WÔ PÀO DE KUÀI AND CHINESE PHRASE STRUCTURE

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This paper juxtaposes two well-known competing hypotheses about the structure of resultative and descriptive sentences in Chinese. According to the Primary Predication hypothesis, the second verb in a V1 ... V2 ... sequence is treated as the main verb of the sentence; according to the Secondary Predication hypothesis, the second verb is treated as a complement to the first. Three major arguments for PP are reviewed and shown not to be cogent, and an alternative analysis is proposed for each of the issues raised: the distribution of A-not-A questions, negation, aspect marking, and the properties of certain complex causative constructions. The otherwise peculiar distribution of the negative and A-not-A morphemes turns out to follow from a principle requiring them to be lexically realized in any, and a D-Structure analysis of complex causative sentences consistent with the SP hypothesis explains the related facts in a desirable way. Additional arguments for SP are presented which turn on certain facts of anaphora, verb reduplication, scope of negation, and tone sandhi.

INTRODUCTION

1. A familiar topic in Mandarin Chinese syntax has to do with the proper phrase structure analysis of sentences like 1 and 2:

(1) wó páo de hén kuài.  
    I run very fast  
    'I run very fast.'

(2) tāmen tiào de hén lèi.  
    they jump very fast  
    'They jumped till they got very tired.'

Each of these sentences has two predicates, which I will henceforth refer to as V1 and V2. In 1, V1 is the action verb páo 'run' and V2 is the adjectival or stative verb kuài 'fast'. In 2, V1 is tiào 'jump' and V2 is lèi 'tired'. Sentences like 1 are traditionally referred to as DESCRIPTIVE COMPLEMENT CONSTRUCTIONS, and those like 2 as RESULTATIVE COMPLEMENT CONSTRUCTIONS. The resultative, but not the descriptive, construction may also take the form of 3, in which the second verb has its own subject appearing before it:

(3) tāmen kù de shǒu pà dōn̄ zǐ le.  
    they cry de handkerchief also wet asp  
    'They cried so much that even the handkerchief got wet.'

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All of these sentences contain the particle de, which has been historically derived from the verb dē 'obtain'. Phonologically, de is attached to the preceding verb, either as a suffix or a clitic, depending on one's theory. The syntactic status of de is itself a controversial matter. I will gloss it simply as de.

The well-known problem which I will discuss in this article is the structural relationship between V1 and V2, in particular the question of which of the two verbs in each sentence is the main verb. This question does not arise if one considers only the English translations given above, in each of which the first verb is clearly the main verb, and the second is embedded in a subordinate clause or appears in an adverbial position. However, sentences 1–3 might just as well have been translated as 'I am fast in running', 'They got very tired from jumping', and 'The handkerchief got wet as a result of their crying', respectively, where the verb corresponding to V2 is treated as the main predicate. The question does not arise in English because there are clear clues, based for example on the finiteness of a verb, the presence or absence of the verb to be, and of a complementizer like until or so that, to tell us which is the main verb. In Chinese, however, none of these clues exist, since finiteness is not marked, a stative verb need not be introduced by a copula, and the status of the particle de is itself at issue.

There are two competing approaches to this question in the literature. Borrowing the terminological distinction from Rothstein 1983, I shall refer to these two approaches as the Primary Predication hypothesis and the Secondary Predication hypothesis, according to whether V2 is treated as the main verb (primary predicate), or as a subordinate verb (secondary predicate).

According to the Primary Predication hypothesis, the second verb in 1 is treated as the main verb, and what precedes it is treated as a sentential subject or a subject followed by an adverbial adjunct containing the first verb, as indicated in Figures 1a and 1b. For a sentence like 3, this hypothesis would treat the second clause as the main clause and the first one as an adverbial clause, as indicated in Figure 1c. This hypothesis was first proposed by Chao 1948, 1968 and Dragunov 1952, and has been followed or argued for in such works as Tai 1973, Tang 1977, Li & Thompson 1978, 1981, and C.-R. Huang & Mangione 1985, although these authors may differ non-trivially in their analyses of specific constructions.

According to the Secondary Predication hypothesis, V2 in each of 1–3 is dominated by a maximal AP or S' which occurs as an adjunct, or secondary predicate, either under V' (as in Fig. 2a) or directly under the matrix S (as in Fig. 2b).

1 For example, Chao's original proposal (1968) was intended only for descriptive constructions like 1, not for resultatives like 2–3. However, since the argument he produced was naturally extendable to make the same point for resultative constructions, it is not surprising that others subscribing to this hypothesis have adopted it for all of 1–3. Furthermore, for certain writers the distinction between 1 and 2–3 is purely one of descriptive convenience, but has no theoretical status. Li & Thompson 1981, for example, regard all of these as instances of what they call the 'complex stative construction'. Under this view, both the descriptive and the resultative constructions should have the same structural analysis, their difference being inferred under appropriate pragmatic conditions.
tāmen māi de shā ‘the book that they bought’ (lit. ‘they buy de book’). A variant of the hypothesis represented by Fig. 1a might take de to be a clausal COMP of S’. According to Figs. 2a and 2b, on the other hand, de may be considered a COMP of the following resultative clause or the marker of the following AP as an adverbial modifier (cf. Ross 1984) which criticizes to the preceding verb, or it may be considered a suffix of the verb.

In this paper I argue for the SP hypothesis by addressing seriously the facts that have been claimed to support the PP hypothesis. In §2 below, I review the major arguments that have been put forth for the PP hypothesis. In §§3–5 I show that each of these arguments turns out to be a non-argument upon closer examination. Furthermore, although the facts that these arguments turn on present important problems for the SP hypothesis, I show that each of these facts is more naturally explained under a proposed analysis that is consistent with this hypothesis. In the remaining sections I turn to some positive arguments for Secondary Predication, and conclude with a brief summary of the entire argument.

Arguments for Primary Predication

2.1. A-not-A questions. Three major arguments for Primary Predication are worth considering. The first, and the best known, turns on the distribution of the so-called A-not-A questions (and the negative morpheme bù). This argument was first produced by Chao 1968, and has often been reproduced by others attempting to support this hypothesis. An example of an A-not-A question is given in 4:

(4) Zhāngsān xīhuān-bù-xīhuān nǐ?
Zhāngsan like-not-like you
‘Does Zhangsan like you or not?’

As shown in 4, an A-not-A question is formed by reduplicating the verb of the sentence and inserting the negative morpheme bù between the two identical verbs. Now, consider how an A-not-A question can be formed out of sentences like 1–3. Crucially, note that it is V2 but not V1 that takes the A-not-A form:

(5) a. tāmen pāo de kuāi-bù-kuāi?
you run de fast-not-fast
‘Do they run fast?’

b. *tāmen pāo-bù-pāo de kuāi?
you run-not-run de fast

(6) a. nǐ pāo de lèi-bù-lèi?
you run de tired-not-tired
‘Are you tired from running?’

b. *nǐ pāo-bù-pāo de lèi?
you run-not-run de tired

Given typical sentences like 4, where what is clearly the main verb appears in the A-not-A form, one may wonder why the A-not-A form must appear with V2 rather than V1, if V1 is the main verb. But if V2 is the main verb as pre-
scribed by the PP hypothesis, the question disappears, and the behavior of descriptive and resultative constructions with respect to A-not-A questions is exactly as expected. The same argument can be produced with facts concerning the placement of the negative marker bù, as shown in negative sentences like the following:

(7) a. tāmen pào de bù kuài.
    they run DE not fast
    ‘They don’t run fast.’

b. *tāmen bù pào de kuài.
    they NOT run DE fast

A tacit assumption underlying this argument is, of course, that an A-not-A question is well-formed only if its main verb appears in the A-not-A form.

2.2. LE-SUFFIXATION. The second argument for Primary Predication has to do with the distribution of verbal aspects such as the perfective le and the durative zhe. In the constructions under consideration, only V2 may take such suffixes, but not V1:

(8) a. tāmen kò de [yánděi liú-(le) chuílái].
    they cry DE tears flow-(PERF) out
    ‘They cried so much that tears came out.’

b. *tāmen kò-le de [yánděi liú-(le) chuílái].
    they CRY-PERF DE tears flow-(PERF) out

This is taken to show that V2 is a full-fledged main verb, while V1 is a ‘degenerate’ embedded verb—degenerate in the sense that it cannot take certain suffixes, like gerunds or infinitives. An argument of this sort appears in Li 1975 and Li & Thompson 1978, and can be found elsewhere as well.

2.3. BINDING: CONDITION C. The third argument is due to C.-R. Huang & Mangione 1985, which is based on sentences like the following, first discussed by Lingding Li 1963:

(9) [e zuì de [Zhāngsān zān-bù-gūlāi]].
    drunk DE Zhangsan cannot-stand-up
    ‘Zhangsan got so drunk that he couldn’t stand up.’

(10) e jìndōng de [Zhāngsān shuā-bù-chū huā lāi].
    excited DE Zhangsan cannot-speak-out words come
    ‘Zhangsan was so excited that he couldn’t speak a word.’

In these sentences, the understood subject of V1 (‘drunk’, ‘excited’) is also the subject of V2. But the subject occurs in overt form only with V2, not with V1. If V1 is the main verb, as shown by the bracketing given, then we have a configuration in which the empty subject asymmetrically c-commands its antecedent. This is in direct violation of a very general constraint on anaphoric relations, namely ‘Condition C’ of Chomsky’s 1981 Binding Theory, which requires all referential expressions to be free in reference from any c-commanding argument. In clear cases where V1 is the main verb, as in 11–12 below, coreference of the matrix and the embedded subject is clearly out:

Let us now reconsider each of the arguments which have been claimed to present problems for the Secondary Predication hypothesis, starting again with A-not-A questions.

A NOT-A QUESTIONS

3.1. EMBEDDED A-NOT-A FORMS. First consider the problem regarding A-not-A questions and bù-negation. Recall that a crucial assumption underlying this argument is that the verb that takes the A-not-A form in an A-not-A question is the main verb of that question. But this is a false generalization that seems to have been inherited from Chao 1968 by everyone who subscribes to the Primary Predication theory. A clear counterexample to this crucial assumption is the following sentence:

(14) ni rènwéi [tāmen hū-bù-hū huā lāi]?
    you think they will-not-will come
    ‘Do you think that they will come or do you think they won’t?’
The entire sequence in 14 is a direct A-not-A question, having the interpretation indicated in the English translation. But the A-not-A form occurs in the embedded clause, with the embedded (auxiliary) verb. Numerous similar examples can be constructed in which the main verb selects a declarative clause as its complement. This sentence is not very different from an ordinary wh-in-situ question in Chinese with its relevant wh-phrase appearing in the base (D-Structure) position of an embedded clause:

(15) nǐ rénwéi [tāmen zúi xīhuàn shéi]?
you think they most like who
‘Who do you think they like most?’

There are of course sentences where an A-not-A form cannot appear in an embedded clause. In particular, the distribution of the A-not-A form is considerably more restricted than that of an ordinary wh-word. As shown in 16, a direct wh-question can have the wh-word appearing in a sentential subject, an adjunct island, and a complex NP:

(16) a. [wǒ kān nàběn shū] bǐjiāo hǎo?
I read which book comparatively good
‘I read which book is better?’
(‘Which book is it more suitable that I read?’)

b. [nǐ kānjiān shéi de shìhòu, Zhāngsān shuí-žháo le]?
you see who REL time Zhangsan fall-asleep ASP
‘When you saw who, Zhangsan was already asleep?’
(‘Who is the person such that, when you saw him, Zhangsan was already asleep?’)

c. nǐ zúi xīhuàn [pìping shéi de shù]?
you most like criticize who REL book
‘You like books that criticize who?’
(‘Who is the person such that you like books that criticize him?’)

But the verb in such constructions cannot appear in A-not-A form and have scope over the matrix sentence:

(17) a. *[wǒ kān-bù-kàn zhebèn shū] bǐjiāo hǎo]?
I not-read read this book comparatively good

b. *[tā lāi-bù-lái de shìhòu, Zhāngsān shuí-žháo le]?
he come-not-come REL time Zhangsan fall-asleep ASP

However, the ill-formedness of these sentences has nothing to do with the A-not-A form being in an embedded clause per se, but is due rather to the fact that the interpretation rule that is associated with these sentences violates island constraints. In Huang 1982, 1983 I have argued that the distinction between 16 and 17 is due to the Empty Category Principle (ECP) of Chomsky 1981 applying at the level of Logical Form (LF). The relevant distinction here is that, whereas 16 involves wh-phrases in complement (object) positions, 17 involves interrogative elements (the A-not-A forms) in adjunct, non-argument positions. Assuming that the wh-phrases and the A-not-A forms are wh-moved in LF to an A’ position c-commanding the matrix S, the distinction between 16 and 17 is reduced to that between a complement trace and an adjunct trace resulting from long extraction—a distinction that fails nicely under the ECP. For example, after wh-movement in LF, 16a and 17a have the following structures:

(18) [nàběn shū, I, [wǒ kān tǐ] bǐjiāo hǎo]?
which book I read comparatively good

(19) *[kān-bù-kàn, I, [wǒ tǐ, zhēbèn shū] bǐjiāo hǎo]?
read-not-read I this book comparatively good

The ECP requires a trace to be properly governed, and a trace is properly governed if and only if it is either lexically governed or antecedent-governed.

I assume that an A-not-A question is a sentence whose INFL has the feature [+wh] which is phonetically realized by a reduplication of a [+V] (verb or auxiliary) element immediately following it. Thus, the trace in 19 is actually that of the INFL with [+wh]. An INFL trace is treated as a par with an adjunct in not being ‘lexically governed’.
In both 18 and 19 the trace is too far from the moved category to be antecedent-governed by it, so in order to satisfy the ECP both traces must be governed by a lexical category. In 18 this requirement is satisfied, since the complement trace is lexically governed by the verb ‘read’. In 19, however, the adjunct trace is not governed by any lexical category, so this structure is ruled out by the ECP at LF. This explains why 17a cannot be used as a direct A-not-A question meaning. ‘Is it better for me to read this book, or is it better for me not to read this book?’ The other sentences in 16 and 17 illustrate the same kind of asymmetry and can be explained in the same way.

Thus, abstracting away from independent principles, there is no independent restriction against an A-not-A question whose embedded verb takes A-not-A form.

3.2. You/-le Alternation. The grammaticality of sentences like 14 falsifies the hypothesis that only main verbs can occur in the A-not-A form. Therefore, the grammaticality of 5a and 6a does not provide evidence that V2 is the main verb in these sentences. We are now left with the other half of the problem: If V1 is the main verb in 1-3, why can’t it take the A-not-A form? This question is significant since it has otherwise been assumed that all clear main verbs are capable of occurring in A-not-A form, and adoption of the PP hypothesis provides an immediate prima facie solution by eliminating the question altogether. I will show, however, that this solution is only an illusion, and that there is an alternative, more desirable, account for the facts under consideration.

Note that a similar question arises in connection with the well-known alternation of perfective aspect markers in this language, first treated in Wang’s important work (1965). Wang observed that the two elements -le and yóu, both having a meaning and function similar to that of the perfective aspect, are in complementary distribution. The marker -le occurs only as a suffix to a verb in affirmative sentences, while yóu occurs only as an auxiliary preceding the verb in negative or A-not-A contexts. This is shown in 20. (The negative morpheme bù takes the allomorphic form méi just in case it immediately precedes yóu ‘have’, whether the latter is used as a main verb or as an auxiliary.)

* The following sentence is grammatical, however, with the sentential subject interpreted as an indirect A-not-A question:

(i) [wò kàn-bù-kàn shèbèn shí] méi yóu guānrì.

‘Whether I read this book or not doesn’t matter.’

This is also predicted by the ECP. Since in an indirect question the scope of the interrogative element is restricted to an embedded clause, the A-not-A element is short-moved to a position c-commanding the sentential subject, but not beyond it. The trace, though not lexically governed, is antecedent-governed in this case in accordance with the ECP.

* This ECP account of complement/adjunct asymmetries receives extensive further support from other areas of English and Chinese syntax, and from other sources, as can be seen from works like Lasnik & Saito 1984, Chomsky 1986, Koopman & Sportiche 1986, Carstens 1986 and references cited there. Work by Larson 1985 also shows that the interpretation of disjunct scope in English is constrained by ECP, in a way similar to that of A-not-A questions in Chinese.

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(20a) tāmén piàn-le Lìsī.

they cheat-PERF Lìsī.

‘They cheated Lìsī.’

b. tāmén méi yóu piàn Lìsī.

they not have cheat Lìsī

‘They did not cheat Lìsī.’

c. tāmén yóu-méi-yóu piàn Lìsī?

they have-not-have cheat Lìsī

‘Did they cheat Lìsī?’

Crucially, the main verb piàn, if suffixed with perfective -le, cannot be negated or occur in A-not-A form:

(21) *tāmén bù piàn-le Lìsī.

they not cheat-PERF Lìsī

(22) *tāmén piàn-bù-piàn-le Lìsī?

they cheat-not-cheat-PERF Lìsī

In order to use the perfective -le in these contexts, something must be inserted before the main verb. For example, 23, with the copula shì (here used as a marker for the emphatic modality), allows -le in these contexts.

(23a) tāmén bù shì piàn-le Lìsī.

they not be cheat-PERF Lìsī

‘It is not the case that they cheated Lìsī.’

b. tāmén shì-bù-shì piàn-le Lìsī?

they be-not-be cheat-PERF Lìsī

‘Is it the case that they cheated Lìsī?’

A related fact is indicated in 24:

(24a) tāmén lài le.

they come PERF/INCH

‘They came/have come.’ (Perfective)

‘They come now.’ (Inchoative)

b. tāmén bù lài le.

they not come INCH

‘They do not come any more.’

c. tāmén méi yóu lài.

they have come

‘They did not come.’

It is fairly well known that a sentence-final -le immediately following a verb has two aspectual meanings: perfective or inchoative (see Teng 1973 and Li & Thompson 1981 for discussion). This is reflected in the ambiguity indicated for 24a. However, the perfective meaning disappears in a negative context, as shown in 24b (cf. 24c), thus showing again that the perfective -le is incompatible with an immediately preverbal bù.

This range of facts is accounted for by Wang 1965 in terms of a rule of ‘affix-hopping’, which obligatorily shifts a base-generated yóu to postverbal position in affirmative contexts (followed by a morphophonemic rule of yóu → -le) but is blocked otherwise.
The pattern of -leyóu alternation shows that it is not true that all main verbs can be directly negated and occur in A-not-A form. There is no doubt that in sentences like 20a 'cheat' is the main verb. But it cannot be negated by bù or A-not-A-questioned. This further shows that the distribution of bù and A-not-A questions is independent of the identification of the main verb.  

3.3. THE SCOPE OF Bù. What explains the -leyóu alternation anyway? Wang's 1965 treatment involving affix-hopping seems to be an accurate description of an important pattern in Chinese grammar, though the very existence of this pattern remains to be explained. As a step toward a possible explanation I propose the following principle:

(25) Principle P: The negative morpheme bù forms an immediate construction with the first V⁰ element following it. 

Assume that bù is locally (Chomsky)-adjoined to V⁰. This has the effect of creating a negated V. Consider now the ill-formed 21–22. According to 25, the relevant portion of the structure of 21 is as follows:

(26) ([(v₀ bù [v₀ pián] le) not cheat PERF] 

According to this structure, the negative is first attached to the verb 'cheat', and then the perfective -le is attached to the negated verb. But such a structure must be ruled out for semantic reasons: It is absurd to assign the perfective to a negated verb, just as it is contradictory to assert the completion of some event that one says does not happen. For a similar reason, a verb that is being A-not-A-questioned cannot take the perfective. 

Consider now the well-formed 20b. Assuming yóu 'have' to be a member of the aux complex dominated by infl, the structure of 20b is then 27, given Principle P:

(27) [s tāmén [infl. méi yóu] [v₀ pián Lisi]] 

\[tā méi-yóu pāo de hén kuài.\] 

\[he not-have run DE very fast\] 

'He did not run fast.'

b. \[tā bù-shí pāo de hén kuài.\] 

\[he not-be run DE very fast\] 

'It is not the case that he runs fast.'

c. \[tā bù-huí pāo de hén kuài.\] 

\[he not-will run DE very fast\] 

'He will not run fast.'

These strings are ruled out semantically because they assert that someone is fast with respect to some event, but at the same time presuppose the non-existence of, or question the existence of, the relevant event. Notice that our theory predicts, correctly, that bù or A-not-A can precede V1 as long as it is supported by an element in infl:

(30) a. \[tā méi-yóu pāo de hén kuài.\] 

\[he not-have run DE very fast\] 

'He did not run fast.'

b. \[tā bù-shí pāo de hén kuài.\] 

\[he not-be run DE very fast\] 

'It is not the case that he runs fast.'

c. \[tā bù-huí pāo de hén kuài.\] 

\[he not-will run DE very fast\] 

'He will not run fast.'

(31) a. \[tā yóu-méi-yóu pāo de hén kuài?\] 

\[he have-not-have run DE very fast\] 

'Did he run fast?'

b. \[tā shì bù-shí pāo de hén kuài?\] 

\[he be-not-be run DE very fast\] 

'Is it the case that he runs/ran fast?'

(28) [s tāmén [infl. bù-shí] [v₀ pián-le Lisi]] 

\[they not-be cheat-PERF Lisi\] 

'It is not the case that they cheated Lisi.'

The use of a preverbal shi or yóu thus has the effect of 'do-support', in preventing bù from being cleftized to the main verb in cases where this would lead to absurdity.

If this interpretation of -leyóu alternation is on the right track, then we also have an explanation for why V1 cannot be negated or A-not-A-questioned when followed by a resultative or descriptive expression, as in 1–3. Principle P requires that sentences with bù preceding V1 have structures like 29:

(29) a. \[^{+}tāmén \[bù-pāo \] de hén kuài.\] 

\[^{+}they not-run DE very fast\] 

b. \[^{+}tāmén \[pāo-bù-pāo \] de hén kuài?\] 

\[^{+}they run-not-run DE very fast\]
c. tà néng bú-néng pào de hên kuài?
‘Can he run fast?’

In this connection, compare the following English data:

(32) Does he run fast?
  a. ?*No, he doesn’t run.
  b. No, he runs slow.

As shown, 32 cannot simply be a yes/no question about whether he runs or not. On the other hand, it can be a question about the truth of fast alone, or about the truth expressed by the entire string run fast. Similarly, He doesn’t run fast can be a negation of fast alone or of the combination of run+fast, but not of run alone. These patterns are clearly similar to the Chinese facts under consideration. The difference is that the patterns are displayed more ‘overtly’ in Chinese than in English. In Chinese, V2 alone is negated or questioned when it is directly preceded by bù or when it is turned into an A-not-A form. The entire combination V1 + V2 is negated or questioned when bù or the A-not-A form appears in the matrix INFL (as in (30–31)) c-commanding both V1 and V2. Given our Principle P, a sentence in which V1 is directly preceded by bù or appears in A-not-A form would be interpreted as one that negates or questions V1 alone, and such sentences are ruled out as ill-formed for the same reason that explains the possible interpretations of 32 in English.

Again, note that 32 also shows that the distribution of A-not-A and bù is independent of the syntactic notion of main-verb-hood. Both English and Chinese are subject to the restriction that V1 run cannot be negated or questioned alone. But in English there is no doubt that V1 is the main verb. So the same semantic fact cannot be used to establish that, in Chinese, V2 is the main verb.

3.4. More on Principle P. Principle P thus seems to enable us to explain the facts in a rather plausible way, as it ties together two heretofore unrelated areas of Chinese syntax: -léylou alternation and the distribution of A-not-A and negation in sentences like 1–3. It is clear that an explanation of 1–3 based on analyzing V2 as the main verb does not also account for -léylou alternation.

However, it is unlikely that Principle P exists as an independent principle of Chinese. It would be highly desirable to derive it as a theorem from some other general principle(s) of Universal Grammar. There may be a general principle that néng must be attached to, and lexically realized with, a V⁰ (or more generally X⁰) element. This may, in turn, be a special case of the more general requirement that elements in INFL (tense, agr, and other elements of modality) must be lexically realized, a requirement that motivates Koopman’s 1984 theory of verb-movement, for example (cf. also Chomsky 1986). In line with the V-movement hypothesis, we may assume that bù is base-generated as a bound form in an INFL node which, if containing no lexical material, triggers Koopman’s verb-raising rule. Adopting the extended X’ notation of Chomsky 1986, a sentence like támén bù xiānluán Lisi ‘They do not like Lisi’ will then have the structure in 33:¹²

(33) [w támén [w bù xíhúan] [w [w t] Lisi]]

they not like Lisi

Whether or not Principle P can be further derived in this way, it suffices for our purposes to show that there is some real evidence that bù forms an immediate constituent with the zero-level category that follows it. For example, there are certain lexical items that are clearly the result of fusion of bù + V⁰. Three such examples are shown in 34:

(34) bù + yìng = bìng nǐ bìng lái tā. ‘You don’t come.’
bù + yìng = mèiyì yìmén yìmèi yì lái. ‘They didn’t come.’
bù + yìng = bìng nǐ bìng lái le. ‘You needn’t come now.’

The intimate relationship between bù and the immediately following element is also evident from historical data. Since Ting 1933, it has been widely recognized as a fact of Archaic Chinese that when bù was immediately followed by the pronoun zhì ‘it’, the two syllables fused into fù. Consider the following passage from Liji, or the Book of Rites:

(35) suí yóu jí yáo, fù shí, bù zhì qí zhí ye; though have good food, not-it eat not know its taste prt
  suí yóu zhì dào, fù xuè, bù zhì qí shān ye; though have top truth, not-it learn not know its good prt
  zhì yì xuè ránhǒu zhì bù zhì,... this reason learn afterwards know not enough

‘Even though you may have good food, if you don’t eat it you won’t know its taste. Even though there are top truths of truth, if you do not learn them you won’t know their virtue. For this reason, one realizes one’s lack of sufficient knowledge only after one has learned,...’

In this example, note crucially that the negative form fù is only followed by a transitive verb without an overt object, whereas the form bù is only followed by a transitive verb with an object or by an intransitive verb. The semantics of each sentence, furthermore, indicates that the missing object must be zhì ‘it’. Given that pronominal objects in Archaic Chinese occurred preverbally in negative and interrogative contexts (possibly a case of cleftization as in some Romance languages, among others), examples like 35 provide strong evidence for Ting’s 1933 claim that fù is the result of fusing bù and zhì.

The close relationship between bù and the following element is also evidenced by the fact that néng cannot occur without a following lexical element:¹³

¹¹ This requires that there be an INFL node immediately preceding kuài in támén pào de kuài ‘they run fast’, which in turn entails that kuài is dominated by IP in addition to AP.
¹² That the negative bù does not occur freely has been observed by several scholars. See Yang 1971 and the references cited there. One exception to this generalization is the use of bù to mean ‘no’, as in bù, tà méi lái ‘No, he didn’t come’.

¹³ The requirement to realize INFL lexically may still be reduced to deeper reasons, e.g. so as to enable INFL to assign Case to the subject (Koopman 1984).
(36) *Zhăngsan xiūduăn zhèbèn shù. Lìsì bù.  
Zhăngsan like this book Lìsì not  
*Zhăngsan likes this book, (but) Lìsì not.
(37) Zhăngsan xiūduăn zhèbèn shù. Lìsì bù xīhuān.  
Zhăngsan like this book Lìsì not like  
‘Zhăngsan likes this book, (but) Lìsì doesn’t.’

Finally, there is also some possible evidence for the supposition that V-movement has taken place in contexts like 37. According to the V-movement hypothesis, the verb xīhuān ‘like’ in the second clause of 37 has moved out of VP into INFL, where it forms an immediate constituent with bù. Therefore, following xīhuān in 37, there is a null VP (and not just a null object). This idea coincides with the intuition that Chinese sentences like 37 are really on a par with VP ellipsis constructions in English. Consider the following English sentences:

(38) a. *John likes this book, but Bill not.  
b. John likes this book, but Bill doesn’t.

The auxiliary do in 38b seems to serve no more purpose than to lexically support an element in INFL. Now, the repetition of the verb xīhuān ‘like’ in 37 also seems to serve no other purpose than ‘do support’. That is, although the verb is repeated in 37, there is no more content of a VP node in the second clause of 37 than there is in its English translation, or in 38b. The idea that the second clause of 37 contains a null VP rather than a mere null object also receives support from the fact that such apparent ‘null-object constructions’ exhibit strict/sloppy ambiguity of the sort typical of VP ellipsis. Thus, just as 39 is ambiguous between a strict (referential) and a sloppy (bound-variable) reading of the deleted pronoun his in English, the Chinese sentence 40 is ambiguous in a similar way:

(39) John saw his mother, and Mary did, too.
(40) John kànjiān-le tāde māmā, Mǎlì yě kànjiān-le.  
John see-perf his mother Mary also see-perf  
‘John saw his mother, and Mary knew that Bill did, too.’

In both 39 and 40, either John and Mary saw the same woman (the strict reading), or both of them saw their own respective mothers. This range of facts in English receives a fairly natural explanation from the theory developed by Sag 1976 and Williams 1977. According to Sag’s account, for example, 39 is characterized as well-formed just in case the empty VP corresponds in Logical Form to a λ-expression that is an ‘alphabetic variant’ of the λ-expression associated with the antecedent VP. If the antecedent VP in 39 is translated into λx (x saw his mother), the pronoun his is taken to be referential. The empty VP will be translated into the same expression, and we have the strict reading. On the other hand, if the antecedent is translated into λx (x saw x’s mother), then the pronoun is taken to be a variable bound to whoever the λ-predicate is a predicate of, and we have the sloppy reading. This account correctly predicts that the antecedent of the sloppy pronoun is restricted to the binder of the λ-expression (the local subject of the empty VP). Thus, although 41 has a sloppy reading according to which Bill saw Bill’s mother, it does not have another sloppy reading according to which Bill saw Mary’s mother:

(41) John saw his mother, and Mary knew that Bill did, too.

Crucially, all this is achieved under the assumption that the availability of a sloppy reading depends on the existence of a category corresponding to a λ-expression. Turning now to the Chinese example in 40, if it is hypothesized that the second clause is followed by a null VP whose verb has been raised to INFL, the strict/sloppy ambiguity of the sentence follows immediately, and so does the lack of a second sloppy reading (meaning that Bill saw Mary’s mother) in 42:

(42) John kànjiān-le tāde māmā, Mǎlì zhīddào Bill yě kànjiān-le.  
John see-perf his mother Mary know Bill also see-perf  
‘John saw his mother, and Mary knew that Bill did, too.’

If, on the other hand, the second clause of 40 is assumed to have merely a null object, such an empty category would not be translated into a lambda predicate, since NPs denote individuals but not properties. In order to allow for one (but not more than one) sloppy reading in 40 and 42, it would be necessary to state ad hoc conditions on the null object which duplicate precisely the Sag-Williams account, but which miss an important generalization otherwise captured by that account.

3.5. An apparent counterexample. Our consideration of the distribution of bù and A-not-A questions will not be complete without a mention of sentences of the following sort (brought to my attention by Y.-H. Audrey Li):

(43) rūguò nǐ bù pāo de kuāi, nǐ jiù dé-bù-dào jiāngpín.  
if you not run de fast you then can’t get prize  
‘If you don’t run fast, then you won’t get the prize.’
(44) bāiguān tā pāo-bù-pāo de kuāi, nǐ dōu dé-bù-dào jiāngpín.  
regardless he run-not-run de fast you all can’t-get prize  
‘Regardless of whether he runs fast or not, you won’t get the prize.’

These sentences each contain an adverbial clause whose V1 (but not V2) directly follows bù (as in 43) or occurs in an A-not-A form (as in 44). These sentences directly falsify the VP hypothesis, which crucially assumes that only V2 may take bù or the A-not-A form and which identifies V2 as the main verb on the basis of this (now false) assumption. On the other hand, these sentences do not falsify the SP hypothesis, which does not relate the identity of a main verb to the distribution of bù and A-not-A; but they do raise a question about our analysis under this hypothesis, in particular our Principle P. If, according to this principle, bù forms an immediate constituent with V1 in 43–44, then the
same semantic constraint that was invoked to rule out sentences like 21–22, and the (b) sentences of 5–7, should also rule out 43–44.

It can be shown, however, that the sentences 43–44 do not present a real problem for our analysis. What our analysis predicts, in these cases, is that *bù is not immediately attached to pào in such contexts as 43–44, though it is in the other contexts. There is reason to believe that this is indeed the situation.

One obvious difference between 43–44 on the one hand and 21–22, 5b, 6b, 7b on the other is that in the former, but not in the latter, the V1–V2 sequence is embedded as an adverbial adjunct clause which carries with it a meaning of volition or of future modality, though the element of modality is not overtly expressed with words like *hui ‘will’ or xiàng ‘want to’. What is crucial is not that the clause containing V1–V2 must be embedded per se, but that it has a (possibly abstract) future or volitional modality in it. In fact, although one of them was marked as ungrammatical, in fact both sentences in 7 (repeated below) are grammatical as long as they are understood with the right meaning:

(7) a. tāmen pào de bù kuài.
   they run de not fast
   ‘They don’t run fast.’
   b. tāmen bù pào de kuài.
   they not run de fast
   ‘They won’t run fast.’

In particular, 7b means that they won’t run fast (meaning perhaps that they refuse to do so), but cannot be understood as a general statement about them that they don’t run fast. The semantic contrast between 7a and 7b is nicely brought out in the following contexts:

(45) a. tā pào de bù kuài, shì yínwèi tā pào-bù-kuài.
   he run de not fast be because he can’t-run-fast
   ‘He doesn’t run fast, because he can’t run fast.’
   b. tā bù pào de kuài, shì yínwèi tā bù xiàng pào.
   he not run de fast be because he want run
   ‘He won’t run fast, because he doesn’t want to run.’

The semantic contrast suggests that in 43–44, 7b, and 45b, there is an abstract modality element in infn. that supports *bù and prevents *bù from forming an immediate constituent with the verb pào, and these sentences are well formed because no semantic anomaly of the sort described above need arise. Stated in a slightly different way, the *bù in these sentences means ‘won’t’ and not simply ‘not’. And the A-not-A question in 44 is a question about the choice between ‘will’ and ‘won’t’, not about the choice between ‘run’ and ‘not run’.

15 In English, the future modality is also unexpressed in conditional clauses, as in If it rains tomorrow, ...

16 A question arises here as to how we get the form pào-bú-pào in 44 even when the sentence is a question about an abstract modal ‘will or won’t’. In Huang 1987 I show that an A-not-A question is a constituent question with a [+wh] infn. constituent (much as a why-question is a constituent with a [+wh] adverbial constituent). This [+wh] infn. is phonetically realized in Mandarin Chinese via a rule of reduplication, which reduplicates a phonetic string to its right and inserts

The situation observed here in Mandarin with sentences like 43–45 is also observable in other Chinese languages. For example, in Taiwanese the negative morpheme *m cannot in general occur without a following verb or auxiliary (see Li 1971 and Lin 1974):

(46) a. li u chi: asi hou? (hou = m + u)
   you have money or not-have
   ‘Have you money or haven’t you?’
   b. *li u chi: asi m?
   you have money or not
   ‘Do you like this book or not-like
   ‘Do you like this book or don’t you?’

(47) a. li ai chibun chheh asi m-ai?
   you like this book or not-like
   ‘Have you been to America or haven’t you?’
   b. *li ai chibun chheh asi m?
   you like this book or not
   ‘Do you want to go America or not want to?’

(48) a. li bat kbiik asi m-bat?
   you EXP go America or not EXP
   ‘Have you been to America or haven’t you?’
   b. *li bat kbiik asi m?
   you EXP go America or not
   ‘Do you want to go America or not want to?’

As indicated in 49b, the negative *m can occur alone precisely where it is related to a volitional modality, so that it really means ‘won’t’ or ‘not want to’, not simply ‘not’. Again, the seemingly exceptional behavior of *m in 49b can be explained by the postulation of an abstract element in infn. which combines with *m into a negated infn.

*bù between the original and its copy. Pào-bú-pào is the phonetic realization of the [+wh] infn. in 44, and no V-raising has taken place here. What is being questioned is not pào, but the abstract infn. c-commanding the entire VP. There is independent evidence that the scope of the question is not related to the length of the reduplicated string. For example, the reduplication can affect a meaningless subpart of a verb, as in (i):

(i) ní xi-bú-xhán Lí?  
you like-not-like Lí
   ‘Do you like Lí or not?’

Although what is reduplicated is the first (meaningless) syllable of xihán meaning ‘like’, the question is clearly not about such meaningless elements.

17 This is the reason why Li 1971 postulates the occurrence of two m’s in Taiwanese: *m1 and *m2: m1 is the pure negative which cannot occur free and m2 is the negation of ‘want to’ and can occur free.
We can conclude, then, that although sentences like 43–44 directly falsify the PP hypothesis, they not only do not constitute a problem for the SP hypothesis but, in fact, provide additional confirmation for a prediction made by our analysis.

**Le-suffixation**

4. Let us now consider the second argument for the PP hypothesis. The crucial fact regarding 1–3 is that only V2—not V1—may be suffixed with -le. Here again, I will show that this does not bear on which of the two verbs is the main verb.

On the one hand, any verb that can take -le in a main clause can also take -le when embedded under such verbs as 'think' or 'say':

(50) a. Lisi dā-le tā.
    Lisi hit-PERF he
    'Lisi hit him.'

b. Zhāngsàn yǒu-Lisi dā-le tā.
    Zhāngsan think Lisi hit-PERF he
    'Zhāngsan thought that Lisi hit him.'

On the other hand, there are many main verbs that cannot take -le. It is well known, for example, that static predicates do not take -le:

(51) *tāmen xīhuǎn-le Lisi.
    they like-PERF Lisi
    'They liked Lisi.'

As Li & Thompson have argued, a central requirement for the use of the suffix -le is that the verb to which it is attached must be one that denotes a 'bounded event', i.e., an event being viewed in its entirety (1981:185–202). Ex. 51 is thus ill-formed because the static verb 'like' does not express an event, much less a 'bounded' one. This condition, it seems, is explained why in 1–3 the main verb cannot take -le. Although verbs like pāo 'run', tiān 'jump', and kū 'cry' can express bounded events and can take -le in simple sentences, when they are followed by a descriptive expression they do not BY THEMSELVES refer to bounded events. In Li & Thompson's terminology, sentences like 1 are 'complex static constructions', and as static constructions their verbs of course do not take -le.18

(52) *tāmen pāo-le de hēn kuài.
    they run-PERF de very fast
    'They ran very fast.'

18 Compare 52 to the well-formed (51), where pāo does take -le:

(50) tāmen hēn kuài de pāo-le.
    they very quickly run-PERF
    'They very quickly ran away.'

The essential difference between a postverbal and a preverbal hēn kuài is that a sentence with postverbal hēn kuài is active, expressing general properties, whereas one with preverbal hēn kuài is passive, referring to specific (and often bounded) events. In this regard, consider also the difference between fast and Quickly in English. A preverbal manner adjunct seems to necessarily refer to specific events, but a postverbal adverb can be generic: *He quickly runs, He runs quickly, *He fast run, He ran fast.

As for the resultative constructions in 2–3, even though such constructions as a whole may denote bounded events, it is by virtue of the resultative complement denoted by V2 that they do so. That is, the resultative clause containing V2 does the job of 'resultificizing' V1 (Li & Thompson 1981:206). The V1 in each case does not in itself denote a bounded event, and therefore does not take -le.19

**Binding Condition C**

5.1. Irrelevance of the condition. Consider now the argument involving sentences like 9–10, repeated below:

(9) zhuī de [Zhāngsàn shū-bù-chā huài lái].
    drunk de [Zhāngsan cannot-speak-out words]
    'Zhāngsan got so drunk that he couldn't speak.'

(10) zhuī-de [Zhāngsàn shū-bù-chā huài lái].
    excited de [Zhāngsan cannot-speak-out words]
    'Zhāngsan was so excited that he couldn't speak.'

These sentences present an important problem for the SP hypothesis because, under this hypothesis, the understood logical subject of V1 c-commands its antecedent, in violation of Condition C. The problem does not arise under the PP hypothesis, because V1 and its subject would be contained in an adverbial clause, and neither the empty category nor its antecedent c-commands the other. This is a very interesting piece of prima facie evidence for Primary Predication.

There is an important fact about these sentences, however, that previous researchers have not noticed. This concerns a crucial semantic difference between 9–10 and the following counterparts, where the subject position of V1 is filled with Zhāngsàn and that of V2 with an empty category:

(53) Zhāngsàn, zúi de [e, zhūn-bù-chā].
    Zhāngsan drunk de cannot-speak
    'Zhāngsan was so drunk that he couldn't speak.'

(54) Zhāngsàn, jǐdòng de [e, shū-bù-chā huài lái].
    Zhāngsan excited de cannot-speak-out words
    'Zhāngsan was so excited that he couldn't speak.'

Whereas in 9–10 there is an implicit (but salient) argument fulfilling the thematic role of an external Causer whose reference is understood in discourse, in 53–54 there is no such argument. Thus, according to 54 Zhāngsan can be excited for no reason or for unknown reasons, but according to 10 an external cause for Zhangsan's excitement is understood, so that the latter is better translated as 'it got Zhangsan so excited that he couldn't speak a word.' Exx. 53–54 can be used to initiate a discourse, but 9–10 would be ill-formed if used in a situation where the implicit causer has no definite reference.

The fact that exx. 9–10 involve an implicit Causer suggests that the empty subject preceding V1 is not c-indexed with the c-commanded Zhāngsàn, but is instead a free zero pronoun referring to the understood Causer. If this is
correct, then these sentences do not constitute a problem for Binding Condition C, and a potential argument for the PP and against the SP hypothesis disappears. Independent evidence for this analysis of 9–10 comes from the fact that, if the understood external Causer is spelled out lexically, it occupies precisely the subject position preceding V1:

(55) zhèpǐng jiǔ zui de [zhàngsàn zhàn-bù-qílāi],
this wine drunk de Zhangsan cannot-stand-up
This bottle of wine got Zhangsan so drunk that he couldn’t stand up.

(56) zhèjiàn shì jìdǒng de [zhàngsàn shuō-bā-chū huā lái],
this event excited de Zhangsan cannot-speak-out words come
This event got Zhangsan so excited that he couldn’t speak a word.

As a possible objection to the claim that the empty subject in 9–10 refers to an external Causer but does not co-refer with the embedded subject, one might suggest that the Causer ‘this bottle of wine’ or ‘this event’ in 55–56 in fact occupies the topic position but not the subject position of these sentences. This suggestion has the potential of enabling one to maintain that the empty subject position preceding V1 in 9–10 is still coindexed with Zhàngsàn, thereby preserving an argument for the PP hypothesis. Actually, however, such a view is untenable. If ‘this event’ in 56 occupies the topic position followed by a subject e coindexed with Zhàngsàn, then 56 should be semantically on a par with 57:

(57) zhèjiàn shì, Zhàngsàn, jìdǒng de [e, shuō-bā-chū huā lái],
this event Zhàngsan excited de cannot-speak-out words come
As for this event, Zhàngsan was so excited that he couldn’t speak a word.

But there is an important (though perhaps subtle) semantic difference between 56 and 57. In 57, the relationship between the topic and the comment is a vague ‘as for’ relationship. The topic need not be understood to be the Causer of Zhàngsan’s excitement; it might refer to something Zhangsan is excited about, and it may be that something or someone else (or he himself) has caused his excitement about the topic. But in 56 ‘this event’ is directly understood to be the Causer of Zhangsan’s excitement. The contrast between 56 and 57 suggests that even if ‘this event’ or ‘that article’ occupies the topic position in 56, it still binds the empty subject position before V1, rather than being loosely related to the comments by an ‘aboutness relation’ (as in 57). If so, then the empty subject before V1 is not coindexed with the NP before V2, and again there is no violation of binding principles.

There is considerable additional evidence for the subjecthood of the NP preceding V1. For example, in the following sentence the reflexive zìjī ‘self’

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(58) (tā zhěngtiān qì mà.) e, bā zìjī, qì de mān-tōu-dào-hú.
he whole-day ride horse ba self ride de sweat-all-over-head
‘(He had been riding the whole day.) He got himself to ride until he had sweat all over his head.’

Given the well-known fact that the reflexive in Chinese must have a subject as its antecedent, it is clear that the empty category in 58 is a subject.

Finally, the contrast between 53–54 and 55–56 is analogous to the clear contrast between 59 and 60:

(59) tā xiào-sī le,
he laugh-die asp
‘He died laughing.’

(60) nǐ xiào-sī tā le,
you laugh-die he asp
‘You caused him to die laughing.’

The subjecthood of the first NP in the transitive sentence 60 can be established simply by the fact that it can be deleted in an imperative or under an Equi verb:

(61) biè xiào-sī rèn le,
don’t laugh-die people asp
‘Don’t cause people to die laughing.’ (Don’t be ridiculous.)

(62) wǒ hǎi bù xiāng [pro xiào-sī tā],
I still not want laugh-die he
‘I still don’t want to cause him to die laughing.’

In short, there is ample evidence that 9–10 each contain an implicit subject whose reference is distinct from Zhàngsàn, and as such they do not constitute a binding theory violation under the SP hypothesis.

5.2. The analysis of causatives. Sentences like 9–10 and 53–56 do raise a question about how such sentences are to be analyzed in a proper theory of thematic relations and phrase structure. In particular, note that predicates like zìjī ‘drunk’ and jìdǒng ‘excited’ are normally intransitives that take a single animate argument, the subject. So sequences like zhèpǐng jiǔ zui-le wǒ ‘This bottle of wine got me drunk’ are impossible. The question is why in 53–56 such verbs take wines and events as their subjects and precede their ‘logical subjects’ (Zhàngsàn). The following sentences, where the ‘logical objects’

21 This situation does not, of course, violate Condition C, since what we have here is an anaphor bound by a zero pronoun. What is relevant for us is simply that the pre-V2 NP is a R-expression (as in 9 and 10), it is not coindexed with the pre-V1 NP, so that 9–10 do not constitute a violation of Condition C, and therefore present no problem for the SP hypothesis.


23 In Classical Chinese, certain intransitives of this sort do have a causative (and a non-causative) meaning, as in jì duō zui rèn, rēn zì zui ‘The wine doesn’t get one drunk, but one gets drunk by oneself.’
occur as the subject of V₁, pose a similar problem:

(63) tā de huà tīng de [wǒ xǐn-jǐng-dān-zhàn],
his word hear DE I tremble-with-fear
'His words caused me (after hearing them) to tremble with fear.'

(64) zhèdēn fān chī de [Lìsī yì-máo-hù-tòng],
this meal eat DE Lìsī one-dime-not-left
'This meal got Lìsī completely broke (after eating it).'

The generalization that emerges from these sentences is that the causative meaning is available only from the combination of V₁ and V₂ as a whole, not from V₁ or V₂ alone. This generalization obviously also holds of verbal compounds like xiào-sī 'laugh-die' exemplified in 59–60. In particular, the combination xiào-sī 'laugh-die' can mean either 'to laugh until one dies' (59) or 'to cause one to laugh until one dies' (60). However, xiào 'laugh' alone can only have a noncausative use.²⁴

Recall also that the difference between 53–54 and 55–56 is parallel to that between 59 and 60. The predicate in 53, 'got so drunk as to be unable to stand up', is inchoative, and the argument Zhāngsūn is the Experience. The predicate in 55 is causative, taking 'this wine' as Causer and Zhāngsūn as Causee. Similarly, xiào-sī is inchoative in 59, taking an Experience, and causative in 60, taking a Causer and a Causee. Below are more causative examples, where the members of each pair do not differ semantically in any significant way.

(65) a. nǐ qi-sī wǒ lè.
you angry-die I ASP
'You cause me to laugh to be angry to die.' (I.e., you piss me off.)
b. nǐ qi de [wǒ bàn sī],
you angry DE I half die
'You caused me to be so angry as to be half dead.'

(66) a. zhějiān shí kā-hóng-le Lìsī de yān-jīng,
this matter cry-red-ASP Lìsī 's eyes
'This matter 'cried-red' Lìsī's eyes.' (I.e., this matter caused Lìsī to cry until he got red eyes.)
b. zhějiān shí kā de [Lìsī de yān-jīng hóng le],
this matter cry de Lìsī 's eyes red ASP
(Same as (a).)

There are two syntactic differences, of course, between the (a) and (b) members here and between 59–60 and 53–56. The first is that xiào-sī 'laugh-die', qi-sī 'angry-die', and kā-hóng 'cry-red' are short enough to be treated as a word

²⁴ If used transitively, xiào can only mean 'to ridicule, laugh at', not 'to cause one to laugh':

(i) tā xiào-le.
he laugh-PFV
'He laughed.'

(ii) wǒ xiào tā.
I laugh he
'I laughed at him.'

(a V²) each, whereas the predicates meaning 'cause to become so drunk as to be unable to stand up' (as in e.g. 55) are long sequences that have to be treated as phrases. The other difference is that a short V₁-V₂ sequence may be directly followed by a Causee argument (as in the (a) sentences above and in 60), whereas a long V₁-V₂ sequence cannot. In the latter case, the Causee argument must occur either between V₁ and V₂ (as in the (b) sentences above and in 9–10 and 55–56), or else before the entire V₁-V₂ combination as subject of a passive sentence or as a preverbal object with the preposition bā:

(67) wǒ bèi nǐ qi de bān sī.
1 by you anger de half die
'I am pissed off by you to half death.'

(68) nǐ bā wǒ qi de bān sī.
you bā I anger de half die
'You pissed me off to half death.'

Any theory that attempts to characterize sentences like 9–10 correctly in relation to their 'inchoative' counterparts must, therefore, capture: (a) the generalization that the causative meaning arises from the combination of V₁ + V₂ as a whole; (b) the semantic-thematic parallelism between lexical causativization (as in 60, 65a, and 66a) and phrasal causativization (as in 55–56, 65b, and 66b); and (c) the syntactic differences between them. To these ends I propose to analyze inchoative resultative constructions like 53–54 as having a D-Structure of the form in Fig. 4, and causative sentences like 9–10 and 55–56 as having a D-Structure of the form in Fig. 5.²⁵

²⁵ The idea that certain resultative constructions are causatives is first due to Li Wang, who in his early work simply identified all resultatives as causatives. In Wang 1958, sentences having the form in Fig. 4 are (correctly) taken to be noncausatives. But since he seemed to assume that only those resultatives whose V₁ is transitive are causative in meaning, his new definition of the causative construction was too narrow, excluding sentences like 9–10. My claim is that any resultative of the form represented by Fig. 5 is transitively causative, though not a sentence of the form in Fig. 4.
Fig. 4 differs from Fig. 5 in that in Fig. 4 the V' (V-single-bar) is intransitive, whereas in Fig. 5 the V' is transitive, having an object external to V' but internal to VP. This distinction parallels that between an intransitive V' and a transitive V'. So these D-Structures parallel those of sentences 59–60:

(69) [5 tā [V' [vō xiàō-sī] le]].
he laugh-die ASP
'He laughed to death.'
(70) [5 ni [V' [vō xiàō-sī] tā le]].
you laugh-die him ASP
'You caused him to laugh to death.'

The main difference between Figs. 4–5 and the structures 69–70 is that, whereas in the latter the V1-V2 combination makes up a V0, in Figs. 4–5 it makes up a V'-phrase. One other difference between these structures is that whereas the object of V0 follows the verb (as does tā 'him' in 70), the object of V' precedes the V' (as does NP2 in Fig. 5). I assume that Fig. 5 gives the right D-Structure position of the external object NP2, in conformity with the general word-order patterns of Chinese—in particular, the fact that the language is primarily head-final except for the lowest level of VP or PP expansion.26

In abstracting away from this difference in the position of the object, the structures posited in Figs. 4–5 then parallel those of 69–70. The difference between Fig. 4 and Fig. 5 also parallels that between the D-Structures 69–70: it lies in whether an external argument has been 'internalized' by a Causer. Ex. 70 is a case of lexical causativization, whereby the addition of the Causer ni 'you' internalizes the subject of 69, tā 'he', making it a Causee in 70. Fig. 5 represents a case of phrasal causativization, which internalizes the NP1 of Fig. 4.27 This analysis correctly captures an important observation of Li 1963 and Zhu 1982, who indicate that the NP immediately preceding V2 can be understood as the patient of the action denoted by the V1 + V2 combination, but often not as the subject of V2 (more on this below).

Consider now only the (transitive) causative structure. The D-Structure of 55, for example, is depicted in Fig. 6. The structure is on a par with that of 71:

26 This explains why, in general, verbs and prepositions may each be followed by one constituent only, though they may be preceded by several constituents. For a fuller description of this particular aspect of Chinese word order, see Huang 1982. For further discussion and very interesting attempts to derive it from principles of the Government and Binding theory, see Koopman 1984, Travis 1984, and Li 1985.

27 The internalization of an external argument from the structure in Fig. 4 into that in Fig. 5 seems to be a relatively recent development in the long history of the Chinese language. Mei 1986 cites extensive textual evidence showing that what is commonly used today as a (transitive) causative (e.g. nǐ-sī 'drown-die', shào-sī 'burn-die') could only be used inchoatively in Archaic Chinese.

Incidentally, in some of the cases under discussion, one might adopt the 'unaccusative hypothesis' (Perlmutter 1978; cf. Burzio 1985) and assume that the subject of the intransitive is in fact the object of an unaccusative verb or V' whose subject is expletive. The difference between 59 and 60 is not unlike that between The window broke and John broke the window. In such cases, of course, we do not speak of internalization, but only of the addition of an external argument.

That is, in both Fig. 6 and ex. 71, zépéng jīù is the Causer, and Zhāngsān is the Experiencer/Causee. Since zūi-dāo 'drunk-fall' is a zero-level category, it can assign Case to Zhaangsan, so the latter may occur directly after the whole compound in 71. However, since the theta-marker of Zhaangsan in Fig. 6 is a V'-phrase, it does not assign Case to this external object. One of the things that can happen to Fig. 6 is that the V1 may be moved into INFL, where it then assigns Accusative Case to Zhaangsan, assuming that Case-assignment is rightward in Chinese (following Li 1985, Koopman 1984, and Travis 1984). The result of V-raising is 72, the S-Structure representation for the phonetically identical 55:

(72) [INFL [zūi de] [V' Zhāngsān this wine drunk de Zhāngsan [V' tā [S' pro zhān-bā-qūlā can't-stand-up]]]

V-movement is not the only way to allow Zhāngsān in Fig. 6 to have Case. Insertion of the preposition bā directly before NP2 also gives a good result:

(73) [V' [bā Zhāngsān [V' zūi de [S' pro zhān-bā-qūlā]] this wine bā Zhāngsān drunk de can't-stand-up]]

All the other causative sentences we have seen may have similar grammatical bā-forms. Still another way for NP2 to get Case is to move to the subject position of the entire sentence, where it gets Nominative, under passivization.28

28 Sentence 67 in the text is another example of Case assignment under passive. Not all causatives may have a grammatical passive form, however. Some speakers do not accept 74, and sentences like 63–64 in the text cannot be turned into passives:

(1) [wō bei tāi lìu tīng de xīn-jīng-dān-zhūn.]
by his words heard in tremble-with-fear
'I was caused to tremble with fear by his words from hearing them.'
(74) Zhàngsàn, bèi zhèpíng jìu [vP t, [v zui de (Zhængsan by this wine drunk de
[sv pro zhàn-bà-qìllài]].
can't-stand-up
'Zhængsan was made so drunk by this wine that he couldn’t stand up.'

Note that in 72 Zhångsàn does not occur in the subject position of the V2, zhàn-bà-qìllài can't stand up, but in a position external to V', where it controls the pro subject of V2. It is this control relation that gives one the impression that Zhångsàn is the subject of V2, which led previous generative analyses to postulate a direct subject-predicate relationship between them (e.g., Huang & Mangione 1985, Mei 1978, Huang 1982, Tang 1977). According to earlier analyses, the NP is directly posited as the subject of V2 in D-Structure. 55 would have the structure 75:

(75) zhèpíng jìu zui de [Zhångsàn zhàn-bà-qìllài].
this wine drunk de Zhångsan can't-stand-up

Under such an analysis, the bà-form 73 and the passive form 74 would be derived by moving Zhångsàn out of the lower clause, as an instance of subject-raising; the relation between the subject position of V2 and Zhångsàn is therefore one of movement. However, under the analysis proposed here it is a relation of control.

5.3. Consequences. The analysis proposed here thus accounts for the essential facts concerning 9–10 and their inchoative counterparts in the following manner. First, in postulating D-Structures like Fig. 4 and Fig. 5, I have assumed that sentences like 9–10 are associated with hierarchical thematic grids (in the sense of Stowell 1981), whereby thematic roles are assigned compositionally—the external object by the V'-phrase as a whole, and the subject by the entire VP as a whole. This captures the generalization that the causative meaning (the presence of the external subject) is the result of compositional theta-assignment by the V1 + V2 combination as a whole. Secondly, the parallelism between lexical causativization and phrasal causativization is captured by the assumption that sentences with inchoative or causative phrases are derived from structures identical to those for inchoative or causative compounds except for a difference in category-rank: V' vs. V. Finally, the difference between lexical and phrasal causatives with respect to the position of the external object is derived from Case theory: in the case of a causative compound the object receives Case to the right of the compound, whereas in the case of a causative phrase V1 is raised to the left of the external object to assign Case to the latter.

An important feature of this analysis is the postulation of external objects within VP. This requires a slight enrichment of the theory of thematic grids so that, contrary to what is often assumed, there may be two or more than two external arguments in the thematic grid of a lexical item. This does not seem an undesirable result, and it is actually supported by other facts. For example, Belletti & Rizzi 1986 argue that sentences with psychological verbs have D-Structures in which both the internal and the external arguments originate in VP. Within Chomsky's 1986 extended X'-theory, the category VP should also have an external argument position, spec of VP. The 'external object' (NP2) postulated in Fig. 5 may be considered an instantiation of the spec of VP position. In English, several linguists have argued that the subject of a sentence originates as spec of VP but moves to the subject position under S (or IP) to get Case (Kuroda 1986, Fukui 1986, Koopman & Spotti 1985, etc.). This movement is possible only where the spec of VP is explicable in D-Structure, since movement into a theta-position would lead to a violation of the Theta-criterion (Chomsky 1981). However, if there is another way to Case-mark the external argument in VP, movement to spec of IP need not occur, and the spec of IP can, in principle, have an independent theta-role. When both the spec of VP and the spec of IP have independent theta-roles, we have two external arguments within the thematic grid of a verb. This happens with persuade-type control sentences, as argued in Larson 1987. Larson adopts an early suggestion made in Chomsky 1955, assuming that at D-Structure Bill is the external object (i.e., spec of VP) of the sequence persuade pro to go in 76, rather than an object of persuade alone:

(76) [up John [v-ed] [vP Bill [v persuade [pro to go]]]

In this structure, movement of Bill to the spec of IP position is ruled out. But persuade may be raised into infel., where it then Case-marks Bill, giving John persuaded Bill to go. This is what I suggest also happens in Chinese causatives like 72.

The existence of an external object in VP is also supported by other facts. It is well known that in Chinese there are two kinds of "compounds" that have the internal structure of [verb + object]. One kind of V + O compound may take a postverbal object:

(77) a. Zhångsàn hên zhú-yì zhèjìàn shì.
Zhångsan very pay-attention this matter
'Zhångsan has paid much attention to this matter.'

b. Zhångsàn hên dàn-xìn Lìsì.
Zhångsan very carry-heart Lìsì
'Zhångsan is very worried about Lìsì.'

But the other kind does not:

(78) a. *Zhångsàn [bùō-pî]-le jìzi.
Zhångsan peel-skin-ASP orange
'Zhångsan peeled the orange.'

b. *wò [bāng-pîo]-le tà.
I tie-ticket-ASP him
'I kidnapped him.'
Other examples of the latter class include kāi-dào ('open-knife') ‘operate on’, kāi-wān-xiào ‘make fun of’, dâ-ér-kuâng ('hit-ear') ‘slap’, chi-chi ('eat-vinegar') ‘be jealous of’. The sentences in 78 are ill-formed not because they can take no objects, but because their objects must occur preverbally or between the verb and the internal object of the V + O combination:

(79) a. wò bā tà bāng-le piào.
    I  ēm tie-ASP ticket
    'I kidnapped him.'

b. tà bèi wò bāng-le piào.
    he by me tie-ASP ticket
    'He was kidnapped by me.'

c. wò bāng-le tà piào.
    I tie-ASP him ticket
    'I kidnapped him.'

The relationship between tà ‘him’ in these sentences to the combination bāng + piào clearly parallels that between the postverbal objects of 77 and the compounds preceding them. This is why Chinese grammarians have described all of these V + O combinations as verb-object compounds. But why should the second group of V + O compounds disallow postverbal objects? The most plausible answer is that these V + O combinations are really V’ phrases which take external objects, while those of the first group have evolved into genuine compounds. The D-Structure of the sentences in 79 is 80:

(80) [wò [v [t à [v- bāng-le piào]]]
    I  him tie-ASP ticket

Since bāng-le piào is a V’, it does not assign Case, so 78b is ill-formed. Case may be assigned to the external object under bā-insertion (as in 79a), or passivization (as in 79b), or under V-movement of bāng-le to 10 (as in 79c). Notice that the derivation of 79a-h parallels that of the causative sentences 73-74, and 79c parallels 72. The sentence 79e may be further converted to 81, where the external object has been reanalyzed as a genitive phrase of the NP headed by piào ‘ticket’, triggering insertion of the prenominal modifier marker de:

(81) wò bāng-le tà-de piào.
    I tie-ASP his ticket
    'I kidnapped him.’ (lit. I tied his ticket.)

Although tà-de ‘his’ now occurs as a SPEC of NP, it is not an element in the functional complex (argument structure) of the noun piào ‘ticket’. It is a ‘pseudo-possessive’ phrase of the NP tà-de piào.

This analysis provides a straightforward explanation for an otherwise peculiar fact of binding. As observed in C.-R. Huang 1987, the genitive tà-de ‘his’ in 82 must be disjoint in reference from the subject Zhângsàn.

(82) Zhângsàn bâng-le tà-de piào.
    Zhângsàn tie-ASP his ticket
    'Zhângsàn kidnapped him.'

This is what Thompson 1973 already suggested, though she did not go beyond this point to explain the systematic differences between the two groups of compounds.

In other contexts, genitive pronouns are in general not subject to this restriction: Zhângsàn kâi-lân-le tà-de shù ‘Zhângsàn saw his book’ allows the pronoun to take Zhângsàn as its antecedent. (Cf. also John pulled his leg vs. John saw his book.) This fact directly follows from our analysis, as a result of the hypothesis that the genitive NP in 82 is, prior to reanalysis, an external object of V’ and a clausemate of Zhângsân when the relevant binding principle applies. This is parallel to a similar fact of causative sentences like 83, where disjointness is required between tà and Zhângsân:

(83) Zhângsàn kâ de tà-hên shângxin.
    Zhângsân cry de he very sad
    'Zhângsàn cried so much that he (not Zhângsân) became very sad.'

This again follows directly from the idea that tà is an external object of kâ de hên shângxin, at least when the disjoint reference principle applies. 10

Another piece of evidence for our analysis comes from the occurrence of sentences where NP2 clearly does not belong to the functional complex of V2. In early Mandarin and in the speech of many northern Mandarin speakers, examples of the following kind are well attested:

(84) Zhângsân qîn-le de wò zuî xióng.
    Zhângsàn criticize de I most fiercely
    'Zhângsân criticized me most fiercely.'

(85) Cuiîng yi-là mãi jiû, mãi shî, fêngchêng de tà hâo.
    Cuiîng one-way buy wine buy food please de he well
    'Cuiîng, bought wine and food all the way, and pleased him, well.'

In 84 wò ‘I’ clearly does not participate in the argument structure of ‘most fiercely’, and in 85 ‘he’ and ‘well’ do not form a clause. In both cases, the NP can be interpreted as the external object of the V’ meaning ‘criticized fiercely’ or ‘pleased well’ in accordance with our analysis, but would pose important difficulties for an analysis that takes NP2 as the subject of V2 at D-Structure. 31

SECONDARY PREDICATION

6. We have seen that all three arguments that have been produced for the PP hypothesis turn out not to support that hypothesis, and that the facts that they turn on can be plausibly accounted for in a way consistent with the traditional SP hypothesis. Now I turn to some positive arguments in favor of this latter hypothesis.

The first argument has to do with backward anaphora in Chinese. In Huang 1982 it is shown that an overt pronoun cannot occur as the possessive of an
NP c-commanding its antecedent (as in 86–87), but can be the possessive of the subject NP of an adverbial clause or sentential subject (as in 88–89):

(86) *tâde, méimei hên xihuăn Zhângsân.,
     his sister very like Zhangsan
     'His sister likes Zhangsan.'

(87) *tâde, méimei shùò Zhângsân.shui-zhâo le.
     his sister say Zhangsan sleep-on ASP
     'His sister said that Zhangsan was asleep.'

(88) tâde méimei yi hui dào jiä, Zhângsân jiù kâ.
     his sister once return to home Zhangsan then cry
     'As soon as his sister arrived home, Zhangsan started to cry.'

(89) tâde méimei mî dê jiâng shî Zhângsân hên shêngqî.
     his sister not get prize make Zhangsan very angry
     'That his sister did not get a prize made Zhangsan very angry.'

As argued in Huang 1982, the difference between 86–87 and 88–89 can be captured by reference to the relative height of the pronoun in relation to its antecedent. In 86–87, the NP which immediately contains the pronoun 'his' c-commands the antecedent, but in 88–89 the pronoun is one step further embedded, since the NP immediately containing the pronoun 'his' c-commands only the rest of the sentential subject or adverbial clause, but does not c-command the antecedent Zhângsân.\(^{32}\) Now, consider a resultative sentence like 90:

(90) tâde méimei qi de Zhângsân zhi fâdou.
     his sister angry de Zhangsan straight tremble
     a. 'His sister was so angry that Zhangsan trembled all over [with fear].'
     b. 'His sister caused Zhangsan to be so angry that he trembled all over [with anger].'

This sentence is grammatical with two meanings, but only with the interpretation that 'his sister' does not refer to Zhangsan's sister. Now, according to the PP hypothesis, this fact is unexpected, since 'his sister' would be the subject of an adverbial exactly as it is in 88, or the subject of a sentential subject as in 89.

\(^{32}\) The relative well-formedness of 88-89 can be brought out more clearly if the sentences are compared to those in which 'his sister' is replaced by 'he'. So, for example, in contrast to 89, (i) does not permit referential dependence of tâ 'he' on Zhângsân:

(i) tâ méi dê jiâng shî Zhângsân hên shêngqî.
     he not get prize make Zhangsan very angry
     'That he didn't win the prize made Zhangsan very angry.'

In this sentence the pronoun is less deeply embedded than in 89. My point here is that although embedding a pronoun as the possessive of a subordinate clause subject makes coreference possible (as in 88-89), embedding it as the possessive of a main clause subject does not (since 86-87 are no better than those in which 'his sister' is replaced by 'he'). The relevant restriction that was proposed in Huang 1982 to account for this range of facts is that an overt pronoun cannot 'cyclic-c-command its antecedent. Roughly, in our examples, a cyclic-c-commands if and only if the minimal cyclic category containing c-commands \(\beta\). For an improvement along similar lines, see Teng 1985. It should be added that there are speakers who do not even accept the coreference reading of 88-89 and cannot distinguish between 86-87 and 88-89. For such speakers, of course, this argument does not obtain.

it is in 89. The SP hypothesis correctly predicts this pattern, however, since 'his sister' would be a main clause subject c-commanding Zhângsân as it does in 86–87. The facts surrounding 86–89 concerning backward pronominal anaphora thus provide a positive argument for our hypothesis.

A second argument is available from facts concerning the scope of negation and questions. In the foregoing discussion we saw that, although V1 in a descriptive or resultative construction cannot be directly preceded by bi or itself occur in A-not-A form, pre-V1 negation or questioning is possible if there is a 'supporting' element like yòu 'have', shi 'be', and nêng 'can'. The relevant examples are 30–31, repeated below:

(30) a. tâ méi-yêu pâo de hên kuai.
     he not-have run de very fast
     'He did not run fast.'

b. tâ hú-sê pâo de hên kuai.
     he not-be run de very fast
     'It is not the case that he runs fast.'

c. tâ hú-hui pâo de hên kuai.
     he not-will run de very fast
     'He will not run fast.'

(31) a. tâ yòu-mêyi-yêu pâo de hên kuai?
     he have-not-have run de very fast
     'Did he run fast?'

b. tâ shi-bú-sê pâo de hên kuai?
     he be not-be run de very fast
     'Is it the case that he runs/fast?'

c. tâ nêng-bú-nêng pâo de hên kuai?
     he can-not-can run de very fast
     'Can he run fast?'

In each of these sentences, the scope of the negation or A-not-A element extends over the entire string to its right including, in particular, V2.\(^{33}\) Given the standard assumption that scope is determined by c-command, this fact is consistent with the SP hypothesis, because in each case the negation or A-not-A morpheme appears in main clause wh, where it c-commands both V1 and V2; but it is inconsistent with most versions of the PP hypothesis. In particular, the sequences tâ méi-yêu pâo de in 30a or tâ yòu-mêyi-yêu pâo de in 31a (and similar sequences) cannot be analyz ed as a sentential subject or adverbial clause below V2 in accordance with the PP theory, because in that case the relevant negative or interrogative element c-commands only V1 but not V2.\(^{34}\)

Thirdly, there is also evidence for this analysis derivable from a fairly well known constraint on VP structure in the language. As described in Huang 1982, this constraint prevents a Chinese VP from containing, in postverbal position, a

\(^{33}\) This is reflected in the English translations. That the scope of negation extends over the entire string to its right is also evidenced in the following sentence:

(i) tâ méi-yêu pâo de bi rén hê tên kuai.
     he not-have run de than any person fast
     'He doesn't run faster than anybody.'

Here the negative polarity item 'anybody' is clearly affected by the negation, as it is interpreted existentially.

\(^{34}\) See also Li 1985 for a similar argument for the SP analysis.
both an INNER COMPLEMENT such as an object and an OUTER COMPLEMENT such as a resultative or descriptive expression or a frequency or duration phrase. The following examples are ill-formed because they contain such structures:

(91) a. *tā nián shì de hěn kuài.
   he read book de very fast
b. *tā nián shì de hěn lèi.
   he read book de very tired
c. *tā nián shì le sāngé zhòngtóu.
   he read book asp three hours
d. *tā nián shì le liàng ci.
   he read book asp two times

These sentences can be saved if the direct object ‘book’ (the inner complement) is preposed or otherwise removed from postverbal position. Another way to save the sentences is to reduplicate the verb after the direct object, so that only one sort of complement follows the verb at a time.

(92) a. tā nián shì nián de hěn kuài.
   he read book read de very fast
   ‘He reads books fast.’
b. tā nián shì nián de hěn lèi.
   he read book read de very tired
   ‘He reads books until he got tired.’
c. tā nián shì nián le sāngé zhòngtóu.
   he read book read asp three hours
   ‘He reads books for three hours.’
d. tā nián shì nián le liàng ci.
   he read book read asp two times
   ‘He reads books twice.’

There are a number of other facts apparently related to this constraint, construed in Huang 1982 as a descriptive generalization.35 A crucial aspect of this constraint is that it applies specifically to VP syntax, in particular to postverbal elements in VP. Crucially, there is no similar restriction that necessitates verb reduplication following a sentential subject or an adverbial adjunct:

(93) [tā kàn zhéběn shū] (*kàn) hú hǎo.
   he read this book read not good
   ‘That he reads this book is not good.’

(94) tā yóng gùnți (*yòng) dà-le rěn.
   he use stick use hit-PERF person
   ‘He hit someone with a stick.’

35 It is doubtful that such a constraint has an independent theoretical status. Koopman 1984, Travis 1984, and Li 1985 have shown that part of what the constraint covers may be derived from Chomsky’s 1981 Case theory and Theta theory coupled with a parameter of the directionality of Case or theta-assignment. The remainder might be derived in a modular manner from other sources. Ernst 1986 suggests that the reduplication in descriptive and resultative constructions may be explained by the assumption that the particle de must be ciliated to a verb. But this explanation does not account for the similar facts in frequency and duration constructions like 91c–d and 92 c–d, or for the ungrammaticality of *tā nián-le shì liàng ci, for ‘She read the books twice’.

This means that both the descriptive and the resultative phrases (each containing V2 in the relevant examples) must be construed as postverbal elements with respect to V1, in accordance with the SP hypothesis. A PP analysis in terms of any of the structures in Fig. 1 would not be able to capture this constraint.

The SP hypothesis receives additional evidence from the ambiguity of sentences like 95 (due to Zhu 1982):

(95) tā zhēng de hěn lán.
   he steams de very soft
   (a) ‘He steamed (it) very soft.’
   (b) ‘What he steamed is very soft.’

This fact argues against Chao’s 1968 PP analysis, according to which 95 has one single structure: the sequence tā zhēng de is analyzed as a free relative functioning as the subject of the entire sentence, and hěn lán is the main verb. However, since each lexical element in 95 is lexically unambiguous, it is wrong to give the sentence only one structural analysis, with the nominalizing de and the resultative de identified as one and the same particle. According to the SP analysis, on the other hand, 95 has two structures. In one structure de is a nominalizer marking the preceding sequence as a free relative clause subject, and the sentence has the meaning 95b, with ‘very soft’ being the main verb. In the other structure ‘very soft’ is a secondary predicate and ‘steam’ is the main verb, and the sentence has the meaning 95a. The ambiguity of 95 thus argues for the SP analysis.36

Finally, there is an important piece of phonological evidence for the SP analysis, due primarily to Chen’s 1986 work on Xiamen (Amoy) tone sandhi. Chen observes that Xiamen sentences like the following are ambiguous in their written form:

(96) i cao kha kin.
   he run more fast
   a. ‘He runs faster.’
   b. ‘It would be faster for him to run.’

In spoken form, however, the sentence is not ambiguous. If the V1 ‘run’ is spoken with a sandhi tone (phonetically high even), the sentence means ‘He runs faster’ (96a), but if it is spoken with a citation tone (phonetically high falling), then it means 96b. Why does tone sandhi happen in one case but not

36 One might try to maintain the PP analysis for 95 by claiming that it has only one surface structure (a free relative as its subject taking ‘very soft’ as its main verb) and that the ambiguity arises because the empty head of the free relative can refer to ‘the thing’ or ‘the extent’. In other words, 95 might be the result of deleting the head of a relativized NP from two possible D-Structures, meaning either ‘The thing that he steamed is very soft’ (i.e. 95b), and ‘The extent to which he steamed (it) is very soft’ (i.e. 95a). However, this assumption is untenable in view of the widely accepted principle of recoverability of deletion. Although a free relative may in general be formed by deleting a head if an NP ARGUMENT is relativized, such a process is impossible if an ADJUNCT is relativized. Thus, both mài shù de ‘the person who bought the book’ and wǒ mài de ‘the thing which I bought’ are well formed, but sequences like *wǒ mài shù de or *wǒ lāi de (intended for ‘the time I bought the book’ or ‘the means by which I came’) are not.
the other? There is sufficient evidence (from Chen 1986, Cheng 1973) that the single most important principle governing the applicability of tone sandhi in this language is that a major phrase boundary blocks the immediately preceding tone from undergoing tone sandhi. This argues strongly for the hypothesis that 96 has the two structures given in Fig. 7, corresponding to the two meanings. That is, 96a has a structure of secondary predication where the main verb cāo 'run' is not immediately followed by a major phrasal boundary, but 96b has a structure of primary predication where cāo appears at the end of a sentential subject taking 'faster' as its main verb. The SP hypothesis must be correct, then, for the reading 96a.

\[ \text{Figure 7.} \]

Chen's argument from Xiamen can be duplicated in Mandarin by reference to the well-known rule of Third Tone Sandhi, which changes a third tone into a second tone in the environment of a following third tone. As shown in Shih 1985, the domain of this rule is limited by syntactic and certain prosodic factors. According to Shih, the tone sandhi rule need not apply across a subject-predicate boundary, though in VP-internal position the rule must apply regardless of the tempo of speech. Now, the following sentence, with an underlying tone sequence 1 3 3 4, must be spoken with the tone pattern 1 2 3 4 under the meaning 97a, though this change of the first tone 3 into tone 2 is optional in the case of 97b:

\[
\begin{align*}
(97) & \text{tā pāo hěn kuài.} & \text{Underlying tone sequence:} & \begin{cases} & /1\; 3\; 3\; 4/ \quad \text{Surface tone sequence:} \\
& \text{a. 'He runs very fast.'} & \begin{cases} & [1\; 2\; 3\; 4]; \quad *[1\; 3\; 3\; 4]. \quad \text{Surface tone sequence:} \\
& \text{b. 'For him to run is fast.'} & \begin{cases} & [1\; 3\; 3\; 4]; \quad [1\; 2\; 3\; 4].
\end{cases}
\end{cases}
\end{cases}
\end{align*}
\]

It seems, then, that all the available evidence we have favors a traditional analysis of 1-3 according to which V1 rather than V2 is the main verb.

**Summary**

7. In this paper I have juxtaposed two well-known hypotheses about the phrase structure of descriptive and resultative constructions, and concluded that the traditional hypothesis taking V1 to be the main verb is more nearly correct. I reviewed three arguments that have been produced for the hypothesis that V2 is the main verb; these turn on (a) the distribution of A-not-A questions and bù-negation, (b) the distribution of the -le suffix, and (c) the occurrence of sentences which appear to violate a general principle of binding. These facts were shown not to provide a cogent argument for the SP hypothesis, however, as in each case the facts have an explanation consistent with the traditional SP hypothesis. Finally, a number of other arguments were added in support of SP.

On the more substantive side, what this paper has done is offer an analysis for a number of facts that are interesting both in their own right and because they seem to present problems for the analysis of descriptive and resultative constructions. Except for -le suffixation, furthermore, it seems that these facts may find a unified explanation in terms of V-movement. Assuming that the negative marker bù is properly contained in INFL and that it must be attached to the first following V, V-movement explains why V1 cannot be negated by bù or occur in A-not-A form. It also enables one to derive yǒu-le alternation in a desirable way. In addition, V-movement creates causative structures like 9-10, explaining away an apparent counterexample to Binding Theory and capturing a heretofore unnoticed difference between such causative sentences and their noncausative counterparts.

The phrase structure of constructions considered here is an important issue, because each analysis has consequences that extend over the rest of the grammar. The issue is important for a proper understanding, not only of Mandarin and other Chinese languages, but also of other (unrelated) languages in Asia and elsewhere. The degeneracy of overt inflectional markers of verbs and other morphological clues in such languages makes the problem of identifying the main verb an especially interesting one—precisely because the answer is not at all obvious. The two hypotheses discussed here represent the various criteria that linguists have come up with in an attempt to approach the question. What I have argued in this paper is that proponents of Primary Predication have drawn upon the wrong criteria for an answer, and that an analysis in terms of Secondary Predication is more likely to be right.

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