* in *John pulled his leg*, undergoes NP-deletion (on a par with CP-deletion), resulting in ECM. In this case the governing category for the possessive pronoun would be the root clause, and disjointness of reference follows. But note that the pronoun receives Genitive Case in these cases. This means that it is not exceptionally Case-marked (or governed) from outside the NP. Therefore, the small-clause or raising analysis really does not have a good way to account for (83)–(84).

²² In contrast to (86)–(88), the following sentences are well-formed:

- (i) John considers there to be a smart person here.
(ii) I consider advantage to have been taken of John.
(iii) I consider tabs to have been kept on Jane Fonda.

These sentences are genuine raising/ECM constructions, however, and not complex predicate constructions. The expletive and idiom chunks in these sentences occur in the non-thematic subject position of IP.

Incidentally, extraposition *it* may occur in a theta-position since it is coindexed with an antecedent with a thematic role:

- (iv) John considered it obvious that Bill was stupid.

Examples like (iv) cannot be taken as showing that the object position of a complex predicate can be a non-theta position.

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