In the surface structure of Chinese nominal modifiers (quantifiers, determiners, adjectives, measure phrase, relative clause, etc.) may occur either before or after a modified noun. In most of the transformational studies of Chinese syntax (e.g. Cheng 1966; Hashimoto 1966; Mei 1972; Tai 1973; Teng 1974), it has been assumed that such NP's have the underlying order of modifier + noun (M-N, henceforth) with the variant surface order of noun + modifier (N-M, henceforth) being derived. This paper, however, first argues that Chinese has the underlying order of N-M and that the variant M-N order is due to an optional transformation that reorders the N-M sequence. It is shown that the M-N hypothesis requires a set of complex constraints on the rule postposing modifiers in order to account for various surface patterns exhibited by NP's containing more than one modifier. It will be argued that in the N-M hypothesis proposed here various surface patterns can best be accounted for by constraining the N-M inversion rule to the following effect; namely, it can apply to any NP, either a higher one or a lower one, but only once within the domain of a possible complex NP. (Author)
NOMINAL MODIFIERS IN MANDARIN CHINESE

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0. Introduction

In the surface structure of Chinese nominal modifiers (quantifiers, determiners, adjectives, measure phrase, relative clause, etc.) may occur either before or after a modified noun. In most of the transformational studies of Chinese syntax (e.g. Cheng 1966; Hashimoto 1966; Mei 1972; Tai 1973; Teng 1974), it has been assumed that such NP's have the underlying order of modifier + noun (M-N, henceforth) with the variant surface order of noun + modifier (N-M, henceforth) being derived.

This paper, however, first argues that Chinese has the N-M order underlyingly, and that the variant M-N order is due to an optional transformation that reorders the N-M sequence. It is shown that the M-N hypothesis requires a set of complex constraints on the rule postposing modifiers in order to account for various surface patterns exhibited by NP's containing more than one modifier. It will be argued that in the N-M hypothesis proposed here various surface patterns can best be accounted for by constraining the N-M inversion rule to the following effect; namely, it can apply to any NP, either a higher one or a lower one, but only once within the domain of a possible complex NP.

Nominal modifiers in Chinese may also occur either before or after a verb. As opposed to the recent proposal in which such modifiers are to be analyzed as part of the VP (e.g. Li and Thompson 1974; Tai 1973; Teng 1974), this paper also provides and motivates a transformation proposed here as modifier postposing. It is shown that the recent proposal is inadequate because it provides no syntactic and semantic evidence in support of such a hypothesis. It will be argued that such modifiers can be best derived by undergoing a rule of modifier postposing, moving a modifier from a prenominal position to a postverbal position.
1. Nominal Modifiers and Noun Phrases

1.1. M-N Hypothesis vs M-N Hypothesis

In Chinese nominal modifiers (determiners, quantifiers, adjectives, relative clauses, etc.) can occur either before or after a modified noun. This is exemplified in the following sets of sentences.

A. Quantifiers

(1) a. Qiúanbù xiuéshēng láile.  
   all  student  came  
   'All of the students came.'

   b. Xiuéshēng qiúanbù láile.  
      student  all  came

(2) a. Méiyīgé xiuéshēng láile.  
      each  student  came

   b. Xiuéshēng méiyīgé láile.  
      student  each  came

(3) a. Móxié xiuéshēng láile.  
      some  student  came

   b. Xiuéshēng móxié láile.  
      student  some  came

(4) a. Hěndūo xiuéshēng láile.  
      many  student  came

   b. Xiuéshēng hěndūo láile.  
      student  many  came

(5) a. Yǐbaígè xiuéshēng láile.  
      100  student  came

   b. Xiuéshēng yǐbaígè láile.  
      student  100  came

B. Determiners

(6) a. Neixiē xiuéshēng láile.  
      those  student  came

   b. Xiuéshēng neixiē láile.  
      student  those  came

C. Adjective

(7) a. Tsōngmíngde xiuéshēng láile.  
      intelligent  student  came  
      'The intelligent students came.'
b. Xiúshēng tsūngmíngde láile.
   student intelligent came

D. Measure Phrase

(8) a. Ershísùide dà de xiúshēng láile. 'The twenty-year-old students came.'
   20-year-old student came

b. Xiúshēng ershísùide láile.
   student 20-year-old came

E. Relative Clause

(9) a. Dài yíánjìng de xiúshēng láile. 'The students who wear glasses came.'
   wear glasses rel. student came

b. Xiúshēng dài yíánjìng de láile.
   student wear glasses rel. came

There are in general two ways in which sentences (1)-(9) may be analyzed. One way is to claim that nominal modifiers such as quantifiers, determiners, adjectives, measure phrases, and relative clauses in prenominal positions as shown in (1a)-(9a) are underlying forms, and those in postnominal positions as shown in sentences (1b)-(9b) are derived forms. Within this type of analysis, on the one hand, in order to generate sentences (1a)-(9a), a phrase structure rule such as follows is needed.

(10) \[ \text{NP} \rightarrow (M) + N \]

where \( M \) = quantifiers, determiners, adjectives, measure phrase, relative clause, etc.

On the other hand, to derive sentences (1b)-(9b) from (1a)-(9a) respectively, an optional transformation that moves nominal modifier to a postnominal position is also needed. The proposed M-N inversion transformation can be schematized as shown in (11).
where $M =$ quantifiers,
determiners,
adjectives,
measure phrase,
relative clause, etc.

The other possibility is that we can claim that nominal modifiers in postnominal positions as shown in (1b)-(9b) are underlying forms, and those in prenominal positions as shown in (1a)-(9a) are derived forms.

Within this type of analysis, on the one hand, in order to generate sentences (1b)-(9b), a phrase structure rule such as follows is needed:

$$\begin{align*}
\text{NP} & \quad \rightarrow \quad \text{N} \ + \ (M) \\
\end{align*}$$

where $M =$ quantifiers,
determiners,
adjectives,
measure phrase,
relative clause, etc.

To derive sentences (1a)-(9a) from (1b)-(9b) respectively, on the other hand, a transformation that moves modifiers to a prenominal position such as (13) is needed.

$$\begin{align*}
\text{N-M Inversion:} & \quad \text{NP} \quad \rightarrow \quad \text{NP} \quad \text{N} \quad \rightarrow \quad \text{M} \quad \rightarrow \quad \text{NP} \\
\end{align*}$$
In the case of sentences containing one modifier, such as (1a)-(9a), these two analyses seem to be equally adequate, since both make correct predictions about surface forms of modified NP in Chinese. Below I would like to show how the proposed hypothesis that Chinese NP has N-M as the underlying order, with M-N being derived, is preferable to the one that it has M-N as the underlying order with N-M being derived. The proposed analysis is superior because it does not need a set of complex constraints on the rule postposing modifiers in accounting for various surface patterns exhibited by NP's containing more than one modifier.

1.2. Noun Phrases Containing Two Modifiers

This section provides a discussion on how the above two analyses can handle cases where NP's containing two nominal modifiers. For the sake of discussion, let us consider the following sets of sentences:

A. Quantifiers and Determiners

(14) a. Qúnānbù xiùshēng nèixiē láile.  'All of those students came.'
    all  student  those  came

    b. Nèixiē xiùshēng qúnānbù láile.
       those  student  all  came

    c. Xiùshēng nèixiē qúnānbù láile.
       student  those  all  came

    d.* Qúnānbù nèixiē xiùshēng láile.
       all  those  student  came

(15) a. Měiyīgè xiùshēng nèixiē láile.  'Each of those students came.'
    each  student  those  came
b. Nei xue sheng meiyige laile.
   those student each came

c. Xue sheng nei xie meiyige laile.
   student those each came

d. Meiyige nei xie xue sheng laile.
   each those student came

(16) a. Mo xue sheng nei xie laile.
   some student those came

b. Nei xue sheng mo xie laile.
   those student some came

c. Xue sheng nei xie mo xie laile.
   student those some came

d. Mo xue sheng nei xie xue sheng laile.
   some those student came

(17) a. Henduo xue sheng nei xie laile.
   many student those came

b. Nei xue sheng henduo laile.
   those student many came

c. Xue sheng nei xie henduo laile.
   student those many came

d. Henduo nei xie xue sheng laile.
   many those student came

(18) a. Yibaige xue sheng nei xie laile.
   100 student those came

b. Nei xue sheng yibaige laile.
   those student 100 came

c. Xue sheng nei xie yibaige laile.
   student those 100 came

d. Yibaige nei xie xue sheng laile.
   100 those student came

B. Quantifiers and Adjectives

(19) a. Quan bu xue sheng tsungmingde laile.
   all student intelligent came

b. Tsungmingde xue sheng quan bu laile.
   intelligent student all came
c. Xiūsēng tsūngmíngde qiān bù làile.  
student intelligent all came

d. *Qiān bù tsūngmíngde xiùsēng làile.  
all intelligent student came

(20) a. *Méiyí ge xiùsēng tsūngmíngde làile.  
each student intelligent came

  b. Tsūngmíngde xiùsēng méiyí ge làile.  
intelligent student each came

  c. Xiùsēng tsūngmíngde méiyí ge làile.  
student intelligent each came

each intelligent student came

some student intelligent came

  b. Tsūngmíngde xiùsēng mó xiùsēng làile.  
intelligent student some came

  c. Xiùsēng tsūngmíngde mó xiùsēng làile.  
student intelligent some came

  d. *MÓ xiùsēng tsūngmíngde xiùsēng làile.  
some intelligent student came

(22) a. *Héndúo xiùsēng tsūngmíngde làile.  
many student intelligent came

  b. Tsūngmíngde xiùsēng héndúo làile.  
intelligent student many came

  c. Xiùsēng tsūngmíngde héndúo làile.  
student intelligent many came

  d. *Héndúo tsūngmíngde xiùsēng làile.  
many intelligent student came

(23) a. *Yí bái ge xiùsēng tsūngmíngde làile.  
100 student intelligent came

  b. Tsūngmíngde xiùsēng yí bái ge làile.  
intelligent student 100 came

  c. Xiùsēng tsūngmíngde yí bái ge làile.  
student intelligent 100 came

  d. *Yí bái ge tsūngmíngde xiùsēng làile.  
100 intelligent student came

'Each of the intelligent students came.'
'Some of the intelligent students came.'
'Many of the intelligent students came.'
'One hundred of the intelligent students came.'
C. Quantifiers and Relative Clauses

(24) a. Qúánbù xiuéshēng dài yíanjìng de láile.  
   all student wear glasses rel. came

b. Dai yíanjìng de xiuéshēng qúánbù láile.  
   wear glasses rel. student all came

c. Xiuéshēng dài yíanjìng de qúánbù láile.  
   student wear glasses rel. all came

d. *Qúánbù dài yíanjìng de xiuéshēng láile.  
   all wear glasses rel. student came

   each student wear glasses rel. came

b. Dai yíanjìng de xiuéshēng méiyígè láile.  
   wear glasses rel. student each came

c. Xiuéshēng dài yíanjìng de méiyígè láile.  
   student wear glasses rel. each came

d. *Méiyígè dài yíanjìng de xiuéshēng láile.  
   each wear glasses rel. student came

(26) a. Móxié xiuéshēng dài yíanjìng de láile.  
   some student wear glasses rel. came

b. Dai yíanjìng de xiuéshēng móxié láile.  
   wear glasses rel. student some came

c. Xiuéshēng dài yíanjìng de móxié láile.  
   student wear glasses rel. some came

d. *Móxié dài yíanjìng de xiuéshēng láile.  
   some wear glasses rel. student came

(27) a. Héndúo xiuéshēng dài yíanjìng de láile.  
   many student wear glasses rel. came

b. Dai yíanjìng de xiuéshēng héndúo láile.  
   wear glasses rel. student many came

c. Xiuéshēng dài yíanjìng de héndúo láile.  
   student wear glasses rel. many came

d. *Héndúo dài yíanjìng de xiuéshēng láile.  
   many wear glasses rel. student came

(28) a. Yíbái gè xiuéshēng dài yíanjìng de láile.  
   100 student wear glasses rel. came

b. Dai yíanjìng de xiuéshēng yíbái gè láile.  
   wear glasses rel. student 100 came

‘All of the students who wear glasses came.’

‘Each of the students who wear glasses came.’

‘Some of the students who wear glasses came.’

‘Many of the students who wear glasses came.’

‘One hundred of the students who wear glasses came.’
c. Xiūshēng dài yìanjìng de yībāige láile.
   student wear glasses rel. 100 came

d.  Yībāige dài yìanjìng de xiūshēng láile.
   100 wear glasses rel. student came

D. Quantifiers and Measure Phrases:

(29) a. Qūnānù xiùshēng ěrshīsùidàde láile.
    all student 20-year-old came

   'All of the 20-year-old students came.'

b. Ērshīsùidàde xiùshēng qūnānù láile.
   20-year-old student all came

c. Xiùshēng ěrshīsùidàde qūnānù láile.
   student 20-year-old all came

d.  *Qūnānù ěrshīsùidàde xiùshēng láile.
    all 20-year-old student came

(30) a. Méiyīge xiùshēng ěrshīsùidàde láile.
    each student 20-year-old came

   'Each of the 20-year-old students came.'

b. Ērshīsùidàde xiùshēng méiyīge láile.
   20-year-old student each came

c. Xiùshēng ěrshīsùidàde méiyīge láile.
   student 20-year-old each came

d.  *Méiyīge ěrshīsùidàde xiùshēng láile.
    each 20-year-old student came

(31) a. Moxīe xiùshēng ěrshīsùidàde láile.
    some student 20-year-old came

   'Some of the 20-year-old students came.'

b. Ērshīsùidàde xiùshēng moxīe láile.
   20-year-old student some came

c. Xiùshēng ěrshīsùidàde moxīe láile.
   student 20-year-old some came

d.  *Moxīe ěrshīsùidàde xiùshēng láile.
    some 20-year-old student came

(32) a. Hénduō xiùshēng ěrshīsùidàde láile.
    many student 20-year-old came

   'Many of the 20-year-old students came.'

b. Ērshīsùidàde xiùshēng hénduō láile.
   20-year-old student many came

c. Xiùshēng ěrshīsùidàde hénduō láile.
   student 20-year-old many came

d.  *Hénduō ěrshīsùidàde xiùshēng láile.
    many 20-year-old student came
A close examination of sentences (14)-(33) shows that the acceptable and unacceptable sentences fall into the following patterns:

(34) a. $\begin{array}{c} M_1 \quad N \quad M_2 \quad NP_2 \quad NP_1 \end{array}$  

b. $\begin{array}{c} M_2 \quad N \quad NP_2 \quad M_1 \quad NP_1 \end{array}$

c. $\begin{array}{c} N \quad M_2 \quad NP_2 \quad M_1 \quad NP_1 \end{array}$

d. $\begin{array}{c} M_1 \quad M_2 \quad N \quad NP_2 \quad NP_1 \end{array}$

1.2.1. M-N Hypothesis

Let us first see how the M-N hypothesis can account for the above patterns. Taking the position that the underlying order for Chinese NP is M-N, with N-M being derived by the N-N inversion transformation, then the modified NP in (14), for example, will have the following underlying structure:

(35) 

```
NP_1
  NP_2
    NP
  \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_elay
Given a structure like (35), in order to derive (14a, b, c)-(33a, b, c), but
to block (14d)-(33d), a set of complex constraints on the rule of M-N inversion
are needed. First, in order to yield the form $\left[ \begin{array}{c}
M_1 \\
N \\
M_2 \\
NP_2 \\
NP_1
\end{array} \right]$ (e.g. 
(14a)-(33a)), it is necessary to constrain the rule of M-N inversion so that
only the lower NP (NP$_2$) can be affected. Second, in order to yield the form
$\left[ \begin{array}{c}
M_2 \\
N \\
NP_2 \\
M_1 \\
NP_1
\end{array} \right]$ (e.g. (14b)-(33b)), it is necessary to constrain
the rule so that only the higher NP (NP$_1$) can be affected. Third, to yield the
form $\left[ \begin{array}{c}
N \\
M_2 \\
NP_2 \\
M_1 \\
NP_1
\end{array} \right]$ (e.g. (14c)-(33c)) but to block $\left[ \begin{array}{c}
M_1 \\
M_2 \\
N \\
NP_2 \\
NP_1
\end{array} \right]$ (e.g. (14d)-(33d)), it is necessary to constrain the rule so that both the higher
and lower NPs (NP$_1$ and NP$_2$) can be affected. The first constraint, according
to which only the lower NP can be affected by the rule, suggests that the M-N
inversion in Chinese is an 'upward bound' rule (Ross 1967:146). However, such
a proposal is not valid because it contradicts the second constraint, according
to which only the higher NP can be affected by the rule. In other words, the
second constraint suggests that the M-N inversion obeys the 'A-over-A' principle
(Chomsky 1973:235). According to this principle, the rule of M-N inversion
would allow only the maximum NP to be chosen to account for cases such as (14b)-(33b).
Again, this proposal is not valid either because if the rule of M-N
inversion in Chinese were to obey the 'A-over-A' principle, then it would fail
to explain cases such as (14a)-(33a) where the lower NPs are affected by the
rule. The third constraint, according to which both higher and lower NPs
(NP$_1$ and NP$_2$) can be affected by the rule, suggests that the proposed M-N
inversion obligatorily applies to every representation that satisfies its
structural description. However, such a proposal is not valid either because
it does not hold for cases like (14a, b)-(33a, b), according to which only
one of the NPs can be affected by the rule.
The major difficulty in this analysis is the problem of how the rule of M-N inversion can be adequately constrained so that only the well-formed sentences can be generated. A close examination of (34) demonstrated that there is a significant relationship between the well-formedness of sentences and the selection of the NP's to which the rule of M-N inversion can apply. On the one hand, a sentence is well-formed if either one or both NP's is affected by the rule. On the other hand, a sentence is ill-formed if none of the NP's is affected by the rule. This clearly suggests that the rule of M-N inversion cannot be interpreted as an optional rule to account for sentences whose NP's containing two modifiers such as (14)-(33). Rather, it must be obligatory in one case, and it must be optional in the other. In other words, to account for cases (14c)-(33c) but to block (14d)-(33d), the rule of M-N inversion applies to all the NP's (NP₁ and NP₂) that satisfies its structural description. On the contrary, to account for cases such as (14a, b)-(33a, b), the same rule obligatorily applies to one of the NP's leaving the other NP unaffected. This means that after the rule of M-N inversion has operated on one of the NP's, the same rule is optionally applied to the other. For example, in order to derive (14a) from (35) we can make the rule of M-N inversion obligatorily apply to NP₂ but leaving NP₁ unaffected by saying that after the rule has applied to NP₂ the same rule is optionally applied to NP₁. To sum up, in order to account for the well-formedness on cases like (14)-(33), the proposed M-N inversion rule as in (11) must be somehow reformulated in the following fashion:

\[
(36) \quad X \quad Y \quad M \quad Z \quad N \quad \text{NP} \quad W \\
\quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6
\]

Conditions: (i) obligatory if 2 or 4 contains M, M = quantifiers, determiners, adjectives, measure phrase, relative clause, etc.
(ii) optional otherwise
(iii) W does not contain an NP
The problem in (36) is that the constraints on the rule of M-N inversion is so complex that it would greatly complicate the grammar. Another factor argues against the M-N hypothesis is that starting out with a sequence such as \( [M_1 \ M_2 \ N \ NP] \) in the underlying structure is syntactically unmotivated since a structure as such never occurs in the surface.

It has been argued in this section that Chinese sentences whose NPs containing two modifiers cannot be explained with an M-N sequence underlyingly unless certain highly complex constraints are implemented into the grammar. Below I will argue that various surface patterns can be nicely accounted for with an N-M sequence without positing complex constraints on the rule.

1.2.2. N-M Hypothesis

Starting out with a N-M sequence as the underlying order, the modified NP in (14) will have the following underlying structure:

\[
\begin{align*}
(37) \\
\text{NP}_1 \\
\text{NP}_2 \\
\text{NP} \\
M_2 \\
N \\
\text{xiusheng} \\
\text{student} \\
\text{neixie} \\
\text{those} \\
\text{quanbu} \\
\text{all}
\end{align*}
\]

Three facts should be noticed here. First, a structure like (37) is a mirror image of (35). Consider:

\[
\begin{align*}
(38) \text{a.} \\
\text{NP}_1 \\
M_1 \\
\text{NP}_2 \\
M_2 \\
N \\
\text{xiusheng} \\
\text{student} \\
\text{neixie} \\
\text{those} \\
\text{quanbu} \\
\text{all}
\end{align*}
\]

\[
\begin{align*}
(38) \text{b.} \\
\text{NP}_1 \\
\text{NP}_2 \\
M_2 \\
N \\
\text{xiusheng} \\
\text{student} \\
\text{neixie} \\
\text{those} \\
\text{quanbu} \\
\text{all}
\end{align*}
\]
Second, the selection of the NP's to which the rule inversing modifiers and nouns of these two structures are in complementary distribution. For example, to derive (14a) within the M-N hypothesis, it is necessary to apply the rule of M-N inversion to NP₂ but not to NP₁, whereas in this analysis the rule of N-M inversion must affect NP₁ but not NP₂. To obtain (14b) within the M-N hypothesis, it is necessary to apply the rule of M-N inversion to NP₁ but not to NP₂, whereas in this analysis it is necessary to apply the rule of N-M inversion to NP₂ but not to NP₁. To obtain (14c) within the M-N hypothesis, it is necessary to apply the rule of M-N inversion to both NP₁ and NP₂, whereas in this analysis none of the NP's is affected by the rule of N-M inversion. Third, the acceptability of (14a, b) - (33a, b) and the unacceptability of (14d) - (33d) are related to the selection of the NP's to be affected by the rule of N-M inversion; namely a sentence is well-formed if only one NP is affected by the rule within the domain of a complex NP. Otherwise a sentence is ill-formed. Consider the following table:

(39)

<table>
<thead>
<tr>
<th>surface form</th>
<th>sentence</th>
<th>NP's are affected by the N-M inversion</th>
<th>well-formedness</th>
</tr>
</thead>
<tbody>
<tr>
<td>[M₁[N M₂]NP₂]NP₁</td>
<td>(14a-33a)</td>
<td>NP₁</td>
<td>well-formed</td>
</tr>
<tr>
<td>[M₂ N]NP₂ M₁ NP₁</td>
<td>(14b-33b)</td>
<td>NP₂</td>
<td>well-formed</td>
</tr>
<tr>
<td>[N M₂]NP₂ M₁ NP₁</td>
<td>(14c-33c)</td>
<td>Ø (generated by phrase structure rules in the base)</td>
<td>well-formed</td>
</tr>
<tr>
<td>*[M₁[N M₂]NP₂]NP₁</td>
<td>(14d-33d)</td>
<td>NP₁, NP₂</td>
<td>ill-formed</td>
</tr>
</tbody>
</table>
The above demonstrates that we can account for the well-formedness of (14a, b, c, d)-(33a, b, c, d) by constraining the rule of N-M inversion in such a way it can apply to any NP, either a higher one or a lower one, but only once within the domain of a possible complex NP.\(^1\) In other words, in the following underlying structure:

\[
\begin{array}{c}
\text{NP} \\
\text{NP} \\
\text{NP} \\
\text{N}
\end{array}
\]

The rule of N-M inversion can apply to either NP\(_1\) or NP\(_2\), but only one of them can be affected. For example, if NP\(_1\) is chosen, then NP\(_2\) cannot be chosen; and if NP\(_2\) is chosen, then NP\(_1\) cannot be chosen. The proposed constraint on the rule of N-M inversion can be summarized as follows:

\[
\text{N-M inversion can apply to any NP that satisfies its structural description but only once within the domain of a possible complex NP.}
\]

Comparing this analysis based on our N-M hypothesis with the one based on the M-N hypothesis, we conclude that the former is more desirable than the latter because it provides a nice account of various surface patterns without positing highly complex constraints on the rule.

1.3. NP's Containing Three Modifiers

Another set of sentences that provide support for the proposed N-M hypothesis is to be found in the following:
1.3.1. M-N Hypothesis

Let us first take a look at how the proposed M-N hypothesis can handle sentences above. Starting out with a M-N sequence underlyingly, NP in (42) will have the following underlying structure:

\[
(43)
\]

\[
NP_1 \rightarrow M_1 \rightarrow NP_2 \rightarrow M_2 \rightarrow NP_3 \rightarrow M_3 \rightarrow NF \\
\{qianbu \} \rightarrow \{neixie \} \rightarrow \{dai yianjing \} \rightarrow \{xiuesheng \} \\
all \rightarrow those \rightarrow wear \; glasses \; rel. \rightarrow student
\]
For the sake of convenience, consider the patterns as exhibited in (42):

(44) a. \[ \text{NP}_1 \rightarrow M_1 \rightarrow M_2 \rightarrow \text{NP}_2 \rightarrow \text{NP}_3 \] e.g. (42a)

(42b) \[ \text{NP}_1 \rightarrow M_2 \rightarrow M_3 \rightarrow \text{NP}_2 \rightarrow \text{NP}_3 \]

(42c) \[ \text{NP}_1 \rightarrow M_3 \rightarrow M_2 \rightarrow \text{NP}_2 \rightarrow \text{NP}_3 \]

(42d) \[ \text{NP}_1 \rightarrow M_1 \rightarrow M_3 \rightarrow \text{NP}_2 \rightarrow \text{NP}_3 \]

(42e) \[ \text{NP}_1 \rightarrow M_2 \rightarrow M_3 \rightarrow \text{NP}_2 \rightarrow \text{NP}_3 \]

(42f) \[ \text{NP}_1 \rightarrow M_3 \rightarrow M_2 \rightarrow \text{NP}_2 \rightarrow \text{NP}_3 \]

(42g) \[ \text{NP}_1 \rightarrow M_1 \rightarrow M_2 \rightarrow \text{NP}_3 \rightarrow \text{NP}_2 \rightarrow \text{NP}_1 \]

(42h) \[ \text{NP}_1 \rightarrow M_1 \rightarrow M_2 \rightarrow \text{NP}_3 \rightarrow \text{NP}_2 \rightarrow \text{NP}_1 \]

and the table indicating the relationships between the well-formedness of the sentences and the selection of the NP's to which the rule of M-N inversion can apply.

(45)

<table>
<thead>
<tr>
<th>surface form</th>
<th>sentence</th>
<th>M-N inversion rule</th>
<th>NP's are not affected by</th>
<th>well-formedness</th>
</tr>
</thead>
<tbody>
<tr>
<td>[M_1 \rightarrow N \rightarrow M_3 \rightarrow \text{NP}_3 \rightarrow \text{NP}_2 \rightarrow \text{NP}_1]</td>
<td>e.g. (42a)</td>
<td>NP_2, NP_3</td>
<td>NP_1</td>
<td>well-formed</td>
</tr>
<tr>
<td>[M_2 \rightarrow N \rightarrow M_3 \rightarrow \text{NP}_3 \rightarrow \text{NP}_2 \rightarrow \text{NP}_1]</td>
<td>(42b)</td>
<td>NP_1, NP_3</td>
<td>NP_2</td>
<td>well-formed</td>
</tr>
<tr>
<td>[M_3 \rightarrow N \rightarrow \text{NP}_3 \rightarrow M_2 \rightarrow \text{NP}_2 \rightarrow \text{NP}_1]</td>
<td>(42c)</td>
<td>NP_1, NP_2</td>
<td>NP_3</td>
<td>well-formed</td>
</tr>
<tr>
<td>[M_1 \rightarrow N \rightarrow \text{NP}_3 \rightarrow M_2 \rightarrow \text{NP}_2 \rightarrow \text{NP}_1]</td>
<td>(42d)</td>
<td>NP_1, NP_2, NP_3</td>
<td>\emptyset</td>
<td>well-formed</td>
</tr>
<tr>
<td>[M_2 \rightarrow M_3 \rightarrow \text{NP}_3 \rightarrow \text{NP}_2 \rightarrow \text{NP}_1]</td>
<td>(42e)</td>
<td>NP_1</td>
<td>NP_2, NP_3</td>
<td>ill-formed</td>
</tr>
<tr>
<td>[M_1 \rightarrow M_3 \rightarrow \text{NP}_3 \rightarrow M_2 \rightarrow \text{NP}_2 \rightarrow \text{NP}_1]</td>
<td>(42f)</td>
<td>NP_2</td>
<td>NP_1, NP_3</td>
<td>ill-formed</td>
</tr>
</tbody>
</table>
The above table demonstrate that in order to derive well-formed sentences (e.g. 42 a, b, c, d), but to block ill-formed ones (e.g. 42 e, f, g, h), a number of complex constraints on the rule of M-N inversions are needed. First, to derive the form \[ \text{NP}_3 \rightarrow \text{NP}_2 \rightarrow \text{NP}_1 \] (e.g. 42d) but to block the form \[ \text{NP}_3 \rightarrow \text{NP}_2 \rightarrow \text{NP}_1 \] (e.g. 42h) it is necessary to constrain the rule of M-N inversion so that it must apply to every NP, moving \( M_1 \), \( M_2 \), and \( M_3 \) to a postnominal position. Second, to obtain the form \[ \text{NP}_3 \rightarrow \text{NP}_2 \rightarrow \text{NP}_1 \] (e.g. 42b), \[ \text{NP}_3 \rightarrow \text{NP}_2 \rightarrow \text{NP}_1 \] (e.g. 42c), but to block the forms \[ \text{NP}_3 \rightarrow \text{NP}_2 \rightarrow \text{NP}_1 \] (e.g. 42e), \[ \text{NP}_3 \rightarrow \text{NP}_2 \rightarrow \text{NP}_1 \] (e.g. 42f), and \[ \text{NP}_3 \rightarrow \text{NP}_2 \rightarrow \text{NP}_1 \] (e.g. 42g), it is necessary to constrain the rule so that it must apply to every NP that satisfies its structural description but at least one of those NP's must not be affected by the rule.

The above demonstrates not only that our analysis based on the M-N hypothesis is not desirable because of the complication involved with the derivation, but also that, if sentences like (42a-42d) are assumed to have an underlying structure like (43), then the only way to derive these sentences but to block (42e-42h), is to implement a set of complex constraints as in (36) on the rule of M-N inversion, thereby complicating the grammar. For example,
to derive (42a), the rule of M-N inversion obligatorily applies to NP₂ and NP₃ but optionally to NP₁. On the other hand, to derive (42d), the same rule obligatorily applies to NP₁, NP₂, and NP₃. Constraints as such, as I have argued earlier, is not desirable because it would greatly complicate the grammar.

1.3.2. N-M Hypothesis

Following the N-M hypothesis proposed earlier, starting out with a N-M sequence the modified NP in (42) will have the following underlying structure:

(46)

\[
\begin{array}{c}
\text{NP₁} \\
\text{NP₂} \\
\text{NP₃} \\
\text{NP} \\
\end{array}
\]

xuéshēng  
dai  yíanjing  de  
student  wear  glasses  rel.

It is relatively easy to show that previously proposed constraint as in (41) on the rule of N-M inversion holds here. In order to demonstrate that we have to show that the significant relationship between the well-formedness of sentences of (42) and the selection of the NP's to which the rule of N-M inversion can apply hold cases like (42). Consider the following table:

(47)

<table>
<thead>
<tr>
<th>surface form</th>
<th>sentence</th>
<th>NP's are affected by N-M inversion</th>
<th>NP's are not affected by N-M inversion</th>
<th>well-formedness</th>
</tr>
</thead>
</table>
| \[
\begin{array}{c}
\text{M₁} \\
\text{N} \\
\text{M₃} \\
\text{NP₃} \\
\text{M₂} \\
\text{NP₂} \\
\text{NP₁} \\
\end{array}
\] | e.g. (42a) NP₁ | NP₂, NP₃ | well-formed |
| \[
\begin{array}{c}
\text{M₂} \\
\text{N} \\
\text{M₃} \\
\text{NP₃} \\
\text{NP₂} \\
\text{M₁} \\
\text{NP₁} \\
\end{array}
\] | (42b) NP₂ | NP₁, NP₃ | well-formed |
The above table demonstrates that there is a significant relationship between the well-formedness of sentences and the selection of the NP's to which the rule of N-M inversion can apply. The fact is that the acceptability of (42a, b, c, d) and the unacceptability of (42e, f, g, h) are related to the selection of the NP's to which the rule of N-M inversion can apply. A sentence is well-formed if one or no NP is affected by the rule. Otherwise a sentence is ill-formed. This clearly shows that the constraint on N-M inversion proposed earlier as in (41) not only holds for cases whose NP's containing two modifiers, but also holds for cases whose NP's containing three modifiers such as (42).

The argument is that we can account for the well-formedness of sentences (42a-d) by constraining the rule of N-M inversion as in (41). For example, there is only one NP chosen to which the rule of N-M inversion applies in the forms e.g. (42a), e.g. (42b), and e.g. (42c). Thus they are well-formed.

On the other hand, there are two NP's chosen to which the rule applies in the forms e.g. (42e),
Thus they are ill-formed. Similarly, there are three NP's chosen to which the rule applies in the form $M_1 M_2 N M_3 M_2 N_1$ (e.g. 42h). Thus it is ill-formed.

Comparing this analysis based on our N-M hypothesis with the one based on the M-N hypothesis, we can conclude again, that the former is more desirable because it provides a nice account of various surface patterns without positing complex constraints on the rule.

1.4. NP's Containing Four Modifiers

Another set of sentences that provide further support for the proposed N-M hypothesis is to be found in the following:

(48a) Qiú'ántú xiúēshēng dàì māuz de dàì yíanjìng de gāu de láile.
    all student wear hat rel. wear glasses rel. tall rel. came
    'All of the tall students who wear hats who wear glasses came.'

b. Gāude xiúēshēng dàì māuz de dàì yíanjìng de qiú'ántú láile.
    tall student wear hat rel. wear glasses rel. all came

c. Dài yíanjìng de xiúēshēng dàì māuz de gāude qiú'ántú láile.
    wear glasses rel. students wear hat rel. tall all came

d. Dài māuz de xiúēshēng dàì yíanjìng de gāude qiú'ántú láile.
    wear hat rel. student wear glasses rel. tall all came

e. Xiuēshēng dàì māuz de dàì yíanjìng de gāude qiú'ántú láile.
    student wear hat rel. wear glasses rel. tall all came

f. *Gāude dàì yíanjìng de dàì māuz de xiúēshēng qiú'ántú láile.
    all wear glasses rel. wear hat rel. student all came

g. *Qiú'ántú dàì yíanjìng de dàì māuz de xiúēshēng gāude láile.
    all wear glasses rel. wear hat rel. student tall came

h. *Qiú'ántú gāude dàì māuz de xiúēshēng dàì yíanjìng de láile.
    all tall wear hat rel. student wear glasses rel. came

i. *Qiú'ántú gāude dàì yíanjìng de xiúēshēng dàì māuz de láile.
    all tall wear glasses rel. student wear hat rel. came

j. *Qiú'ántú gāude dàì yíanjìng de dàì māuz de xiúēshēng láile.
    all tall wear glasses rel. wear hat rel. student came.
1.4.1. M-N Hypothesis

Starting out with a M-N sequence the underlying structure for the NP in (48) will be something like the following:

(49)

Consider the table indicating the sentence patterns as exhibited by sentence (48) as in (50)

(50)a. [ ]\n
(50)b. [ ]\n
(50)c. [ ]\n
(50)d. [ ]\n
(50)e. [ ]\n
(50)f. [ ]\n
(50)g. [ ]\n
(50)h. [ ]\n
(50)i. [ ]\n
(50)j. [ ]
and the table indicating the relationships between the well-formedness of sentence and the selection of NP's to which the rule of M-N inversion can apply as in (51).

(51)

<table>
<thead>
<tr>
<th>surface forms</th>
<th>NP's are affected by M-N Inversion</th>
<th>NP's are not affected by M-N Inversion</th>
<th>well-formedness</th>
</tr>
</thead>
<tbody>
<tr>
<td>{[M_1]^N M_4^M NP_4 M_3^M NP_3 M_2^M NP_2 M_1^M NP_1}</td>
<td>(48a) NP_2', NP_3', NP_1 well-formed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>{[M_2]^N M_4^M NP_4 M_3^M NP_3 M_2^M NP_2 M_1^M NP_1}</td>
<td>(48b) NP_1, NP_3 well-formed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>{[M_3]^N NP_3 M_4^M NP_4 M_2^M NP_2 M_1^M NP_1}</td>
<td>(48c) NP_1, NP_2 well-formed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>{[M_4]^N NP_3 M_3^M NP_4 M_2^M NP_2 M_1^M NP_1}</td>
<td>(48d) NP_1, NP_2 well-formed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>{[N]^M NP_4 M_3^M NP_3 M_2^M NP_2 M_1^M NP_1}</td>
<td>(48e) NP_1, NP_2 well-formed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>{[M_2]^M M_3^M M_4^N NP_4 NP_3^M NP_4 M_1^M NP_1}</td>
<td>(48f) NP_1 well-formed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>{[M_1]^M M_3^M M_4^N NP_4 NP_3^M NP_2^M NP_1}</td>
<td>(48g) NP_2 well-formed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>{[M_1]^M M_2^M M_4^N NP_4 NP_3^M NP_2^M NP_1}</td>
<td>(48h) NP_3 well-formed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>{[M_1]^M M_2^M M_3^M M_4^N NP_4 NP_3^M NP_2^M NP_1}</td>
<td>(48i) NP_4 well-formed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>{[M_1]^M M_2^M M_3^M M_4^N NP_4 NP_3^M NP_2^M NP_1}</td>
<td>(48j) Ø well-formed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(48j) (generated by phrase structure rules in the base)
What the above table demonstrates are the following. First, in order to derive the form $[[[N \downarrow M_4 \downarrow NP_4 \downarrow M_3 \downarrow NP_3 \downarrow M_2 \downarrow NP_2 \downarrow M_1 \downarrow NP_1]$ (e.g., 48e) from (49)

but to block the form $[[M_1 \downarrow M_2 \downarrow M_3 \downarrow M_4 \downarrow N \downarrow NP_4 \downarrow NP_3 \downarrow NP_2 \downarrow NP_1]$ (e.g., 48j), it is necessary to constraint the rule of M-N inversion so that it must apply to every NP, moving $M_1$, $M_2$, $M_3$, $M_4$ to the postnominal position. Second, in order to derive the form $[[[M_1 \downarrow N \downarrow M_4 \downarrow NP_4 \downarrow M_3 \downarrow NP_3 \downarrow M_2 \downarrow NP_2 \downarrow M_1 \downarrow NP_1]$ (e.g., 48a),

$M_2 \downarrow N \downarrow M_4 \downarrow NP_4 \downarrow M_3 \downarrow NP_3 \downarrow NP_2 \downarrow M_1 \downarrow NP_1$ (e.g., 48b),

$M_4 \downarrow NP_4 \downarrow M_2 \downarrow NP_2 \downarrow M_1 \downarrow NP_1$ (e.g., 48c),

$[[[M_4 \downarrow N \downarrow NP_4 \downarrow M_3 \downarrow NP_3 \downarrow M_2 \downarrow NP_2 \downarrow M_1 \downarrow NP_1]$ (e.g., 48d),

$[[[N \downarrow M_4 \downarrow NP_4 \downarrow M_3 \downarrow NP_3 \downarrow M_2 \downarrow NP_2 \downarrow M_1 \downarrow NP_1$ (e.g., 48e), but to block the forms $[[[M_2 \downarrow M_3 \downarrow M_4 \downarrow N \downarrow NP_4 \downarrow NP_3 \downarrow NP_2 \downarrow M_1 \downarrow NP_1$ (e.g., 48f),

$[[M_1 \downarrow M_3 \downarrow M_4 \downarrow N \downarrow NP_4 \downarrow NP_3 \downarrow NP_2 \downarrow M_1 \downarrow NP_1$ (e.g., 48g),

$M_3 \downarrow NP_3 \downarrow NP_2 \downarrow NP_1$ (e.g., 48h), and

$[[[M_1 \downarrow M_2 \downarrow M_3 \downarrow N \downarrow M_4 \downarrow NP_4 \downarrow NP_3 \downarrow NP_2 \downarrow NP_1$ (e.g., 48i), it is necessary to constrain the rule so that it must apply to every NP that satisfies its structural description, but leaving at least one NP unaffected by the rule.

Again, what the above demonstrates is that sentences whose NP's containing four modifiers cannot be nicely accounted for under the M-N hypothesis unless certain highly complex constraints on the rule of M-N inversion are implemented into the grammar as in (36). Below I will show cases like (48), however, can be nicely accounted for under the N-M hypothesis.

1.4.2. N-M Hypothesis

Let us take a look at how the sentences containing four modifiers as in (48) can be accounted for within the N-M hypothesis. Starting out
with a N-M sequence, the modified NP in (48a) will have the following structure:

(52)

Again, it is relatively easy to show that the proposed constraint as in (41) also holds here. In order to show that (41) is capable of accounting for cases such as (48), it is necessary to demonstrate the relationship between the well-formedness of sentences and the selection of NP's to which the rule of N-M inversion can apply. Consider the following table:

(53)

<table>
<thead>
<tr>
<th>surface form</th>
<th>sentence</th>
<th>NP's are affected by N-M Inversion</th>
<th>NP's are not affected by N-M Inversion</th>
<th>well-formedness</th>
</tr>
</thead>
<tbody>
<tr>
<td>[N M NP]</td>
<td>(48a)</td>
<td>NP₁</td>
<td>NP₂, NP₃, well-formed</td>
<td></td>
</tr>
<tr>
<td>[N M NP]</td>
<td>(48b)</td>
<td>NP₂</td>
<td>NP₁, NP₃, well-formed</td>
<td></td>
</tr>
<tr>
<td>[N M NP]</td>
<td>(48c)</td>
<td>NP₃</td>
<td>NP₁, NP₂, well-formed</td>
<td></td>
</tr>
<tr>
<td>[N M NP]</td>
<td>(48d)</td>
<td>NP₄</td>
<td>NP₁, NP₂, well-formed</td>
<td></td>
</tr>
</tbody>
</table>
The above shows that there is a significant relationship between the well-formedness of sentences and the selection of the NP's to which the rule of N-M inversion can apply. The acceptability of (48a, b, c, d, e) and the unacceptability of (48f, g, h, i, j) clearly show that the well-formedness of sentences are related to the selection of the NP's to which the rule of N-M inversion can apply. A sentence is well-formed if either one or no NP chosen for the rule of N-M inversion to apply. Otherwise a sentence is ungrammatical. This clearly shows that the proposed constraint as in (41) not only holds for sentence whose NP's containing two and three modifiers, but also holds for sentences whose NP's containing four modifiers such as (48). The argument is that we can account for the well-formedness of (48) in the following way. For example, there is either one or no NP chosen to which the rule applies in the forms

\[
M_1 \overrightarrow{N M_4 \overrightarrow{N_P 4 \overrightarrow{M_3 \overrightarrow{N_P 3 \overrightarrow{M_2 \overrightarrow{N_P 2 \overrightarrow{M_1 \overrightarrow{N_P 1)}}}}}}}, \text{ (e.g. 48a)}
\]

\[
M_3 \overrightarrow{N P_3 \overrightarrow{N_P 2 \overrightarrow{M_1 \overrightarrow{N_P 1}}}}, \text{ (e.g. 48b)}
\]
Thus they are well-formed. On the contrary, there are more than one NP chosen to which the rule applies in the forms 

\[
\begin{align*}
&M_1 - N - M_3 - M_4 \quad \text{(e.g. 48f)} \\
&M_1 - N - M_3 - M_4 \quad \text{(e.g. 48g)} \\
&M_1 - N - M_3 - M_4 \quad \text{(e.g. 48h)} \\
&M_1 - N - M_3 - M_4 \quad \text{(e.g. 48i)} \\
\end{align*}
\]

This section together with section 1.1., 1.2., and 1.3. has been an attempt to argue against a M-N sequence, but for a N-M sequence as the underlying order for a modified NP in Chinese. The argument has been twofold: on the one hand, it has been demonstrated that various surface patterns of NP's containing more than one modifier cannot be adequately accounted for within the M-N hypothesis, since it complicates the grammatical description by requiring a set of complex constraints on the rule of M-N inversion; on the other hand, it has been shown that such patterns can best be accounted for within the N-M hypothesis, since it simplifies the grammatical description by constraining the rule of N-M inversion in such a way that it can apply to any NP, either a higher one, or a lower one, but only once within the domain of a possible complex NP.

2. Preverbal Nominal Modifier

2.1. Preverbal N-\(\overline{\text{N}}\)inal Modifiers

In Chinese nominal modifiers can occur in preverbal position. Consider:

A. Quantifiers

\[(54)a. \text{ Xuěshēng qǐuānbù láile.} \quad \text{\textquoteleft All of the students came.	extquoteright}\]

\text{student all came}
b. (Gùanyú) xiuéshēng, qǐanbù láile.
   As for student all came
   'As for the students, all
   of them came.'

(55) a. Xiuéshēng méiyígè láile.
   student each came
   'Each of the students came.'

   b. (Gùanyú) xiuéshēng, méiyígè láile.
   As for student each came
   'As for the students, each
   of them came.'

(56) a. Xiuéshēng mòxī láile.
   student some came
   'Some of the students came.'

   b. (Gùanyú) xiuéshēng, mòxī láile.
   As for student some came
   'As for the students, some
   of them came.'

(57) a. Xiuéshēng hěnduō láile.
   student many came
   'Many of the students came.'

   b. (Gùanyú) xiuéshēng, hěnduō láile.
   as for student many came
   'As for the students, many
   of them came.'

(58) a. Xiuéshēng yībāige láile.
   student 100 came
   'One hundred of the students
   came.'

   b. (Gùanyú) xiuéshēng, yībāige láile.
   as for student 100 came
   'As for the students, one hundred
   of them came.'

B. Determiners

(59) a. Xiuéshēng zhèixiē láile.
   student these came
   'These students came.'

   b. (Gùanyú) xiuéshēng, Zhèixiē láile.
   as for student these came
   'As for the students, these
   came.'

C. Adjective

(60) a. Xiuéshēng tsūngmíngde láile.
   student intelligent came
   'The intelligent students
   came.'

   b. (Gùanyú) xiuéshēng, tsūngmíngde láile.
   as for student intelligent came
   'As for the students, the
   intelligent ones came.'

D. Measure Phrase

(61) a. Xiuéshēng ěrshíshíùidàde láile.
   student 20-year-old came
   'The twenty-year-old students
   came.'

   b. (Gùanyú) xiuéshēng, ěrshíshíùidàde láile.
   as for student 20-year-old came
   'As for the students, the
   20-year-old ones came.'

E. Relative Clause

(62) a. Xiuéshēng, dài yíanjīng de láile.
   student wear glasses rel. came
   'The students who wear
   glasses came.'
b. (Guanyu) xiuèshèng, dai yianjing de láile. 'As for the students, as for student wear glasses rel. came the ones who wear glasses came.'

2.2. Preverbal Nominal Modifiers and Topicalization

In Hou (1974a) I propose that in Chinese there is a topicalization transformation which moves NP's to the front of a sentence as schematized in (63).

\[
\begin{array}{ccc}
X & NP & Y \\
1 & 2 & 3
\end{array} \rightarrow \begin{array}{c}
2 \# S[1 \emptyset 3]
\end{array}
\]

This transformation relates (a), (b) and (c) in the following sentences:

(a) Xiuèshèng láile. 'The students came.'
(b) (Guanyu) xiuèshèng, láile. 'As for the students, they came.'

(a) Xiuèshèng màile shū. 'The students bought the books.'
(b) (Guanyu) xiuèshèng, màile shū. 'As for the students, they bought the books.'
(c) (Guanyu) shū, xiuèshèng màile. 'As for the books, the students bought.'

We can account for (54b)-(62b) by reformulating the proposed rule of topicalization so that it can either move the whole noun phrase to the front of a sentence or move only the noun, leaving the modifier behind. The reformulation of topicalization can be schematized as in (66).

(66) Topicalization:

\[
\begin{array}{ccc}
SD: X & N & M \downarrow_{NP} & Y \\
1 & 2 & 3 & 4
\end{array} \rightarrow \begin{array}{c}
\end{array}
\]

\[
\begin{array}{c}
SC: (a) 2 + 3 \# S[1 \emptyset \emptyset 4] \\
(b) 2 \# S[1 \emptyset 3 4] \end{array}
\]

M = Quantifiers, Determiners, Adjectives, Measure Phrase, Relative Clause, etc.
Thus, we can derive (5b) in the following fashion:

\[
\begin{array}{c}
\text{NP} \quad \text{VP} \\
\text{xuéshéng} \quad \text{quánbú} \quad \text{lái} \quad \text{laile} \\
\text{student} \quad \text{all} \quad \text{came}
\end{array}
\]

However, this analysis is inadequate because there are topicalized sentences in Chinese whose structure cannot be derived from the application of movement transformation. For example, the following topicalized sentences have no non-topicalized counterparts.

(68) Hua mèigui zui hòukán. 'As for flowers, roses are most beautiful.

(69) Jiàoyù Max bù tōngyì Russell. 'As for education, Max does not agree with Russell.

(70) Yüánxiú yúfà zui lióuxìng. 'As for linguistics, syntax is most popular.

(71) Hài Tàipingyáng zui dà. 'As for ocean, the Pacific is the largest.

(72) Jūngguó tsài Max xīhuān kǎoyà. 'As for Chinese food, Max likes roast duck.'

2.3. Teng's Analysis

Teng (1974) suggests that sentences such as (54b)-(62b) are double nominative constructions and are to be generated directly by phrase structure rules in the base. That is, the noun in the initial position and the noun and nominal modifier in preverbal position are both nominatives in the underlying structure. In other words, both are interpreted as topics. For example, (54b) will have the following underlying structure in Teng's framework:
In order to derive (54b) from a structure like (73) Teng claims that the only transformation needed is a rule deleting the repeated element—xiu\textsuperscript{shēng} 'student' in NP\textsubscript{2} of S\textsubscript{2} yielding the correct surface form.

There are two factors that argue against Teng's proposal. The first concerns the validity of the structure (73). In general an S can be dominated by a VP as a complement as shown in (74).

\[(74) \quad (a) \quad VP \quad (b) \quad VP \quad (c) \quad VP\]

\[(a), (b), \text{ and } (c) \text{ are very common and can be found in many languages. For example, } (a) \text{ and } (b) \text{ are found in English, whereas } (a), (b), \text{ and } (c) \text{ are found in Chinese. However, in (73) we find that an S is immediately dominated by a VP. What Teng suggests is that in the base there is a rule which says a VP can be expanded as an S. Such a proposal is unjustified because there are no evidence which indicate such a relation does exist in natural language.}\]

Another factor against Teng's proposal concerns the placement of the negative adverb bu 'not'. There is a general rule in Chinese which states that negative adverb bu 'not' occurs before the verb except in the case of double nominative construction, where bu 'not' can occur either before a verb or before a noun which is followed by a verb. For example, bu 'not' is placed before the verb in a non-double nominative sentence such as (75).
(75) a. Max xihuan Meigwo fan.  'Max likes American food.'
   like American food
b. Max bu xihuan Meigwo fan.  'Max does not like American food.'
   not like American food

However, bu 'not' is placed either before the verb or before the noun in a
double nominative sentence such as (76).2

(76) a. Max tou tengle.  'Max has a headache.'
   head painful
b. Max tou bu tengle.  'Max does not have a headache.'
   head not painful
c. Max bu tou tengle.  'Max does not have a head-
   not head painful

As an illustration, consider sentences (54b) and (62b). If these sentences
were double nominatives, then their negative counterparts should be the
following:

(77)a. Xiuesheng qivanbu bu laile.  'All of the students didn't
   student all not came
b. Xiuesheng bu qivanbu laile.  'Not all of the students
   student not all came

(78)a. Xiuesheng dai yianjing de bu laile.  'The students who wear
   student wear glasses rel. not came
   glasses didn't come.'
b. Xiuesheng bu dai yianjing de laile.  'Students who didn't
   student not wear glasses rel. came
   wear glasses c me.'

Since the negative counterparts of (54b) and (62b) are (77a) and (78a),
but not (77b) and (78b) respectively and since (77a) and (78a) and (77b) and
(78b) are not synonymous with each other, we must conclude the following:

sentences such as (54)-(62) are not double nominative constructions and they
should be derived from different logical structure.

2.4. The Underlying Structure of Topicalized Sentences: A Proposal

Based on the fact that all types of topicalized sentences such as
(54b)-(62b) and cases like (68)-(72) should be derived from the same kind of
logical structure, I propose that sentences like (54b) has the following underlying structure:

(79) 

To derive (54b) from (79), the only transformation we need is a rule that deletes the repeated element—xiúshēng 'student'. There are three factors arguing for this analysis. First, it provides a nice common source for all types of the topicalized sentences by generating them directly in the base by phrase structure rules. Second, it captures the semantic relation between the notions such as topic and comment in a explicit manner. Third, it provides an explanation for the relationship between a modified noun and its modifier. That is, the close relationship between modifiers and nouns with which they are associated is nicely explicated by treating them as clause mates in the same constituent in the underlying structure.

3. Postverbal Nominal Modifiers

3.1. Postverbal Modifiers

Nominal modifiers in Chinese can also occur in postverbal position. This is exemplified in (80)-(88).

A. Quantifier

(80)a. Xiúshēng qún bù láile. 'All of the students came.'
student all came

b. Xiúshēng (lítou), láile qún bù. 'As for the students, all of them came.'
student among came all
(81). Xiüesheng meiyige laile.  
student each came  
'a. Each of the students came.'  
b. Xiüesheng (lìtou), laile meiyige.  
student among came each  
'As for the students, each of them came.'  

(82). Xiüesheng moxie laile.  
student some came  
'Some of the students came.'  
b. Xiüesheng (lìtou), laile moxie.  
student among came some  
'As for the students, some of them came.'  

(83). Xiüesheng henduo laile.  
student many came  
'Many of the students came.'  
b. Xiüesheng (lìtou), laile henduo.  
student among came many  
'As for the students, many of them came.'  

(84). Xiüesheng yibaige laile.  
student 100 came  
'One hundred of the students came.'  
b. Xiüesheng (lìtou), laile yibaige.  
student among came 100  
'As for the students, one hundred of them came.'  

B. Determiners  

(85). Xiüesheng neixie laile.  
student those came  
'Those students came.'  
b. Xiüesheng (lìtou), laile neixie.  
student among came those  
'As for the students, these came.'  

C. Adjectives  

(86). Xiüesheng tsungmingde laile.  
student intelligent came  
'The intelligent students came.'  
b. Xiüesheng (lìtou), laile tsungmingde.  
student among came intelligent  
'As for the students, the intelligent ones came.'  

D. Measure Phrases  

(87). Xiüesheng ershiqiaide laile.  
student 20-year-old came  
'The 20-year-old students came.'  
b. Xiüesheng (lìtou), laile ershiqiaide.  
student among came 20-year-old  
'As for the students, the 20-year-old ones came.'  

E. Relative Clauses  

(88). Xiüesheng dai yianjing de laile.  
student wear glasses rel. came  
'The students who wear glasses came.'  
b. Xiüesheng (lìtou), laile dai yianjing de.  
student among came wear glasses rel.  
'As for the students, the one who wear glasses came.'
3.2. Tai's Analysis

In Tai (1973) it is proposed that sentences like (80b)-(88b) can be related to (80a)-(88a) by what he called NP-V inversion transformation. He proposes that sentence (80b) has the following structure:

(89)

Then (80b) can be derived from (89) by undergoing the NP-V inversion transformation which is schematized as in the following derivation:

(90)

Tai's analysis is unjustified, because, as I have argued earlier, it treats nominal modifiers as part of the VP although they are closely related to the nouns they modify. The result of this is that the modifiers are associated with the VP in the underlying structure, causing problems in explaining the semantic relation between the NP in subject position and the modifier in VP.

3.3. Li and Thompson's Analysis

Li and Thompson (1974) suggests that sentences such as (80b) is derived directly by phrase structure rule in the base component with a structure as shown in (91):
The problem in this analysis, again, is that it would complicate the grammar if the nominal modifiers were to be analyzed as part of the VP constituent in the underlying structure. Below is one argument against such an analysis.

In general the negative adverb *bù* 'not' is placed before a verb which is followed by a noun. For example:

(92)a. Max xīhūn píngguǒ.  'Max likes apple.'
   b. Max bù xīhūn píngguǒ.  'Max does not like apple.'

Consider sentences (80b)-(88b). If nominal modifiers in these sentences were to be analyzed as part of the VP constituent, then their negative counterparts should be exactly the same as (92). However, the situation in these sentences is different. For example, the negative counterparts of sentences (80b) and (88b) are not (93a) and (94a), but rather (93b) and (94b) respectively.

(93)a. *Xiùshēng bù láile qiuānbū.*  'All of the students did not come.'
   b. Xiùshēng bù qiuānbū láile.  'Student not all came.'

(94)a. *Xiùshēng bù láile dāi yīānjīng de.*  'The students who did not student not came wear glasses rel. came.'
   b. Xiùshēng bù dāi yīānjīng de láile.  'Student not wear glasses rel. came'

On the one hand, the acceptability of (93b) and (94b) clearly indicates that the nominal modifiers in these sentences are closely related to nouns with
which they are associated. On the other hand, the unacceptability of (93a) and (94a) indicates that nominal modifiers in these sentences cannot be analyzed as part of the VP constituent. The argument is that, if the modifiers in these sentences were to be analyzed in the VP constituent in underlying structure, then the complication involved with the placement of the adverb  bu 'not' will result, namely the modifier must be preposed next to the noun with which they are associated before the  bu is placed before the verb in order to derive (93b)-(94b). To accomplish that a rule that moves the modifiers to a preverbal position is eventually needed just in case  bu occurs before the verb. Li and Thompson's treatment is not desirable because it would complicate the grammar by introducing new rules.

3.4. Modifier Postposing Transformation

Another way to account for (80b)-(88b) is by assuming that there is a modifier postposing rule in Chinese that moves modifiers out of the NP's with which they are associated to a postverbal position. For example, sentence (80b) will have the following derivation:

(95)

The problem in this analysis concerns the placement of the modifiers. Consider the rule of modifier postposing which moves modifiers to a postverbal position. If such a rule is built into the grammar of Chinese and if we allow it to apply freely, then the difficulty confronting us is that there is no way to prevent nominal modifiers, and quantifiers in particular, from moving to an improper position, thereby conveying different semantic interpretations.
Consider the following sentences:

(a) 学生全买书
   'All of the students bought books.'

(b) 学生买全书
   'The students bought all of the books.'

Sentence (96b) is a perfectly good Chinese sentence and it could be derived by the application of the rule of modifier postposing. That is, if we allow modifier postposing to apply freely, then this rule could convert (96a) into (96b). The fact is that (96a) is not synonymous with (96b) as we can see in the English translation. They differ in meaning because in (96a) modifier modifies the subject, and in (96b) modifier modifies the object. For example, (96a) has the reading: All of the students bought the books; while (96b) has the reading: The students bought all of the books. Another set of sentences which could be generated by the modifier postposing transformation are found in the following:

(a) 短个子喝汤.
    'The short boy eats the soup.'

(b) 矮个子喝汤.
    'The short boy eats the soup.'

There are two alternatives that can be used as a blocking device to constrain the proposed modifier postposing transformation so that only well-formed sentences can be generated. On the one hand, we can prevent cases like (96b) and (97b) from being generated by constraining the modifier postposing rule in the following fashion:

\[
\begin{array}{llllll}
N & M & \text{LP} & X & V & Y \\
1 & 2 & 3 & 4 & 5 & \rightarrow
\end{array}
\]

Condition: \(Y \notin \text{NP}\)

The solution above is not a desirable one because it would rule out perfectly acceptable sentences such as (96b). The other possibility is that we can account for cases such as (96b) and (97b) by positing a perceptual constraint as in (99):
(99) Associate a nominal modifier with the nearest possible NP.

What (99) claims is that there is a general tendency that in Chinese a nominal modifier tends to modify the nearest possible NP. The function of this constraint is to provide an account for the improper placement of nominal modifier in cases like (96b) and semantic anomaly in cases like (97b). Now let us take a closer look at how cases such as (96b) and (97b) can be accounted for by the proposed constraint as in (99). One way to explain why (96b) should not be derived from (96a) through a rule of modifier postposing as in (98) is to say that if it so derived it would convey a different semantic interpretation according to (99). This means that (96b) must be interpreted as: The students bought all of the books but not all of the students bought the books according to (99). What this demonstrates is that (96b) cannot be derived from (96a) through a rule of modifier postposing. Rather, it would be derived from different structure. Similarly we can explain the semantic anomaly of (97b) by saying if it is so derived it would violate the constraint as in (99). The fact that (97b) is semantic anomalous is because there is no semantic compatibility between the nominal modifier Superview 'short' and the noun tāng 'soup'. Therefore, Superview 'short' cannot be interpreted as the modifier modifying tāng 'soup' although the tāng 'soup' is the nearest NP. This alternative is more desirable over the first one because the proposed perceptual constraint as in (99) provides a nice functional explanation for sentences such as (96b) and (97b).
4. Discontinuous Nominal Modifiers

Consider the following sentences:

(100) \[[\text{Sānbǎige xiūshēng (lìtou)} \]_{\text{NP}} [\text{láile} \]_{\text{NP}} \text{ wūshǐge.}]_{\text{NP}}

300 student among came 50
'Out of the three hundred students, forty came.'

(101) \[[\text{Neixie xiūshēng (lìtou)} \]_{\text{NP}} \text{láile} \]_{\text{NP}} [\text{dài yīnjiāng de.}]_{\text{NP}}

those student among came wear glasses rel.
'Out of those students, the ones who wear glasses came.'

(102) \[[\text{Měiguó wūshí zhōu (lìtou)} \]_{\text{NP}} \text{Max dàoguo} \]_{\text{NP}} [\text{bāi zhōu.}]_{\text{NP}}

U.S. 50 state among have been 8 state
'Out of the fifty states of U.S., Max has been to eight of them.'

(103) \[[\text{Shǐqīgē xiūshēng (lìtou)} \]_{\text{NP}} \text{Max rènshī} \]_{\text{NP}} [\text{lǐanggè.}]_{\text{NP}}

17 student among know 2
'Out of the seventeen students, Max knows two of them.'

One property that characterizes the above sentences is that in these sentences the two nominal expressions separated by the verb denotes a set versus subset relation. The first bracketed NP denotes a total set that is greater than that of the second bracketed NP. Another property exhibited by these sentences is that the NP denoting the universe set or the whole cannot be interchanged with the NP denoting the subset or the part. That is, interchanging the two bracketed NPs would make the sentences unacceptable. For example, the following sentences are unacceptable:

(104) *\text{Wūshǐge xiūshēng (lìtou) láile sānbǎige.}*
50 student among came 300

(105) *\text{Bā zhōu (lìtou) Max dàoguo Měiguó wūshí zhōu.}*
8 state among have been U.S. 50 state.

(106) *\text{Lǐanggè xiūshēng (lìtou) Max rènshī shǐqīgē.}*
2 student among know 17

4.1. Li and Thompson's Analysis

Li and Thompson (1974) proposes that sentences such as (100) has an underlying structure as shown in (107):
What (107) claims is that sentences whose NP containing discontinuous modifiers such as (100)-(103) are directly derived by phrase structure rules in the base component.

One major problem in this analysis is that it fails to provide an account for the systematic relationship among transformationally related sentences. That is, this analysis provides no explanation for how sentences (103)-(106) can be related to their synonymous counterparts as shown below:

(108) Sānbāigè xiùshēng (lìtòu), wǔshígè láile. 'Out of the three 300 student among 50 came students, fifty came.'

(109) Neixié xiùshēng (lìtòu) dāi yīnjīng de láile. 'Out of those students, the ones who wear glasses came.'

(110) Max dàguò Méiguó wǔshí zhōu (lìtòu) bāi zhōu. 'Out of the fifty states of the U.S., Max has been eight of them.'

(111) Max rènshi shíqīgè xiùshēng (lìtòu) liànggè. 'Out of the seventeen students Max knows two of them.'

Here, sentences (100)-(103) are synonymous with (108)-(111) respectively and these sentences should be derived from a common source. This analysis is inadequate because it fails to explicate such relationship among these systematic related sentences. Another factor arguing against this analysis is that there is a strong evidence showing that the second modifier must be associated with the first modifier, but not with the VP in the underlying structure.

Consider the following sentences:
Note that the negative counterparts of (112) and (113) are (112b) and (113b) respectively, but not (112a) and (113a). This means that the second modifiers in these sentences are closely related to the first modifier of the first bracketed NP, but not to the VP constituent. This demonstrates that the second nominal modifiers in sentences such as (100)-(103) should not be analyzed as part of the VP in underlying structure. The argument is that, if the second modifiers in these sentences were to be introduced as part of the VP, then the complication involved with the placement of adverbs such as \( \text{bu} \) 'not' For example, in order to derive (112b)-(113b), but to block (112a)-(113a), the second modifiers must be preposed next to the nouns with which they are associated before the adverbs are placed before the verb, thereby complicating the grammar.

4.3. Discontinuous Modifiers and Topicalization

Based on the fact that sentences whose NP containing discontinuous nominal modifiers are closely related to the nouns, the fact that sentences (100)-(103) are transformationally related to sentences such as (108)-(111), and the fact that (100)-(103) are topicalized sentences, I propose that sentences like (100) has the following underlying structure:
To derive (100) from (114), two transformations are needed. First, a rule deletes the repeated element — xiùshēng 'student' in S₂. Second, the modifier postposing moves the M of S₂ to a postverbal position yielding the correct surface form of (100).

There are two factors arguing for this analysis. First, it provides an explicit account of the semantic relationship between the topic and comment as exhibited by sentences such as (100)-(103). Second, it provides a nice common source for all the transformationally related sentences. For example, we can derive (108) from (114) simply by applying the rule that deletes the repeated element to NP of S₂, namely the rule deletes xiùshēng of S₂ yielding the correct surface form of (108).

5. Conclusion

This paper has been an attempt to argue against a M-N sequence, but for a N-M sequence as the underlying order for a modified NP in Chinese. The argument has been twofold: on the one hand, it has been demonstrated that various surface patterns of NP's containing more than one modifier cannot be adequately accounted for within the M-N hypothesis, since it complicates the grammatical description by requiring a set of complex constraints on the rule of M-N inversion; on the other hand, it has been shown that such patterns can best be accounted for within the N-M hypothesis, since it simplifies the grammatical
description by constraining the rule of N-M inversion in such a way that it can apply to any NP, either a higher one, or a lower one, but only once within the domain of a possible complex NP.

It has also been demonstrated in this study that nominal modifiers in preverbal or postverbal position are not part of the VP constituent, but rather as part of the NP with which they are associated. It has been first shown that such modifiers cannot be adequately accounted for by way of phrase structure rules, since there is no significant syntactic and semantic evidence in support of such a hypothesis. It has also been shown in this section that such modifiers cannot be adequately accounted for by the application of the proposed modifier postposing transformation alone. Rather, a perceptual constraint in Chinese which states that associate a modifier to the nearest possible NP must be implemented into the grammar so that semantic anomaly and the improper placement of nominal modifiers can be nicely explained.


FOOTNOTES

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1 The term ‘complex NP’ here is defined as it refers to cases where a noun is modified by more than one nominal modifiers (e.g. quantifiers, determiners, adjectives, measure phrase, relative clause, etc.)

2 Notice that one property characterizes the Chinese double nominative construction is that the second nominative is always referring to inalienable possessions or body parts. Some examples:

(1) a. Max ya tingle.
    tooth painful
    'Max has a toothache.'

    b. Max ya bu tingle.
    tooth not painful
    'Max does not have a toothache.'

    c. Max bu ya tingle.
    not tooth painful

(2) a. Max jiao suanle.
    foot sore
    'Max's feet become sore.'

    b. Max jiao bu suanle.
    foot not sore
    'Max's feet do not become sore.'

    c. Max bu jiao suan.
    not foot sore

(3) a. Max tu i ma le.
    leg numb
    'Max's legs become numb.'

    b. Max tu i bu ma le.
    leg not numb
    'Max's legs do not become numb.'

    c. Max bu tu i ma le.

The sentences above seem to constitute further evidence against analyzing sentences such as (54 - (52 as double nominatives.

3 The structure (79) is interpreted as the underlying structure for all the topicalized sentences in Chinese. That is, in the base component, we have the following expansions:

(1) \[ S \longrightarrow \{ \text{NP + VP} \} \]
    \{ Top + NP \}

(2) \[ \text{NP} \longrightarrow \{ N + (H) \} \]
    \{ \text{S} \} \]
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