A CONDENSED ACCOUNT OF SYNTACTIC ANALYSIS OF MANDARIN.

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PUB DATE MAY 65

EDRS PRICE MF-$0.09 HC-$1.16 29P.

DESCRIPTORS- *GRAMMAR, *TRANSFORMATION THEORY (LANGUAGE),
SYNTAX, *MANDARIN CHINESE, LINGUISTIC ANALYSIS

VARIOUS ASPECTS OF MANDARIN CHINESE GRAMMAR HAVE BEEN
EXTENSIVELY EXPLORED WITHIN THE GENERAL FRAMEWORK OF
TRANSFORMATIONAL GRAMMAR IN THE PROJECT ON LINGUISTIC
ANALYSIS AT OHIO STATE UNIVERSITY. THE PROBLEMS STUDIED
INCLUDE SUCH GRAMMATICAL CATEGORIES AS ASPECT MARKERS,
ADJECTIVES, EXISTENTIAL AND POSSESSIVE VERBS, INDEFINITE
PRONOUNS, AND NUMERALS, AND DIFFERENT SIMPLE AS WELL AS SUCH
COMPLEX CONSTRUCTIONS AS RESULTATIVE VERBS, THE BA, THE BEI,
CONJUNCTION OF NP AND OF VBP, AND THE YES-NO QUESTION AND
ANSWER. THE PRESENT PAPER IS A BRIEF SURVEY AND DISCUSSION OF
THE RESEARCH WORK DONE SO FAR, IN THE LIGHT OF THE MANY
ADVANCES IN THE UNDERSTANDING OF THE FORM OF A
TRANSFORMATIONAL GRAMMAR, AS RECENTLY SUMMARIZED BY N.
CHOMSKY. THIS ARTICLE APPEARS IN THE OHIO STATE UNIVERSITY
RESEARCH FOUNDATION PROJECT ON LINGUISTIC ANALYSIS, REPORT
NUMBER 10. (IT)
PROJECT ON LINGUISTIC ANALYSIS

REPORT NO. 10

A CONDENSED ACCOUNT OF SYNTACTIC ANALYSIS OF MANDARIN
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MAY 1962
NATIONAL SCIENCE FOUNDATION
Grant No. GN-174
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OFFICE OF EDUCATION

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PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS
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0. **Introduction** This is intended to be a brief survey of research work done in the field of Mandarin grammar on the Project on Linguistic Analysis at the Ohio State University. Since the publication of "Some Syntactic Rules in Mandarin," which provides a general workable framework for the grammatical description of Mandarin, various aspects of Chinese grammar have begun to be extensively explored. Some of the problems which we attempted to deal with include those of different grammatical categories such as aspect markers, adjectives, existential and possessive verbs, indefinite pronouns, numerals etc., and of diverse simple as well as complex constructions such as resultative verbs, the BA, the BEI, the negative, the comparative, the modifying clause, the conjunction of NP and of VBP, the Yes-No question and answer, etc. The main body of the paper will be devoted to the presentation of the nature and implications of the more significant of these miscellaneous problems.

1. **Topics Concerning Grammatical Categories** Grammatical categories are here taken to be nonterminal functional classes in the phrase structure part of the base component of the grammar.

1.1 **Aspect Markers** We are concerned here only with the aspect markers -LE and -GUO, the former expresses roughly the completion of an action, the latter the occurrence of an action at least once. The problem involves certain seeming irregularities in the formation of negative sentences and the so-called A-not-A question. In general, the negative of a simple base sentence is formed by the selection of the negative marker BU preceding the verb phrase, so that the negative counterpart of TĀ MĀI SHU is TĀ BU MĀI SHU. However, when the aspect marker -LE or -GUO is also selected in the base sentence, its negative counterpart does not follow the general pattern.

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a He buy book = 'he buys books'.
b He not buy book = 'he does not buy books'.
For example, the negative of \textit{TA MAI -LE SHU} is not \textit{TA BU MAI -LE SHU}, but either \textit{TA MEI -YOU MAI SHU} or \textit{TA MEI MAI SHU}; and the negative of \textit{TA MAI -GUO SHU} is not \textit{TA BU MAI -GUO SHU} but \textit{TA MEI -YOU MAI -GUO SHU} or \textit{TA MEI MAI -GUO SHU}. Traditional grammars have generally accepted the irregularities as exceptions. Or, these irregular negative sentences were considered as having complex verb structure, consisting of the negative form of the possessive verb \textit{YOU} plus the main verb of the sentence.

The aspect marker in the first case either does not occur or disappears, while that in the other case is retained. The same can be said of the A-not-A questions in which these aspect markers appear. Disjunctive A-not-A questions are formed by the conjoining of two base sentences, matched in every respect except that one contains BU and the other does not. In other words, they are positive-negative counterparts of each other. A general deletion rule then applies to them optionally, allowing any except the left-most element of either verb phrase to be deleted. For example, the conjoined string \textit{TA MAI SHU BU MAI SHU} may be deleted into \textit{TA MAI SHU BU MAI} or \textit{TA MAI BU MAI SHU}. If aspect markers co-occur, the conjoined string will be \textit{TA MAI -LE SHU MEI -YOU MAI SHU}, which may be contracted into \textit{TA MAI -LE SHU MEI -YOU} or \textit{TA -YOU MEI -YOU MAI SHU}.

Our solution lies in the identification of the \textit{YOU} form in the negative sentence and the A-not-A question as the suppletive alternant of the aspect marker \textit{-LE}. Or more specifically \textit{-LE} is considered as the postverbal alternant of \textit{-YOU}. The other aspect marker \textit{-GUO} is conceived to have the complex form \textit{-YOU GUO}; and \textit{MEI} is considered to be the alternant of \textit{BU} before aspect markers.

To make this machinery work, the correct position for positing

\begin{itemize}
  \item a 'He bought books.'
  \item b 'He did not buy books.'
  \item c 'He has bought books.'
  \item d 'He has not bought any books.'
  \item e 'Is he going to buy books or not?'
  \item f 'Has he bought any books or not?'
\end{itemize}
the aspect markers in the base component should be before the verb, since
the morphophonemic change of the negative marker caused by an immediately
following aspect marker holds under all conditions.4

It only remains for a few ordered transformational rules to relate
these abstract forms to their surface structure. The following T-rules in
the order as they are given will produce the desired effect: Deletion of
VP elements in A-not-A questions, Transposition of -GUO after the verb it
modifies, Morphophonemic change of BU into MEI when followed by -YOU, and
Deletion of pre-verbal -YOU after transposition of -GUO on Transformation of
-YOU into -LE to follow the verb it modifies.

With this analysis, the seeming irregularities in negative sentences
and A-not-A questions are seen to be regular and simple.

1.2 Adjectives A preliminary study of the general properties of ad-
jjectives has been made. The nature of the problem is inherently concerned
with the question of subclassification of grammatical categories within the
base component.

Adjectives here are taken to be a subclass of verbs, which may be
termed descriptive verbs.5 All adjectives may be modified by emphatic mark-
ers such as HEN, SHIFEN, etc. This property is not exclusive to adjectives.
Other verbs, such as XIANG, XIHUAN, XIWANG, etc. also share this quality;
however, the latter always co-occur with a following NP or S, while ad-
jjectives never do. Another property which adjectives share with these verbs
is that they can occur freely in the comparative construction, in the posi-
tive, comparative or superlative degrees. Adjectives may take a post-verbal
descriptive or resultative complement introduced by DE. In this respect,
they are similar to verbs like CHI, PAO, KAN, etc. What distinguishes the
adjectives is that they can undergo a transformation which deletes every-

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a 'Resemble', 'like', 'hope'.
b 'Eat', 'run', 'look at'.
thing except the emphatic marker HEN in the complement provided that the complement string contains this emphatic marker, and an NP as well as an adjective identical with those in the matrix string respectively. For example: MEIMEI PIAOLIANG DE MEIMEI HEN PIAOLIANG ---- MEIMEI PIAOLIANG DE HEN.a Most adjectives may take the aspect marker -LE, and some even take -GUO. Another property characterizing most adjectives is reduplication, which is also possible with other kinds of verbs, but which, in the case of adjectives, is obligatorily followed by the particle DE. Compound adjectives like TÖU-TENG, TÖU-QIAN, b etc. are nonreduplicable. Most adjectives can occur in the pronominal modifying clause 6 by means of the particle DE, even after being reduplicated. This latter property seems to be peculiar to adjectives, for other verbs, after being reduplicated, cannot occur in the type of clause mentioned.

In the older framework of the grammar, such properties of adjectives will have to be listed by means of co-occurring formatives, ordered or unordered. Since in general, these properties except for details do not belong to adjectives alone and they do not coincide, there is no possible simple or economical way of listing them so that their co-occurrence restrictions with different kinds of verbs are revealed neatly. This complication is due to the fact that categorization of grammatical categories is presupposed. On the other hand, with the new framework proposed recently by Chomsky, the appearance of a grammatical subcategory such as adjectives in the deep structure will depend entirely on the choice of certain property formatives together with the symbol V. For example, V ---- ADJ if it is preceded by HEN and not followed by any postverbal NP etc.; but V ---- ADJ or V_{intr} if it co-occurs with the reduplicative formative and not followed by any postverbal NP, etc.

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a Sister pretty DE very = 'Sister is very pretty'.
b 'Have a headache', 'rich'.
The same may be said of the subclassification of adjectives. Certain adjectives may take one or more of certain adverbials such as the measure phrase, the duration phrase, indefinite quantifiers, etc. Some adjectives after reduplication may form adverbials, some may not, and some cannot even be reduplicated, etc. To take care of all these by subclassification rules in the PS component is bound to be either unsatisfactory or impossible. However, looking at the same problem with the new concept, adjectives, for example, fall into classes depending on the choice of distinctive features relevant for subclassification. For example, ADJ may be rewritten as DUO, SHAO, QIAO, etc. if it does not co-occur with the feature of reduplication. In this way, much complication and confusion may be eliminated in our attempt to subclassify not only adjectives but any other kind of verbs or grammatical subcategories.

1.3 Others Some work has also been done in examining the distinctive properties of the possessive verb YOUp and the existential verb YOue, which are homophonous. Some of the differences are: NP after YOue must be indefinite but NP after YOUp does not fall under this restriction, YOUp may take aspect markers but YOue may not (except in If-clause), strings with YOUp may be followed by a complement whose object NP is identical with the object NP in the matrix string, or followed by complement introduced by LAI or QU, but strings with YOue may not, strings with YOUp may undergo the object transposition transformation but those with YOue may not, strings with YOUp may occur in a pre-nominal modifying clause but those with YOue may not, etc.

a 'many, much', 'little', 'perchance'.
The study of the existential verb is connected with the study of the relationship between indefinite and interrogative pronouns, which are still under investigation. It is probable that the majority of indefinite and interrogative pronouns may be generated from NP containing indefinite or definite determiners. However, further research has to be done before any conclusion may be drawn.

2. **Topics Related to Simple and Complex Constructions** In the following sections, problems of the deep structure of constructions involving one or two or more strings will be discussed.

2.1 **BA and BEI Constructions** It has been speculated that transitive verbs, especially those of action and perception such as CHĪ, KAN-JIAN\(^a\), etc., and certain resultative verbs such as KŪ HONG, \(^b\) etc., may occur in a kind of passive construction characterized by the overt passive marker BEI which may take several morphophonemic shapes. Such a construction is the result of a transformation making use of the marker BEI to transpose the original post-verbal NP to an initial position and the original pre-verbal NP to a position after BEI. For example:

\[ \text{TĀ CHĪ -LE FAN}\(^c\) \rightarrow FAN GEI TĀ CHĪ -LE.\(^d\) \]

If the verb of the base sentence is reduplicated or co-occurs with either the aspect marker -ZHE or the potential marker De, it cannot occur in the BEI-sentence.

The BA construction is transformed from a base sentence containing, among other features, transitive verbs of action or of double objects (e.g. GÉI)\(^e\) or certain resultative verbs mentioned above, or middle verbs like ÁI, HEN\(^f\) etc., by means of the particle BA which gives definite reference to the postverbal NP. As a result, the postverbal

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\(^a\) 'See'.  
\(^b\)'Cry red'.  
\(^c\) He eat -LE rice = 'he has eaten'.  
\(^d\) 'The rice was eaten up by him'.  
\(^e\)'Give'.  
\(^f\)'Love', 'hate'.
NP is switched to a preverbal position. For example: TA CHI -LE FAN ---- TÂ BA FÂN CHI -LE.a Other restrictions on the BA sentence are as follows: the verb may not co-occur with the potential marker DE, the VP of a BA sentence must be modified in some way, for example, either the verb must take aspect markers or a resultative complement, or the object NP must be followed by a postverbal DE-complement or a frequency phrase, etc.

It is desirable that the deep structure of the underlying string of either the BEI or the BA construction contains the formative BEI or BA respectively. This is, however, not possible within the older framework of the grammar if resultative verbs are to be generated from double-based strings. The reason is that certain resultative verbs which are the combination of intransitive verbs or adjectives may undergo the BA or the BEI transformations, despite the fact that simple intransitive verbs or adjectives may not. For example, TA BA HÔULONG HÂN YÂ LEb or YÂNJING GEI TÂ Kǚ HONGL LEc is perfectly grammatical. If the BA and BEI formatives never co-occur with such simple verbs, this special kind of resultative verbs will also be excluded from the BA and BEI transformations, for which they are eligible. Moreover, resultative verbs which are combinations of verbs eligible for such transformations, but are generated from strings with identical pre-verbal NP’s are ineligible for the same transformations, while similar type of resultative verbs generated from strings with preverbal vs. postverbal identification are fully qualified for the said transformations. Even if the BA and BEI formatives were to be introduced by transformations, the older framework simply could not handle these res-

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a 'He has eaten the rice'.
b He BA throat cry sore LE = 'He cried to such effect that his throat was sore'.
c Eyes GEI he cry red LE = 'His eyes were red as a result of crying'.
These difficulties are eliminated when we adopt the new framework and include the BA and the BEI formatives in the deep structure. The first case can be handled simply by allowing resultative verbs composed of intransitive verbs or adjectives co-occurring with BA or BEI, to go through the transformations concerned, but filtering out simple intransitive verbs or adjectives co-occurring with the same formative from such transformations. The other case can be taken care of by the fact that certain deep structures are required as conditions for the operation of the transformations.

2.2 The Negative

The negative construction as yet remains a problem to be further investigated. We will outline the problem below and discuss the difficulties involved in solving it.

Any affirmative sentence may be negated by employing a form of the negative marker BU. BU assumes different shapes under different morphophonemic environments. For example, BU followed by the imperative YAO\(^a\) may be contracted to BIE. This contraction is often found in negative imperative sentences. For example: NI BIE QU\(^b\) comes from NI BU YAO QU. A contraction must take place if BU is followed by YOU, whether the latter be an aspect marker, a verb or a comparative marker. That is, BU YOU > MEI YOU, already mentioned in the discussion of aspect markers. A different situation occurs when BU occurs with the potential marker DE, either modifying resultative verbs or compound verbs like MAN-GUO, ZHI-ZHU etc. BU then comes in between the two members of either combination and DE is reduced to zero, for example: BU DE CHI BAO --- CHI BU BAO.\(^d\) This change is also mandatory.

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\(^a\) 'Must, have to'.
\(^b\) 'Don’t go!'
\(^c\) 'Deceive', 'stop'.
\(^d\) Eat not full = 'cannot eat to satisfaction'.
The examples given above only show BU occurring with verbs. However, the negative marker can also occur before AUX (auxiliaries: such as NENG or NENGGOU, GAN, KEN, HUI, DEI, KEYI,\textsuperscript{a} etc), and certain ADV (adverbs: such as KENENG, YINGGAI, HUI, HEN, ZAI, YIDING,\textsuperscript{b} ...). This is the central point of the problem. It is not feasible to introduce BU by the negative transformation, for then the transformation will perform something undesirable, namely, change the meaning of the sentence according to the position of BU. Since semantic rules will not read transformed structures, there is no way to handle this change of meaning. We believe the correct alternative is to provide for a negative formative within the deep structure. Shall we then posit three negative markers at three different places in the deep structure? A sentence containing three BU's, such as TĀ BU YIDING BU GAN BU LÁI\textsuperscript{c} is perfectly grammatical.\textsuperscript{9} A possible solution is to consider certain negative markers as derivational, since BU occurring before AUX or ADV may not be intervened by other elements, whereas BU occurring before a verb is transportable. Some examples of the latter case are seen in the negative of the BA and the BEI sentences. BU occurs only before BA and BEI and never after them. This can be explained most simply by saying that the BU is transported from a position before the verb of such strings. However, to call the BU in front of AUX or ADV as derivational does not really solve the problem, but simply postpones it to that part of the grammar which handles word

\textsuperscript{a} 'Can', 'dare', 'willing to', 'will', 'have to', 'may'.
\textsuperscript{b} 'Probably', 'should', 'probably', 'very', 'again', 'certain'.
\textsuperscript{c} He not certain not dare not come = 'It is not certain that he dare not refrain from coming'. (Since there is no parallel construction in English, the meaning is roughly translated only.)
formation. At present, we tentatively accept the solution of positing three negative markers in the deep structure.

Before passing, it may be mentioned that adverbs which occur only in the negative form, for example: BU-DÀ, BU-BĪ, BU-YÒNG\(^a\) etc. will be considered as compounds, and not as syntactic combinations of the negative marker and the following bound form. Some adverbs, such as CÔNGLÁI\(^b\) etc. always occur in negative sentences. And finally, BU is found to be exclusive with the final particle LE, for example; *MEI QÙ LE\(^c\) is ungrammatical.

2.3 Resultative Verbs Resultative verbs are generally considered to consist of a verbal component followed by a resultative or directional complement, for example: CHĪ BAO, PAO SHANGLAI\(^d\) etc. The complement contains either a verb or a verb plus directional markers. These resultative verbs behave in some respects like simple verbs: for example, they may occur with aspect markers or a negative marker. They differ from simple verbs in that they cannot be reduplicated, they do not take DE-complement, and they can freely form the potential mode by means of the potential marker DE in a peculiar way. The potential marker, either in its positive or negative form comes between the two members of resultative verbs. This makes them similar to compound verbs like ZHÃO-ZHÃO\(^e\) which may be derived originally from resultative verb formation.

The form of the resultative verbs looks very simple. However, their formation is by no means simple and uniform. Let us examine resultative verbs with resultative complements. The first component usually consists of transitive verbs of action, certain types of intransitive verbs or adjectives. In relation to the BA and BEI constructions, it has already been pointed out that resultative verbs with resultative

\(^a\) 'Not so much', 'not necessary', 'needless'.  
\(^b\) 'Ever'.  
\(^c\) *Not go LE.  
\(^d\) 'Eat full', 'run up'.  
\(^e\) 'Find'. 
complements almost identical in shape, behave differently with respect to these transformations. If we take the formation of these resultative verbs to be simply the combination of two verbs in the deep structure, such fact cannot be explained. On the other hand, if we regard the complement verb to be derived from another string, such fact can be explained most revealingly by noting the difference between the string underlying the complement and that underlying the first component. If the object of one string is identical with the subject of the other string, or the subject of one string is part of the subject of the other string, the resultative verbs formed from these strings are eligible for both the BA and the BEI transformations. If the subjects of the two underlying sentences are identical, the resultative verbs so formed may only have the BA transformation.

Resultative verbs having the directional complement also vary, depending on the first component, which contains either certain kinds of transitive verbs of action or intransitive verbs of action. The directional complement consists of a motion verb (such as SHANG, XIA, JIN, CHU, HUI, GUO, QI) and a DIR (directional marker: LAI or QU). When the first component contains an intransitive verb of action, the aspect marker, if chosen, will follow it and precede the complement, for example: PAO -LE SHANG QU. Otherwise, the aspect marker will occur either after the first verb or the directional marker, for example: NA -LE CHU LAI YI BEN SHU or NA CHU LAI -LE YI BEN SHU. Since this fact can be easily handled as a selectional condition of the transformation which will determine the location of the aspects, and since there is no compelling reason to regard this type of resultative verb

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a 'Ascend', 'descend', 'enter', 'exit', 'return', 'cross', 'arise'.
b 'Towards', 'away from'.
c 'Ran up'.
d 'Drew out a book'.

as being derived from two strings, the complement in the deep structure will not be rewritten as S, but only as motion verb plus directional marker. Moreover, there are difficulties involved in deriving the directional complement from a sentence when the object in the matrix string is inanimate. To say that SHU CHU LAI is the underlying sentence of the directional complement in TA NA CHU LAI SHU, will compel us to accept the former sentence as grammatical. If the nonoccurrence of inanimate nonmovable nouns with motion verbs is considered as a grammatical problem, as we think it is, we would certainly like to exclude such sentences as SHU CHU LAI.

There are resultative verbs which occur only in the potential form, for example: DUI BU QI, MAI DE QI etc. Not much has been done about them, and they remain a further problem to be solved.

2.4 The Comparative. Here we will be concerned with the positive and comparative degrees of comparison only. The former construction is characterized by the presence of GEN...YIYANG...YOU...NAME, differing slightly in meaning only. The latter construction is distinguished by the presence of the particle BI. Henceforth they will be referred to as the comparative, since except for a few minor points, they are very similar in structure.

Several problems arise. First of all, is the comparative essentially a simple construction or is it a complex one? If it is the latter, there is a further question as to whether it is a conjoining or an embedding structure. Let us consider the first possibility. In this view, a sentence like TA BI WO GAO is seen as simply containing a comparative phrase BI+NP. The advantage of this solution lies in the fact that we do not have to posit such semantically weird underlying strings as TA GAO and WO GAO for the comparative, since the implica-

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a Book come out.
b 'Sorry', 'can afford to buy'.
c He BI I tall = 'He is taller than me'.
tions of the simple sentences do not match that of the comparative sentence as a whole. It can also avoid the problem of the negative --- thus, the negative occurs only before BI. However, there are some serious handicaps if we accept this solution. Certain restrictions on the two NP's compared cannot be stated: the NP's must be matched in construction, they must both be NP's, or VP's or S's. Since our PS-grammar will be context free, there is no way to handle this kind of parallelism within a simple construction. A more serious problem is that certain insights into the matching of NP's will not be revealed. A sentence like *TÀ BI YINYUE GÀO, which is ungrammatical, will not be blocked. Furthermore, the reason that this sentence is ungrammatical will not be evident.

Neither does it seem satisfactory to posit the comparative as derived from two conjoined sentences. In general, conjunction takes place in Mandarin when there are identical or parallel NP's or VP's in the sentences in question. It is hardly conceivable that TÀ BI WÔ GÀO WU CÜNb is derived from the conjunction of TÀ GÀO WU CÜN and WÔ GÀO WU CÜN.

Let us now examine our last alternative: that the comparative is derived from the embedding of one string into another. Let us tentatively consider S to be rewritten as NP+VBP (SADV) where SADV represents sentence adverbials such as Time Phrase or Locative Phrase which can be freely switched to an initial position. VBP will then be rewritten as (BU) VP. The VP of the matrix string of the comparative will consist of a comparative formative, followed by V. The comparative formative consists of BI plus a sentence, followed option-

a *He BI music tall.
b He BI I tall five inch = 'He is five inches taller than me!'
ally by adverbs which can occur with the comparative.

Adjectives, middle verbs such as XIHUAN\(^a\) etc., or quality verbs such as XIANG\(^b\), can freely occur in the comparative. Certain other kinds of verbs such as transitive or intransitive verbs, double-object verbs, telescoping verbs, quotative verbs etc. can occur in the comparative only if they are modified by certain adverbs such as XIAN, ZAO, DUO\(^c\) etc.\(^{11}\) It is therefore justified to consider these adverbs as part of the elements of the comparative formative.

Degree adverbials such as WU CUN etc. occurring in the comparative come from the matrix string only. The conditions we have to state in the comparative transformatic\(a\) are only two: let \(S_1 = \) matrix string, \(S_2 = \) embedded string. The VBP of \(S_2\) must equal either \(V_1\) or \(V_1 + NP_1\) in \(S_1\) (that is, \(S_2\) may not contain BU or degree adverbials etc); if \(S_2 = NP_2 + VP_2\), then \(NP_2\) may not be the same as the preverbal \(NP_1\) in \(S_1\). If only condition 1 is met, sentences like WO JINTIAN BI TA ZUOTIAN MANG\(^d\) may be generated. If both conditions are met, only sentences like TA BI WO GAO WU CUN are generated. In other words, condition 1 will allow the comparison of Time Phrase as illustrated and Locative Phrase.\(^{12}\)

With this interpretation of the formation of the comparative, it is very easy to explain why *TA BI YINYUE GAO is ungrammatical: simply because the sentence *YINYUE GAO will not be generated by the grammar.

In explaining the semantic implication underlying strings of the comparative sentences, as well as strings of other embedding con-

\(a\) 'Like'.
\(b\) 'Resemble'.
\(c\) 'First', 'early', 'more'.
\(d\) I to-day BI he yesterday busy = 'I am busier today than he was yesterday'.
structions to be discussed in the following section, it is very important
to take into consideration the following nature of the semantic rules:
namely, they will interpret a simple sentence TA GAO differently from the
same one embedded into the comparative and dominated by the comparative
formative; similarly, they will distinguish a simple sentence TA WU CUN
GAO a from one which is exactly the same except that it contains the
comparative formative. It is on this basis that we find our positing of
sentences underlying the comparative acceptable and satisfactory.

Examples have been given for the comparative degree, but the
same can be said of the positive degree. The only difference is that
with the positive degree, verbs other than adjectives or middle verbs
or quality verbs may not occur, and the comparative formative will not
include degree adverbs.

2.5 Pre-Nominal Modifying Clause The term Pre-Nominal Modifying
Clause signifies those modifying elements occurring before a nominal
by means of the particle DE, which can be traced to have been derived
from a clause or a sentence. There are several interesting problems
related to this Pre-Nom Mod clause, namely, the types of Pre-Nom Mod
clauses, the formulation of PS- and T- rules for it, pronominalization
and interrogation in connection with it, etc. These will be discussed
below.

There seem to be two types of Pre-Nom Mod clauses (henceforth
abbreviated as Mod clauses). One type must contain a Nom identical
with the Nom it modifies in the matrix sentence. For example, the Mod
clause of DAI YANJING DE HAI ZI LAI LE b is from HAI ZI DAI YANJING in

a 'He is five inches tall.'

b Wear glasses DE child come LE = 'the child who wears glasses has come,'
or 'children who wear glasses have come.'
which HAIZI is the shared Nom. This type will be referred to as the shared-
Nom type, which will be our main concern. In the other type, this condi-
tion is unnecessary: it will be referred to as the non-shared Nom type.
The latter is limited to clauses which modify certain abstract nouns such as SHIQING, WENTI, XIANXIANG, YUANYIN, SHIHOU etc. For example, the
Mod clause of a sentence like WO BU ZHIDAO NIMEN CHAOJIA DE SHIQING simply has as its underlying sentence: NIMEN CHAOJIA. It is possible to posit a
shared Nom in the underlying sentence, such as: SHIQING SHI NIMEN CHAOJIA. It means that the base form itself has to be derived from an embedded sen-
tence having the form SHIQING+SHI+C, where C is rewritten as S, in this
case: NIMEN CHAOJIA. To employ so much machinery in order to make the Mod
clause uniform does not seem feasible. Moreover, this type never has pro-
nominalization, as distinct from the shared-Nom type.

 Needless to say, the Mod clause is a subordinate structure embedded
into the matrix sentence in which there is a Nom which the former modifies.
MOD, the formative for Mod clause, will be an optional element following
the Nom it modifies, both dominated by NP, that is, NP -> Nom (MOD).
Nom will be rewritten as (DET) N, where DET -> (D[Num]) Cl; and MOD as
S+DE (DET= determiners; D = demonstratives like ZHE, NA; Num = numerals;
Cl = classifiers). The position where the Mod clause actually occurs is
either before or after the determiners of the Nom it modifies, with different
significance. Since the condition for the share-Nom type Mod clause
is concerned with both the determiners and nouns, the choice of the
position for the MOD formative is either before or after Nom. If a
Mod clause occurs in front of numerals only, the resultant string is un-
grammatical, as in "DAI YANJING DE YI GE HAIZI," for pre-determiner Mod clause
gives definite reference and is therefore incompatible with indefinite
nominals. Moreover, if the MOD formative is placed in front of DET, it

a 'Matter', 'problem', 'phenomenon', 'cause', 'time'.
b I not know you quarrel DE matter = 'I don't know about your quarrel'.
c 'This', 'that'.
d 'This', 'that'.
e 'Wear glasses DE one GE child.'
suggests that the other possible construction, which gives purely descriptive reference, is derived from the construction resulted from this arrangement. It is therefore feasible to position the MOD formative after Nom. Later a permutation rule will put MOD in the correct position in accordance with the structure of the modified Nom.

When two or more Mod clauses modify one Nom, it is either the result of conjunction of Mod clauses modifying the same Nom, or the effect of a Mod clause modifying a Nom already modified by one or more Mod clauses, so that no iterative or recursive device need be built into the PS-rule.

There are certain restrictions with regard to both the Mod clause and the modified Nom. Pronouns and proper names generally do not take Mod clause. The Mod clause may not end with final particles, nor can it contain verbs like SHǐ, or certain adjectives, etc. It may be a complex sentence. Moreover, the shared-Nom may be in the subordinate clause, for example: TĀMEN ZĀI TĀN Wǒ Yǐ Kàn Jīu Kū DE DIĀNYÌNG, the Mod clause being derived from: Wǒ Yǐ Kàn DIĀNYÌNG Jīu Kū. On the other hand, the shared-Nom may not be dominated by more than one MOD formative at the time when the MOD transformation will apply, unless it is in the possessive. That is, we cannot make a Mod clause out of a Nom in a Mod clause, with only one exception: for example, Wǒ PÈNGJIAN TĀ DE NUÈR DE NÉI GE RÈN LÀI LE, where TĀ is NÉI GE RÈN pronominalized, and it itself occurs in a Mod clause, namely, NÉI GE RÈN Yǜ NUÈR.

There are interesting facts concerning the shared-Nom of the Mod clause in connection with pronominalization, provided that the former consists of human nouns. It may not be pronominalized if the Mod clause either

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a 'To be'.
b They ZĀI talk I whenever see then cry DE movie = 'they are talking about the movie, which whenever I see it, I cry'. (This construction is not paralleled in English, so that the translation is clumsy. Same with the following examples.)
c I meet he DE daughter DE that GE person come LE = 'the person, whose daughter I met, has come'.
begins or ends with it. This will exclude ungrammatical sentences like *TA DAI YANJING DE HAIZI LAI LE, a or *MAMA XIHUAN TA DE HAIZI LAI LE.b Pronominalization is obligatory if the said shared-Nom is immediately preceded by particles like GEN, BI, BA, BEI, ZAI, CONG, XIANG, WANG etc., or if the shared-Nom is dominated by more than two MOD’s in accordance with the condition stated above. Examples are: NI BI TA GAO DE NEI GE REN SHI SHEI, c TA ZAI NAR CHI FAN DE CAIGUAN REN DA (Mod clause derived from: TA ZAI CAIGUAN LI CHI FAN), ZHE JUI SHI WO SHUO TA DE FANGZI GEI HUO SHAO-DIAO DE REN, e etc. Other than these cases, pronominalization is optional.

It is clear that the MOD Transformation, which permutes eligible Mod clauses to the right position, has to state the order of permutation, for as we climb up trees from the bottom, erasing boundary markers, etc., a Nom may be followed by more than one Mod clause. In that case, lower order Mod clauses should be permuted first, even if they are contained in higher Mod clauses, then higher order Mod clauses will be placed in front of the already permuted Mod clauses.16

The pronominalization rule and the rule for the deletion of repeated elements will be general ones, which cover not only this case but also many other cases of embedding or conjoining structure. Needless to say, the former rule should precede the latter.

Finally, it has been found out that any nonpronominalized Nom of the Mod clause may be interrogated; however, the modified Nom may not.

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a *He wear glasses DE child come LE.
b *Mother like he DE child come LE.
c You BI he tall DE that GE person be who = 'Who is the person than whom you are taller?'
d He locate there eat rice DE restaurant very big = 'the restaurant where he ate is very big'.
e This JUI be I say he DE house GEI fire burn up DE person = 'this is the person I said his house was burnt up'.
Interrogation of determiners alone are not counted here, as for example:

\[
\text{Tä Xihuán de shénme háizi lái le}^d \quad \text{is grammatical.}
\]

2.6 Conjoining of NP and of VBP There are two major types of conjoining possible in Mandarin, namely, NP conjoining and VBP conjoining, since each base sentence consists of an NP followed by a VBP. To provide for the possibility of unlimited conjoining, the following schema may be used:

\[
S \longrightarrow \{ S^n + \text{cjn}, \text{cjv} + S^n \}
\]

where cjn stands for conjunction for NP's and cjv for conjunction for VBP's.

Given two or more sentences, if there is a match in the VBP's that is, if all the corresponding nodes dominating the VBP's are identical, the NP's may be conjoined upon deletion of all the VBP's except the last one. The cjn, which includes conjunctions like QUAN, DÜE etc., is transported to a position immediately preceding the preserved VBP. For example:

\[
\text{Zhāng xiānshēng lái} + \text{Lǐ xiānshēng lái} + \text{Chén xiānshēng lái} + \text{Dōu} \longrightarrow \text{Zhāng xiānshēng Lǐ xiānshēng Chén xiānshēng Dōu lái}^f\]

If the match is in the NP's the VBP's may be conjoined, this time upon deletion of all NP's but the first one. The cjv, which may be YÜE, YÈG, \( \phi \), etc., is re-duplicated and distributed among each of the VBP's. For example: \( \text{Yüé} + \text{Tä huì dà zǐ} + \text{Tä huì huá huār} \longrightarrow \text{Tä yüé huì dà zì yüé huì huá huār}^h \)

or \( \text{Tä huì dà zì huì huā huār.} \)

The main finding of the study of these two kinds of conjoining is the discovery of a set of principles which determine the constituent structure of the surface P-markers as they are derived from the deep P-markers in such kind of conjoining. There are three major steps involved.

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a He like DE child come LE = 'the child he likes came'.
b Who like DE child come LE = (nontranslatable into English)
c *He like DE who come LE.
d He like DE what child come LE = (nontranslatable into English)
e 'All'.
f Zhang Esq. Li Esq. Chen Esq. all come = 'Mr. Zhang, Mr. Li and Mr. Chen all came'.
g 'Also'.
h He also can type word also can draw picture = 'He can type as well as draw'.
First of all, we take the constituent closest to the conjunction and move it in the direction of the latter. The two are permuted if they share the same node. This is called "reattachment". Next, all other matched constituents (one less than total of the matched constituents), which are supposed to be marked, must be deleted. The S symbols now dominating only NP's or VBP's will be relabelled with the same symbol as that of the only node it directly dominates. This is "deletion and relabelling". Finally, all the matched constituents are grouped together and dominated by their shared label. This is "grouping". It is interesting to notice that the NP reattachment goes exactly in the opposite direction from the VBP reattachment.

The match in VBP can be a match in one or more of the following: AUX(auxiliaries), V, DET, etc. For example: TA YAO MAI YIXIE QIANBI + TA YAO MAI YIXIE MAOBI —— TA YAO MAI YIXIE QIANBI MAOBI after all deletions have taken place.

There are a few exceptions to these principles. In the case of disjunctive questions, there is an obvious match of VBP; however, deletion of the matched constituent is not permissible. For example: NI GAO TA GAOb but not *NI GAO TA or *NI TA GAO. Another case is the A-not-A question, containing an affirmative and its corresponding negative VP, which involves multiple possibilities of deletion. Deletion may take place from either the affirmative or the negative VP. For example, TA YAO MAI SHU + TA BU YAO MAI SHU —— TA YAO BU YAO MAI SHU or TA YAO MAI SHU BU YAO.c

2.7 Others Some investigation has also been made into the nature of the close relationship between certain sentences. Since the study of structure beyond the limit of a sentence has barely begun, our attempts

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a He want buy some pencil brush = 'he wants to buy some pencils and brushes'.
b You talk he talk = 'Are you taller or is he taller?'
c He want not want buy book} = 'does he want to buy books?'
He want buy book not want}
have brought forth some interesting points but have not been able to work out satisfactory solutions. An interesting example is the relation between Yes-No questions and answers with tags. Yes-No questions are sentences in either the affirmative or negative ending with questions particles like MA, BA, etc. The tags are of two forms: the affirmative is SHI\textsuperscript{a} or any of its morphophonemic form, and the negative is BU SHI\textsuperscript{b} or any of its alternants.\textsuperscript{17} The answers to these questions may also be affirmative or negative sentences. It is found out that through the combination of tags and answers, the questions are predictable. If the tags and the answers agree in sign, that is, simultaneously affirmative or negative, the questions will also be of the same form, that is affirmative or negative respectively. For example: from SHI + WO QU\textsuperscript{c} or BU + WO BU QU, the question NI QU MA\textsuperscript{e} can be predicted. On the other hand, if the tags and the answers disagree in form, that is, one is affirmative, while the other is negative, the questions will be in the negative. For example: from SHI + WO BU QU\textsuperscript{f} or BU + WO QU\textsuperscript{g} we can predict the question NI BU QU MA.\textsuperscript{h} It seems, therefore, possible to generate Yes-No questions from the combination of given tags and answers. However, the idea of regarding a tag plus answer as a base sentence seems to be counter-intuitive and needs more consideration. Exactly how this interesting relation is to be handled is still under research.

3. Prospective Since the many advances in our understanding of the form of a transformational grammar, as recently summarized by N. Chomsky, many

\[\text{a} 'Yes'.\]
\[\text{b} 'No'.\]
\[\text{c} 'Yes, I am going'.\]
\[\text{d} 'No, I am not going'.\]
\[\text{e} 'Are you going?'.\]
\[\text{f} 'That's right, I am not going'.\]
\[\text{g} 'That's not right, I am going'.\]
\[\text{h} 'Are you not going?'.\]
of the problems and difficulties we encountered earlier in dealing with different aspects of Mandarin grammar seem to have come to light. Since these problems are interrelated, as the structures of a language are, the investigation of one naturally sheds light upon others. It remains for us to engage our future efforts to incorporate the ideas developed so far into a more integrated description.
FOOTNOTES

1 I would like to express my thanks to William S-Y. Wang and Sandra Annear for helping me to prepare this paper and for their valuable suggestions.


3 This last example is rejected as deviant by Northern Mandarin speakers of the older generation. However, in recent linguistics publications of Peking, this construction has often been cited, e.g., in Dīng, Shēng-Shū et al., Xiàndài Hányǔ Yūfǎ Jiānghuà (Peking, 1961, p. 206) This means that it has come into current use.

4 As for example when the verb and the negative marker is interrupted by a series of elements: for example, TĀ KONGLAI MÉI -YOU GĀOGAOXÍNGXING DÀFĀNGFANG DE MAI -GUO SHU, in which -YOU is obligatorily switched to a position immediately following the negative marker.

5 In adopting the term "Adjectives," we follow the terminology of Y-R. Chao.

6 See section 2.5 below.

7 Examples of measure phrase, duration phrase, and indefinite quantifiers are WU CUN, LIANG NIÂN, YIDIAR respectively.

8 For example, it can only be stated as a footnote in the transformation involved that certain resultative verbs generated from a certain resultative transformation are not eligible for the BEI transformation, etc.

a He ever not -YOU gladly generously buy -GUO book = 'he has never gladly and generously bought books'.

b 'Five inches', 'two years', 'a little'.
Sentences with more than three negative markers are of complex construction. For example: Wǒ Bù Shì Bù Zhī Dao Nǐ Bù Jiān De Bù Yuányi Bù Qu" is derived from Wǒ Bù Shì + C where C ——> Wǒ Bù Zhī Dao + C' where C' ——> Nǐ Bù Jiān De Bù Yuányi + C" where C" ——> Nǐ Bù Qu.

The latter case occurs when one of the subject nominals is in the possessive, as when we have Tā as subject in one string and Tā De Yān Jīng" as subject in the other.

For example: "Tā Bǐ Wǒ Chī Fan is ungrammatical, but Tā Bǐ Wǒ Xīān Chī Fan" is fully grammatical.

For example: Tā Zài Jǐ Ā Bǐ Zài Xué Xīaō Lǐ Hún ào.\d


Crossed brackets signify the obligatory choice of one or more of the elements within the brackets chained.

Restrictions in connection with other kinds of verbs will not be pursued here. Adjectives like Duō, Shào, Gōu, Quefa etc. do not occur in a Mod clause. *Duō De Rén...etc. is ungrammatical.

\a I not be not know you not Jiān De not willing not go = 'It is not that I don't know that it is not the case that you are not willing not to go'.
\b He De glasses = 'his glasses'.
\c He BI I first eat rice = 'he ate before me'.
\d He at home BI in school naughty = 'he is naughtier at home than in school'.
\e 'Much', 'little', 'enough', 'insufficient'.

\a I not be not know you not Jiān De not willing not go = 'It is not that I don't know that it is not the case that you are not willing not to go'.
\b He De glasses = 'his glasses'.
\c He BI I first eat rice = 'he ate before me'.
\d He at home BI in school naughty = 'he is naughtier at home than in school'.
\e 'Much', 'little', 'enough', 'insufficient'.
The following example may illustrate the point. Minimum tree structure is used.

MOD\textsubscript{2} is included in MOD\textsubscript{1} as shown by the tree. The former should be permuted before the latter by the following rule:

\[
\begin{align*}
\frac{X}{} & \text{ DET} & (\text{MOD})^n & N & \text{ MOD}^n & Y \\
\frac{1}{2} & (n) & \frac{3}{4} & \text{ MOD}^n & \text{ MOD}^n & Y
\end{align*}
\Rightarrow 1 3 2 4
\]

with the provision that lower order MOD, MOD\textsubscript{2} in this case, should be permuted first.

An alternative form of SHI is SHI DE, and of BÙ, SHI is BÙ SHI DE.

\[a\] Book he buy book book very new locate here.
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