Comparative Grammar of Chinese and English

An Elementary Introduction To The Grammars of Chinese and English From A Comparative Perspective

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1. Knowledge of Language and Syntax

Knowledge of language

What is language?

The Swiss linguist Ferdinand de Saussure (1857-1913) provided this answer: Language is a sign system linking sound on the one hand and meaning on the other. This is the *Saussurean* conception of language. But the answer provided by the theory of generative grammar is a lit different. According to the theory of generative grammar, language is a set of sentences L = {S_1, S_2, S_3, …}, whereby each element S_i is finite in length, though the set L itself is infinite (i.e., contains an infinite number of Ss).

We can regard L as the output state of a grammar G. G has the following properties:

(i) It is finite, and,

(ii) it can generative an infinite number of linguistic expressions (namely, Ss).

G is finite because human brain is finite – a human brain weighs only a couple of kilograms. This, of course, presumes that L is (in some important sense) a mental activity/state of human being. G can generate an infinite number of linguistic expressions because human being can utter an infinite number of sentences – known as the *creativity* of human language faculty.

How do we know that such a definition of language is the right one that we need for the pursuit of scientific understanding of language?

Knowledge of language

Let's assume that language is infinite, which is obviously true. Where lies the infinity of language?

Knowledge of language is composed of the following domains:

Phonetics: the sounds (and gestures) of human languages, and their properties.

Phonology: the system into which sounds are organized.

Morphology: meaningful elements and the ways they are put together to form words.

Syntax: The ways sentences are formed.

Semantics/pragmatics: the ways that sentences are understood and used.

The phonetics and phonology of a language is clearly finite. For one thing, the sound inventory of a language is very limited—from twenty some to sixty some – for another, the phonological

patters (e.g. Syllable Structure Constraints, SSC) are highly restricted.

The morphology of a language is finite too. Firsts, the number of words in a language is finite; second, the morphological alternation (inflection or derivation) of a language is restricted.

Syntax is infinite. Human beings can produce infinite sentences for use.

Semantics/pragmatics is infinite too, but human being expresses semantics of use language by way of sentences.

The conclusion, therefore, is: Syntax is the source of infinity of human language.

Syntactic knowledge

What is syntax?

In the traditional studies of language, syntax was known as *syntagmatics*, the study of arrangements of units in a linguistic expression (as opposed to *prardigmatics*, the study of possible substitutions of specific units in a linguistic expression). The current scientific view on syntax is that, syntax is a *generative procedure* (or *generative function*) in human mind that takes lexical items as input and produces sentences as output. This generative procedure is also known as the grammar G of a language L.

Knowledge of syntax

Usually, when we hear about the word "grammar," we immediately think of things such as the arrangement of words in a sentence ("syntagmatics"), or, in addition, things like subject-verb agreement (e.g. ***John*** *wants* ***s*** *to go home*). Indeed, these are part of the knowledge of syntax that we have about a language. But there is much more to syntax.

What about the knowledge of the grammar of Chinese?

While we know that Chinese is a language with the basic word order Subject-Verb-Object,

(1) a. **張三吃了一大堆漢堡**
b. ***張三一大堆漢堡吃了** (*: ungrammatical or unacceptable)
c. ***一大堆漢堡張三吃了**
d. ***吃了一大堆漢堡張三**
e. ***一大堆漢堡吃了張三**

and that it lacks grammatical agreement of any sort, and that its nouns require classifier or different sorts,

(2) a. 一本書 *一書
b. 一朵花 *一花
c. 一張桌子 *一桌子
d. 一面牆 *一牆

we also know much which we are not even conscious of. In what follows we provide tw examples.

The first example is the *dou* and *ge* quantification. The elements *dou* and *ge* look similar, but closer examinations reveal that they have very different properties.

(3) a. 他們都買了一頂帽子
b. 他們各買了一頂帽子
c. 他們都來了
d. *他們各來了

(4) a. 他們各買了一頂帽子 (他們都買了一頂帽子)
b. 他們各踢了老王兩腳 (他們都踢了老王兩腳)
c. *他們各喜歡瑪麗蓮夢露 (他們都喜歡瑪麗蓮夢露)

(5) a. 老王這些日子每天各吃一個雞蛋 (老王這些日子每天都吃一個雞蛋)
b. *老王一般的日子各吃一個雞蛋 (老王一般的日子都吃一個雞蛋)
c. 老王每個城市各有一個女朋友 (老王每個城市都有一個女朋友)
d. *老王到處各有一個女朋友 (老王到處都有一個女朋友)

The generalization for the grammatical rules of *ge* quantification appears to be: The predicate of a *ge*-quantified sentence must contain an indefinite object. The subject, of which *ge* quantifies over, must be existentially restrictive. Notice that we have not had conscious access to these rules (until you are told now), but we use these rules proficiently and uniformly without any problem.

The second example is *yiqian* modification. *Yiqian* may freely modify a noun, but it appears that the noun that *yiqian* modifies must be presently existential in the world or the speaker, otherwise the result is awkward.

(6) a. 以前的狗
b. 以前的老王
c. #以前的恐龍 (#: semantically odd)
d. #以前的岳飛

These examples indicate that we have rich internal knowledge about the grammar of Chinese, even though we don't necessarily have consciousness about its existence.

But the term "grammar" doesn't just mean this. It has a strong universal flavor when we compare the grammars of different languages. Again, we provide two examples to illustrate this point.

The first example is the notion of *syntactic islands*. Look at the following English sentences.

(7) a. He is the man [who John said will buy the house].
b. *What is he the man [who John said will by __]?

The contrast in (7a-b) is an illustration of what we call the *wh-island effect* – a constituent headed by a *wh*-phrase does not permit any extraction (that is, the *wh*-movement of *what* in (7b)). (By the way, a (syntactic) *island* is a constituent from which nothing can move.) Now consider Chinese. The following contrast shows that Chinese observes the *wh*-island effect too.

(8) a. **他就是 [老王說會買那棟房子] 的人**
b. ***哪棟房子，他就是 [老王說會買 __] 的人？**

Thus it appears the notion of *syntactic islands* is cross-linguistically existent, even though we, as native speakers of Chinese, never heard about it, much less being taught about it.

The second example is the Binding Principle C effect. Consider the following English sentences.

(9) a. $John_i$ said he_i would be able to come.
b. *He_i said that $John_i$ would be able to come.
c. The fact that he_i would be able to come made $John_i$ happy.

The grammatical and ungrammatical co-references in these sentences can be accounted for in terms of what we call the *Binding Principle C*, which is defined by an abstract principle called *c-command*. The definitions are given below. (There are also Binding Principle A and A, but they do not concern us here.)

(10) C-command and Binding Principle C
C-command
α c-commands β iff the first branching node that dominates α dominates β.

Binding Principle C

A referential expression (that is, a proper name) must not be c-commanded by a co-indexing NP (that is, an NP with the same reference) in the sentence.

Again, consider the case of Chinese. We see exactly the same pattern.

(11) a. **老王$_i$ 說他$_i$ 能夠來**

b. ***他$_i$ 說老王$_i$ 能夠來**

c. **他$_i$ 能夠來的消息讓老王$_i$ 很高興**

Thus the Binding Principle C and the relation of c-command are vitally effective in the grammar of Chinese, even though we never heard about then—much less being taught about them.

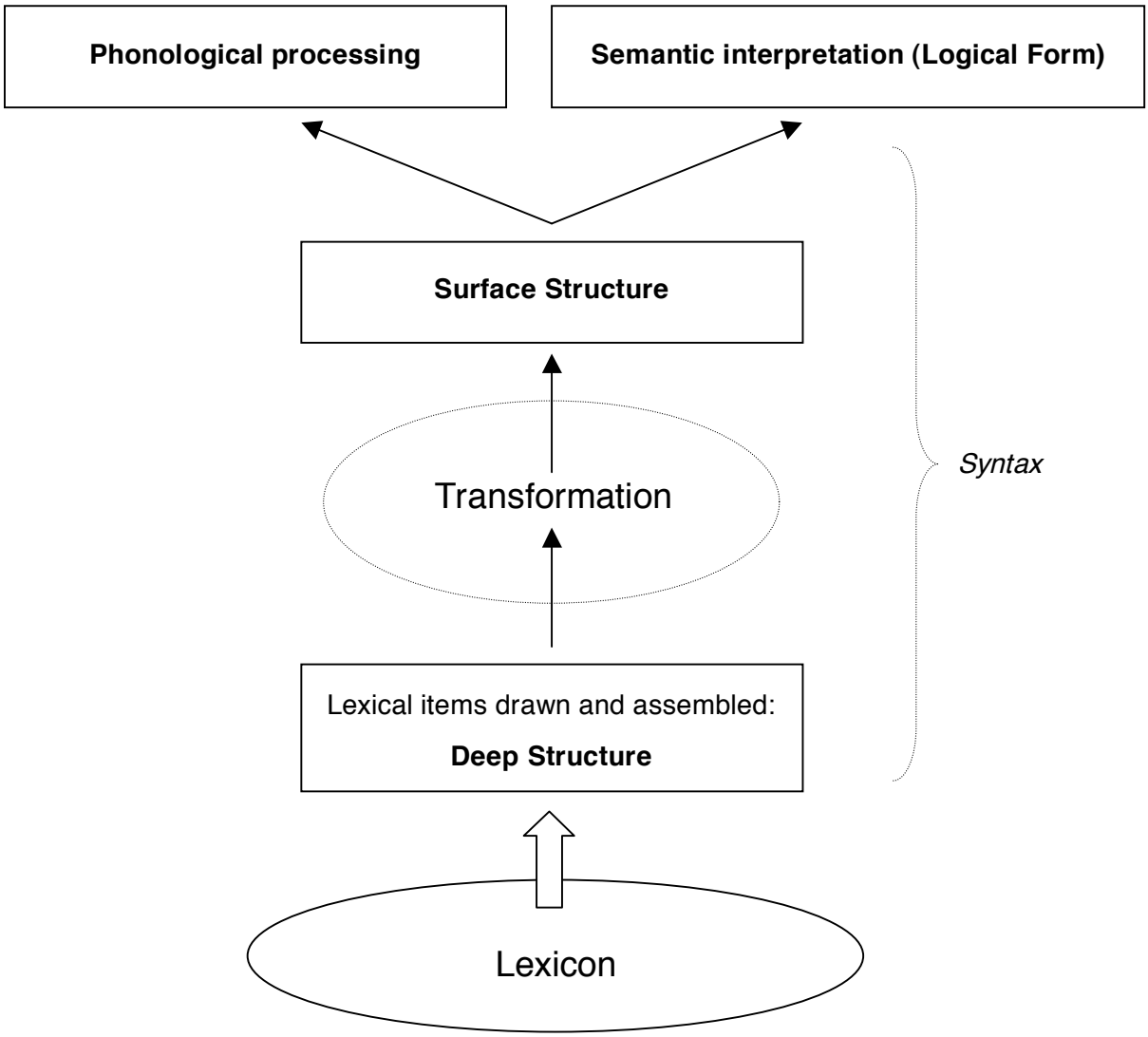
In conclusion, the grammar of a language is a rich, complex system, whereby particular rules specific to the language and universal principles that govern all human languages co-exist. We inquire the issues of the grammar of Chinese in such light.

The architecture of grammar

We adopt the Saussurean conception of language and formalize it. According to this conception, language is a mechanism that links sound (or other means of expression) on the one hand and meaning on the other. But what precisely is this mechanism?

Let's call this mechanism a grammar. The grammar has a few essential components none of which is dispensable. First, the grammar need a lexicon, in which we find the morphemes and words that gives the minimal units of meaning. This set of words and morphemes do not just go out into the world as language. We need to put these units into different arrangements and associations so as to carry different propositions. Once we reach these propositions, these propositions give us sounds and meanings. Thus there must be a core component in the grammar which links the lexicon with the sound and meaning components. That core component is *syntax*.

- *The architecture of grammar*



When we are constructing a sentence, first we choose some words and morphemes from the lexicon, and then we put them into a structural form. This is the *Deep Structure* of this sentence. If no other things happen, this Deep Structure goes on and split at a certain point, *Surface Structure*, toward phonological processing and semantic interpretation. But sometimes we want to do a little "manipulation" on the Deep Structure of the sentence, for example, to make a active sentence into passive form or move a noun to the initial position of the sentence to form a topic construction.

(12) a. John bought that book ⇒ That book was bought by John

b. I will call John ⇒ Call John, I will

In such cases we have *transformation* applies on the Deep Structure of a sentence, and make the Surface Structure of the sentence different in form from its Deep Structure. Transformation is therefore an important component in the grammar. In what follows we will examine each of these components in the grammar.

2. Phrase Structure

Phrase structure in English

What is *phrase structure*? Simply put, phrase structure is the way a language looks. Some languages have very "loose" phrase structure; others have very "compact" phrase structure. Some languages have a lot of functional categories in their phrase structures, some others do not have functional categories. Phrase structure encodes important information of a language, e.g. word order, hierarchical structure, and so on. The phrase structure of English has been investigated thoroughly. In what follows we will look at the English phrase structure first, and then go on to look at the phrase structure of Mandarin Chinese.

Knowledge about the phrase structure

To start with, let's ask ourselves this question: What do we know about sentences? We know the word order.

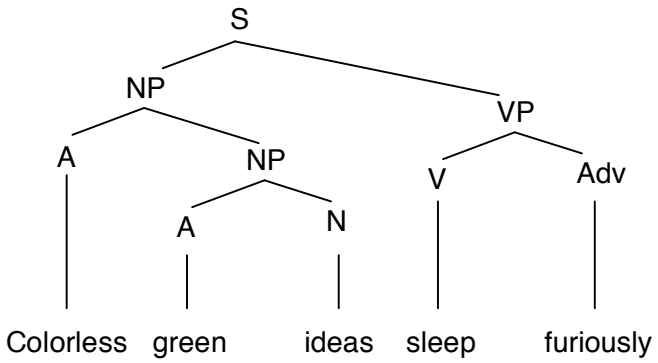
(1)	Chinese, English	SVO
	Japanese, Korean	SOV
	Irish, Chamorro	VSO
	Tsou, Atayal	VOS

We know the grammaticality of sentences.

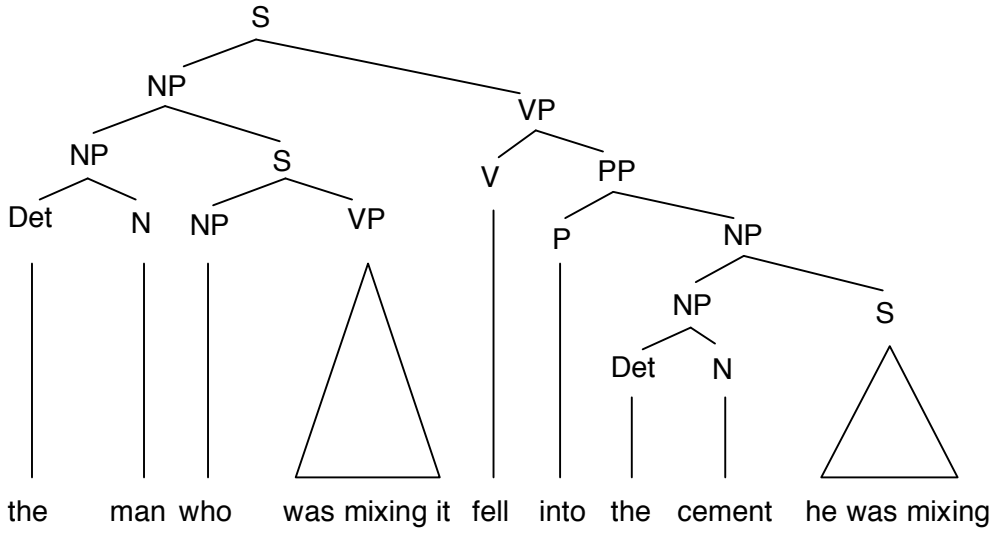
(2)	a.	Colorless green ideas sleep furiously.	(Nonsense, but grammatical)
	b.	*Furiously sleep ideas greeen colorless.	(Nonsense, and ungrammatical)
(3)	a.	?Which book did John wonder why Mary buy?	(Mildly weird)
	b.	*Why did John wonder which book Mary buy?	(Strongly ungrammatical)

We also know the structure and categories. What follows is the *tree structure* of the sentences *Colorless green ideas sleep furiously* and *The man who was mixing it fell into the cement he was mixing*.

(4)



(5)



We can also represent the tree structures in terms of *labeled brackets*.

(6) [$_S$ [$_{NP}$ [$_A$ colorless] [$_{NP}$ [$_A$ green] [$_N$ ideas]]] [$_{VP}$ [$_V$ sleep] [$_{Adv}$ furiously]]]

(7) [$_S$ [$_{NP}$ [$_{NP}$ [$_{Det}$ the] [$_N$ man]] [$_S$ [$_{NP}$ who] [$_{VP}$ was mixing it]]] [$_{VP}$ [$_V$ fell] [$_{PP}$ [$_P$ into] [$_{NP}$ [$_{NP}$ [$_{Det}$ the] [$_N$ cement]] [$_S$ he was mixing]]]]]

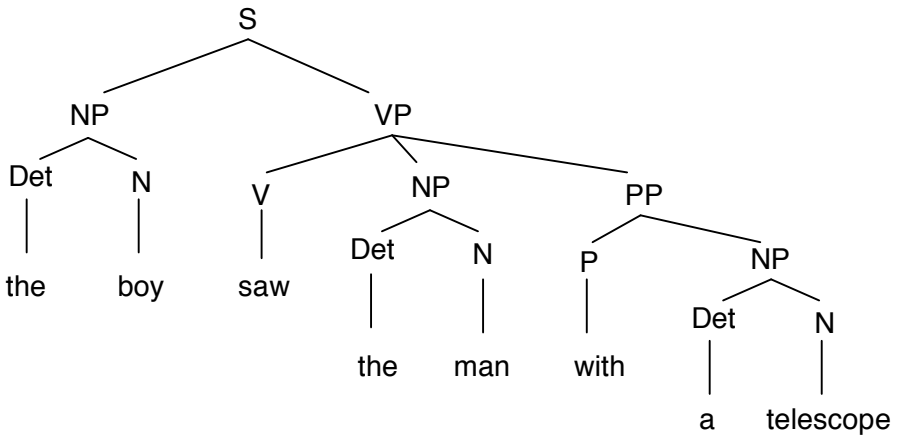
Why do we bother to draw these tree structures? We draw tree structures because they are part of our knowledge of the syntax of English (and Chinese). In other words, sentences have structures; they are not just linear arrangements of words and morphemes.

How do we know that sentences have structures? Because sentences may exhibit *structural ambiguity*. The existence of structural ambiguity is a strong piece of evidence for the claim that

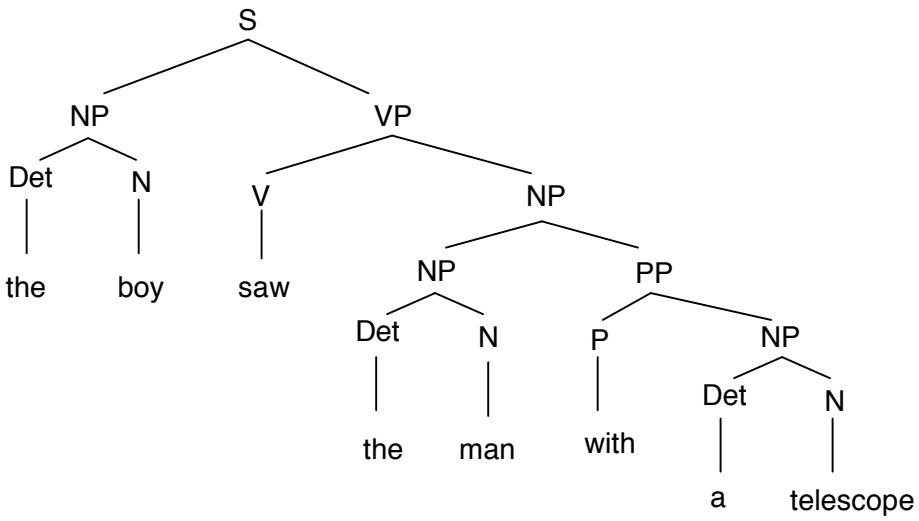
sentences are not just flat, linear-ordered words/morphemes, but have *hierarchical structure*.

(8) a. The boy saw the man with a telescope
b. The boy helped the old men and women

(8a')



(8b')



Categories, phrases, and constituent structure

To understand the phrase structure of a language, we need to first understand the building blocks of the phrase structure—the categories and phrases.

Why do we classify words into different categories (parts of speech)? Linguistic evidence indicates that such classification is necessary.

First, we have morphological evidence, such as:

— The plural morpheme *–s* attaches to nouns only

— Inflection applies to verbs only.

— Different derivational affixes attach to specific categories.

(9) *-able:* V ⇒ A

-ize: N or A ⇒ V

-ness: A ⇒ N

We also have syntactic evidence, such as:

— Words of the same kind can substitute each other.

(10) John should not { love / hit / tell / help } Mary.

(11) The { vase / picture / window / glass / bone } broke with a big noise.

— Words of the same kind often exhibit complementary distribution.

(12) I like { the / a / John′s / that } hat

What are phrases? Phrases are enlarged categories. For example, we have adjectives, then we have adjective phrases; we have verbs, and we have verb phrases. Technically speaking, phrases are projections of categories—A projects an AP, V projects a VP, and so on.

How do we prove that phrasal categories (AP, VP, NP, etc.) are necessary? Again, we have evidence.

— Morphological evidence: the possessive marker ‘s takes an NP rather than an N.

(13) a. [My father]'s friend has a coyote fro a pet.
b. [The king of England]'s head is bald.

— Distributional evidence: elements of the same phrasal category have the same distribution.

(14) John should not { kiss Mary / tell Mary the truth / escape / sell the gold watch that his father left to him }.

(15) { Mary / The boy / The man who I met last year / John, who lost all his money } arrived yesterday.

A sentence is composed of different constituents. A constituent is a "chunk" in the phrase structure. Simply put, a constituent is a projection of a category. There is evidence for constituent structures.

— Only constituents can move, be coordinated, be pronominalized, and omitted.

(16) a. John gave Mary the book.
b. The book was given to Mary by John
c. The book, John gave to Mary.
d. *Mary the was given to book by John.

(17) a. *John saw the blue sky and the clean water.
b. *The police chased the dog and caught it.
c. *John rang up his mother and up his sister.

(18) a. The book on the table is on sale. ⇒ It is on sale.
b. The army moved toward the hill. ⇒ The army moved there.
c. *John put a book on the table. ⇒ John put it.

(19) a. John went to New York, and Mary does ___, too.
b. John can fix the car, and Mary can ___, too.
c. *John loves his mother, and Mary ___ sister.

Phrase structure rules

The study of phrase structure is the study of the ways that words are organized into phrases and phrases into sentences. Different languages may have different ways to organize words into phrases and phrases into sentences.

(20) a. John firmly believes that Mary came to the party last night.
b. John firmly believes that Mary last night came to the party.
b. Firmly believes John that Mary to the party last night came.
c. John firmly Mary last night the party to came that believes.
d. Believes firmly that last night to the party came Mary John.

A convenient way to characterize the phrase structures of a language – a way that was popular in the 1960's and the 1970's – is to employ the phrase structure rules (PSRs). A phrase structure rule has the following format, X → Y Z, understood as "X is re-written as Y followed by Z" or "X is expanded into the sequence of Y followed by Z."

(21) A *phrase structure grammar*
i. X → Z Y
ii. Z → A B
iii. Y → P Q
iv. A → U V K
v. Q → E F
vi. F → J A R
vii. P → X B

You may think about the following questions: What phrase structures *can* be generated by the PSRs in (21)? What phrase structures *cannot* be generated by the PSRs in (21)? These are the sentences (in the formal sense) that *can be* and *cannot be* generated by this tiny "grammar" composed of PSRs.

The PSRs have three remarkable properties—also the three fundamental properties of the phrase structure of natural language.

1. Linear order (precedence)
For X → Y Z, Y precedes Z (and all other elements that succeed Z)

2. Hierarchical structure (domination)
   For X → Y Z, X dominates Y and Z (and all other elements that Y and Z dominate)
3. Recursion
   If a symbol X occurs to the left and to the right of the arrow (not necessarily in one and the same PSR), then the phrase structure grammar is said to be recursive, as it can generate an infinite number of sentences.

English phrase structures and PSRs

The PSRs can be used to characterize the phrase structures of natural languages. To characterize the phrase structures of English, we need to observe the sentence structures of English more closely.

(22) a. John runs.
b. John loves Mary.
c. John gives Mary a book.
d. John runs to the school.
e. John buys a book in the store.
f. John gives Mary a book in the school.
g. John thinks Mary runs.
h. John thinks Mary says Bill gave Jane a book.
i. John tells Mary Jane gives a book to Bill.

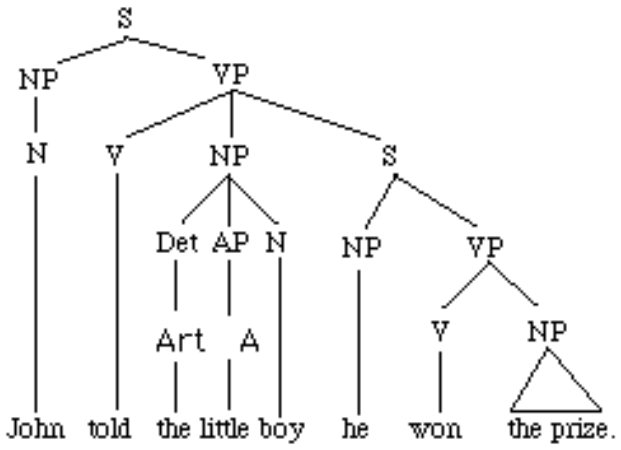
(23) a. S → NP VP
b. VP → V (NP) (NP) (PP)
c. VP → V (NP) S

The following table summarizes the elementary phrase structure rules in English (C.-T. James Huang, http://www.people.fas.harvard.edu/%7Ectjhuang/lecture_notes/lectpg.html, *Introductory Syntax*).

PSR1	The Sentence Rule	S ------> { NP / S' } (Aux) VP
PSR2	The NP Rule	NP -----> { a. Pronoun / b. (Det) (AP) N (PP) (S') }
PSR3	The VP Rule	VP -----> (AdvP) V { (AP) / (NP) ({ NP / PP / S' }) } (XP*)
PSR4	The AP Rule	AP ------> (deg) A ({ PP / S' })
PSR5	The PP Rule	PP -------> P (NP)
PSR6	The Determiner Rule	Det ------> { Art / Dem / NP_{Poss} }
PSR7	The Coordinate Structure Rule	X ----> X ((Conj) X . . . .) Conj X where X is a lexical (word-level) or phrasal category.
PSR8	The Dependent Clause Rule	S' ----> (Comp) S
PSR9	The Auxiliary Rule	Aux ----> ({ Inf. / Modal }) (Perf.) (Prog.)

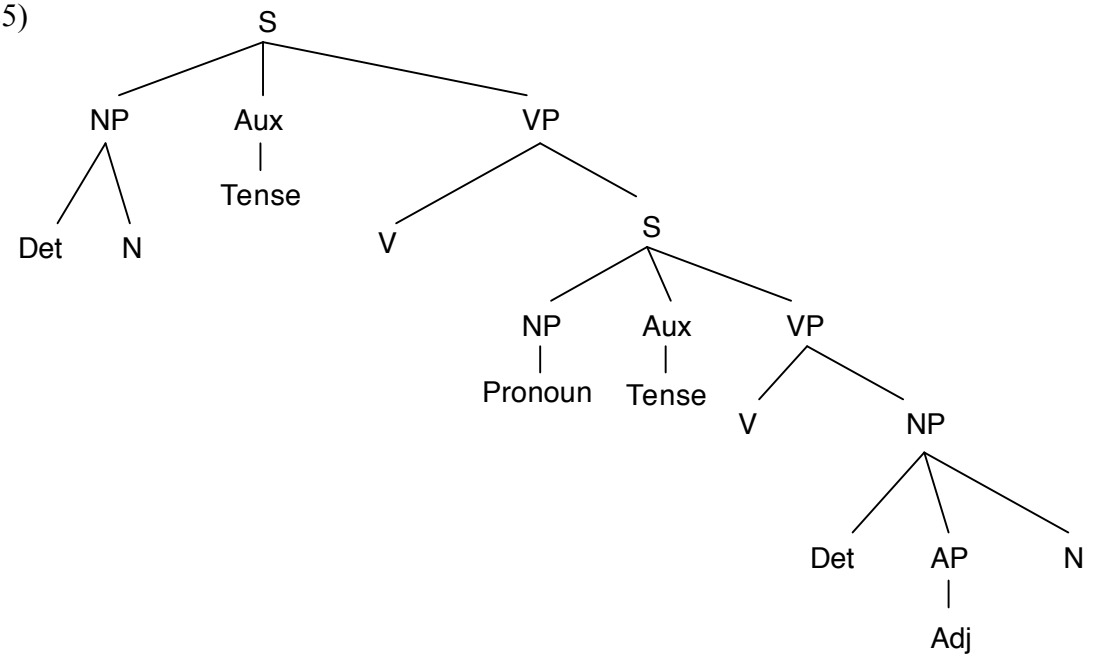
The PSRs can be regarded as *instructions* for building the hierarchical structures of sentences. That is, when we build a tree structure for a sentence, we use these PSRs, step by step, in a top-down fashion.

(24) *John told the little boy he won the prize.*



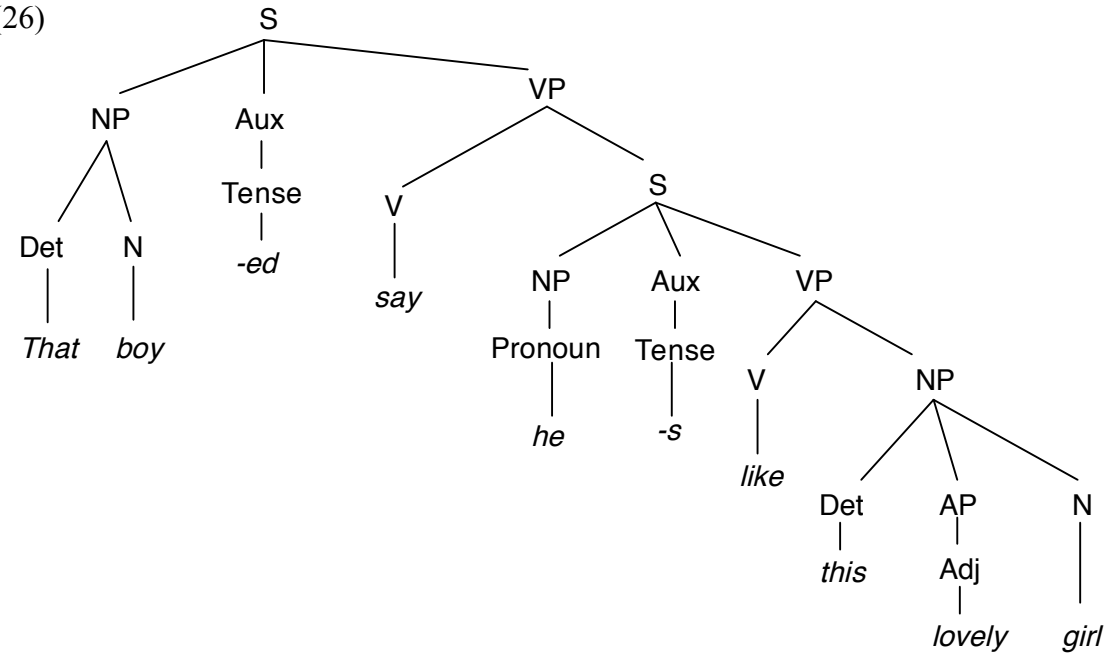
Now we must add one more rule to the list to complete the *Phrase Structure Grammar* of English, that is, the *Lexical Insertion Rule*. Let's assume that these PSRs apply blindly and generate phrase structures. Suppose we apply some of the PSRs and gets the following tree structure.

(25)



Up to this point we have built a nice-looking tree structure. But the task is not finished yet, since one crucial thing is missing here – the lexical items. (25) is just an ***empty shell,*** and we have to insert lexical items into it. This process is called ***Lexical Insertion***. Now we choose lexical items and insert them into the ***terminal nodes*** of the tree structure (25). We get:

(26)



(27) That boy said he likes the lovely girl.

Notice that these PSRs only generate the ***basic sentences*** of English. In other words, if we regard the language L as a set of legitimate sentences and the grammar G of L as a device that generates all those legitimate sentences and only those sentences, it is clear that the phrase structure grammar outline above for English is not sufficient. This point is important for the following reasons.

First, the PSRs only gives us a bunch of empty phrase structure shells; they don't have a control over the process of lexical insertion. That is, For example, if all that we have is just the set of PSRs given above, how can we exclude the following two illegitimate sentences?

(28) *That boy said he ***arrives*** this lovely girl.
(29) *That boy said he likes ***those*** lovely girl.

Second, the sentences of a language can be divided into two groups: the basic sentences, and the derived sentences. The basic sentences are those that can be generated by the PSRs, and the derived sentences are those that undergo ***transformations***. Consider the following contrast:

(30) John hit Bill.
(31) Bill was hit (by John).

The sentence (6) can be readily generated by the PSRs given above, but the sentence in (7) cannot. We will come back to the reason later.

Subcategorization

Consider the following examples.

(32) a. The boy saw Bill.
b. *The boy died Bill
c. The driver died
d. *The driver saw

Notice that, according to the PSR3 (The VP Rule), the object position is optional for a verb. In other words, *VP → V (NP)…* and so on. But this causes problems in examples like (32b) and (32d), where an intransitive verb illegitimately takes an object, and a transitive verb is illegitimately short of an object. This well illustrates the problem that we pointed out above; that is, PSRs has no contro over lexical insertion. If there is no restriction other than the PSRs, (32b) and (32d) may very well be generated in English, a wrong result.

This kind of phenomenon is called ***subcategorization***. Crucially, a verb has intrinsic properties as to whether it takes an object, and so on. This kind of information must be listed in the lexicon with individual lexical items

(33) a. *die*: Semantics: "to become not alive"
Category: V
PAS: {1} (PAS = Predicate-Argument Structure)

b. *see*: Semantics: "to perceived with eyes"
Category: V
PAS: {1, 2}

c. *give*: Semantics: "to transmit by hand"
Category: V
PAS: {1, 2, 3}

With information like (33a-c), we will not make mistakes such as those in (32b) and (32d). When lexical insertion takes place, it checks the environment in which a lexical item (*e.g.* a verb) is going to be inserted. If the inserted position has a NP following it, then the position is suitable for (33b) kind of verbs but not (33a) and (33c) kinds. On the other hand, if the inserted position has no NP following it, then the position is suitable for (9a) kind of verbs but not others. Mismatch causes ungrammaticality, as the case of (8b) and (8d).

Selectional restriction

A further phenomenon of a similar nature as subcategorization is the following:

(34) a. The baby cried
b. *The table cried
c. The baby arrived

d. The table arrived
e. His proposal surprised me
f. They bought an orange
g. *They surprised the orange
h. *His proposal bought me
i. *John gave a toy to the baby
j. John gave a toy on the baby
k. John put a toy on the table
l. *John put a toy to the table

Compare *cry* and *arrive*. These two verbs are both intransitive; then, by definition, both verbs must have a subject but not an object. According to this regulation, (34a-d) should be all okay, but unfortunately they are not – (34b) is ungrammatical, even though it has a subject but not an object. What is happening here?

This kind of phenomenon is called ***selectional restriction***. It is not enough to simply say that a verb can have one, two, or no argument; the semantic content of the argument matters too. What we can do is add the relevant information, in particular the thematic information, to the lexical entry as intrinsic properties of the lexical item.

(35) a. *surprise* Category: V
PAS: {1, 2}
S-selection: {Theme, Experiencer} (S = semantic)
b. *put* Category: V
PAS: {1, 2, 3}
S-selection: {Agent, Theme, Location}
a. *die* Category: V
PAS: {1}
S-selection: {Experiencer}
b. *see* Category: V
PAS: {1, 2}
S-selection: {Agent, Theme}
c. *give* Category: V
PAS: {1, 2, 3}
S-selection: {Agent, Theme, Goal}

Arguments and adjuncts

The listing that we see in (35) is usually called the ***argument structure*** of the verb. This term comes from the term ***argument***. An argument is a mandatory element for a head. (The term head usually means verb, though it has a more general meaning.) An intransitive verb has only one argument, that is, the subject; a transitive verb has two arguments, the subject and the object. A ditransitive verb has three argument. Each argument of a verb has a specific thematic role; for example, the two arguments of the verb *surprise* are Theme (subject) and Experiencer (object), the verb *walk* has only one argument, and its thematic role is Agent, and so on and so forth.

Adjuncts are non-mandatory elements (usually modifiers) in a sentence.

(36) a. John walks.
b. John walks quickly.
c. John walks to the office.
d. John walks quickly to the office.

(37) a. John gave Mary a book.
b. John sincerely gave Mary a book.
c. John gave Mary a book to please her.
d. John sincerely gave Mary a book to please her.

In (36) and (37), walk and give are the main verbs of the sentences, with *John* (for (36)) and *John, Mary*, and *a book* (for (37)) as arguments. But what about those extra expressions, *quickly* and *to the office* (for (36)) and *sincerely* and *to please her* (for (37))? These extra expressions are not mandatory for the completeness of the sentences, because (36a) and (37a) are all perfectly okay. These extra expressions are called adjuncts – they just provide extra modification to the sentences; they are ***not*** part of the argument structures of the verbs *walk* and *give*. The argument structure of a verb only contains the arguments and information relevant for the arguments. Adjuncts are not included.

Phrase structures of Chinese sentences

To start with, let's look at the word order properties of Chinese sentences. Chinese sentences have the basic word order SVO, though in some derived cases we have SOV as well.

(38) **張三吃了一大堆漢堡**
***張三一大堆漢堡吃了**
***一大堆漢堡張三吃了**
***一大堆漢堡吃了張三**
***吃了一大堆漢堡張三**
***吃了張三一大堆漢堡**

(39) *Object Shift Construction in Chinese*
張三吃了那隻雞
張三那隻雞吃了
張三吃那隻雞，吃得很開心
張三那隻雞吃得很開心

(40) The *ba* and *bei* constructions
張三把那隻雞吃了
那隻雞被張三吃了

Notice that the major syntactic categories in Chinese exhibit different *headedness*.

(41)

VP:	V-NP		
	吃漢堡，踢足球，看電視		
PP:	P-NP	***Head-initial***	
	在家裡，向老王（鞠躬）		
AP:	AdvP-A		
	很漂亮，非常貴		
NP:	XP-N	***Head-final***	
	很貴的衣服，我昨天遇到的人		

Compare with the basic word order and the headedness of major categories in English:

(42) John ate that burger *(SVO)*
John that burger ate *(No object shift in English!)*

(43) VP: V-NP
eat a burger, kick a ball

PP: P-NP

in the room, to Taipei

AP: AdvP-A

very beautiful, extremely high

NP: XP-N & N-XP

beautiful girl, the man who I saw

Adverbial modification: In Chinese, they always precede the main verb; in English, they may precede or follow the main verb (but do not intervene between V-Obj). (But PP adverbials in English typically occur post-verbally.)

(44) a. **張三很開心地吃了漢堡**

b. ***張三吃了漢堡很開心地**

c. **張三在回家的半路上，遇到了李四**

d. ***張三遇到了李四，在回家的半路上**

e. John happily ate the burger.

f. John ate the burger happily.

g. John, on the way back home, met Bill.

h. John met Bill on the way back home.

(45) a. **張三很用力地切開西瓜**

b. ***張三切開西瓜很用力地**

c. **張三用一把刀切開西瓜**

d. ***張三切開西瓜用一把刀**

e. John opened the watermelon forcefully.

f. John forcefully opened the watermelon.

g. John opened the watermelon with a knife.

h. *John with a knife opened the watermelon.

Contrasting Chinese with English:

(46) a. John studied English very hard in the library yesterday.

b. **張三昨天在圖書館很用功地讀英文**

Typological properties of Chinese sentences

Chinese is an "isolating" (*a.k.a.* "analytic") language. An isolating language is a language in which a morpheme is a word (or almost the case). Contrasting with the isolating languages are "agglutinating" (*a.k.a.* "synthetic") languages. In an agglutinating language, several morphemes constitute a word. These two types of languages differ in extent, not in absolute terms.

(47) Vietnamese (analytic): 12 morphemes, 12 words
Khi toi den nha ban toi, chung toi bat dau lam bai.
when I come house friend I Plural I seize head do lesson
'When I came to my friend's house, we began to do lessons.'

(48) Japanese ((verbal) synthetic): 10 morphemes, 4 words
John-wa sensei-ni gakkoo-e ik-ase-rare-ta.
John-Top teacher-Dat school-to go-Cause-Passive-Past
'John was forced to go to the school by the teacher.'

(49) Eskimo (synthetic): 23 morphemes, 5 words
Tavva-guuq ikpiarju(q)-ku(t)-Luni-tigualaka-mi-uk
Then-they-say work-bag-by-while-she-swept-up-Loc-Poss
takanu-nga ikijaq-tuq-Luni qaja(q)r-mun.
that-one-there-below-her way-out-she-while kayak-towards
'Then suddenly, she swept up her work-bag from its place below her as she went out towards the kayak.'

Chinese is a topic-prominent language. Chinese permits sentences where the topic phrase does not correspond to any gap inside the sentence.

(50) a. **這本書，張三很喜歡__**
b. **魚，我喜歡吃鮪魚**
c. **大象，鼻子很長**
d. **這件事情，老王幫了我們很大的忙**

(51) a. This book, John likes __.
b. *Fish, I like tuna.
c. *Elephants, trunks are long.
d. *This problem, John helps us a lot.

Phrase structure rules in Chinese

PSRs in Chinese: We may follow the examples of English and try to construct phrase structure rules for Chinese sentences. The following is a tentative formulation of the PSRs in Chinese. They are not meant to be exhaustive, though. They are presented for illustration purposes only. With this in mind, let get started. First we look at the sentence rule:

(52) $S \rightarrow \left\{\begin{matrix} NP \\ S \end{matrix}\right\}$ (AdvP) (Aux*) (AdvP) (Aux) VP (SFP*)

(53)

這棵樹高	張三可能會明天來
張三娶阿美是不可能的	張三說不定可能會明天來
張三會來	張三來了
張三可能會來	張三來了吧？
張三明天可能會來	張三買了什麼了呢？
張三可能明天會來	

The NP rules look like the following:

(54) $NP \rightarrow (\mathbf{X}^*) \left\{\begin{matrix} Pronoun \\ N \end{matrix}\right\}$

(55) $\mathbf{X} \rightarrow \left\{\begin{matrix} Det - (Num) - Cl \\ Num - Cl \\ AP \\ PP \\ S \end{matrix}\right\}$

(56)

這本書	我昨天買的書
這些書	那三本很貴的在書架上的我昨天買的書
這三本書	我昨天買的那三本在書架上的很貴的書
三本書	很開心的老王／他
很貴的書	我昨天遇到的很開心的老王／他

在書架上的書　　那個我昨天遇到的很開心的老王／他

The VP rule is:

(57) $VP \rightarrow \begin{Bmatrix} AdvP \\ VP \\ PP \end{Bmatrix}$ (AdvP) V(-Asp) (NP) $\begin{Bmatrix} VP/PP \\ S \\ QP \end{Bmatrix}$

(58)
張三狠狠地打了李四兩巴掌	張三站著吃飯
張三告訴李四明天不要來	張三去了台北三次
張三向李四恭敬地鞠了躬	張三吃牛排吃得膩了
張三買肉做飯	張三在桌子上跳
張三買飯吃	張三跳在桌子上

The following are the AP and PP rules:

(59) AP → (AdjP) A

(60) 漂亮
非常地漂亮

(61) PP → P NP

(62) 在圖書館（看書）
從台北（來）

And lastly the coordination rule:

(63) X → X (Conj) X

(64) 張三，李四，王五來了學校
你走，我就走

As can be easily seen, Chinese phrase structures are very different from the English phrase structure rules. The phrase structures of Chinese sentences are interesting in at least the following aspects.

- NP in Chinese doesn't have the "close off" properties as the English NP – the function of the determiners.
- The NP-internal elements don't seem to have a fixed order except the head N.
- Sentence final particles (SFPs) are very important in Chinese sentences. There can be more than one SFP in a Chinese sentence.

- Are there S’ and COMP in Chinese?
- Aux in Chinese is more similar to the regular verb than auxiliaries of English type – there can be more than one Aux in a Chinese sentence, just like VP, which can have multiple occurrences in a sentence.

3. Words in Mandarin Chinese

Words

What is a word? A word is the minimal independent form in a linguistic expression (sentence). A different definition is that a word is a free morpheme or a combination of free and bound morphemes.

The morpheme is the minimal unit in a language that carries a meaning (= has a denotation) or exhibits a grammatical function (= participates in the determination of the well-formedness of a linguistic expression).

(1) *foolishness = fool + ish + ness*
disarmament = dis + arm + a + ment
工業化 = 工 + 業 + 化
傻子 = 傻 + 子
老虎 = 老 + 虎

A *free morpheme* is a morpheme that can occur alone in a sentence as a word.

(2) *fool, arm, table, sky, sincere, kick, with, bright, hate, at ...*
傻, 手, 天, 踢, 和, 亮, 恨, 在 …
(*軍, *桌, *臂, *誠…)

A *bound morphemes* is a morpheme that *cannot* occur alone in a sentence as a word and hence must be affixed to another morpheme.

(3) *-ish*, *-ness*, *-ment*, *dis-*, *il-*, *un-*, *-ed*, *-s*, *-self* …
子, 老, 軍, 桌, 臂, 誠, 泳, 非, 反, 己 …

Words, therefore, are free morphemes + morphemes that result from affixations of (free or bound) morphemes.

(4) Free morphemes as words:

fool, arm, table, sky, sincere, kick, with, bright, hate, at ...

傻, 手, 天, 踢, 和, 亮, 恨, 在 …

Affixations of (free or bound) morphemes as words:

foolish, disarm, sincerity, kicking, without, brighten, hatred …

軍隊, 軍營, 桌子, 桌腿, 誠懇, 誠心, 游泳, 蛙泳, 非難, 是非, 反常, 反對 …

Content words in Mandarin Chinese

Chinese is said to be a *monosyllabic* language. This statement must be understood in the following way: each syllable in Chinese stands for a morpheme (bound or free). This statement ***cannot*** be understood as each syllable in Chinese stands for a word (but perhaps a character).

Words can be classified as content words and function words. Content words are words that have concrete meanings. They form an open class; that is, they are in principle unlimited in number.

(5) *table, chair, kick, read, yellow, bright…*

Function words, on the other hand, are words that don't have concrete meanings but only carry grammatical functions. They form a closed class, and are limited in number.

(6) *with, in, at, about…*

Content words in Chinese include:

(7) N: **牛 狗 人 書 山 愛**

A noun in English has to have a determiner, or it has to be plural. A noun in Chinese can be bare. In other words, Chinese nouns don't have count vs. mass distinction, whereas English nouns do. This is probably the reason that Chinese has a special category called ***classifiers***.

(8) a. The dog bites John.

b. *Dog bites John.

c. Dogs bite John.

(9) a. **狗咬了老王**

b. **狗有四條腿**

c. **老王打了狗**

d. **老王喜歡狗**

Content words in Chinese also include:

(10) V/A: **打 踢 像 愛 睡 蓋**

There don't seem to be clear distinctions between verbs and adjectives in Chinese. For one thing, adjectives in English and other western languages typically denote static situations; but adjectives in Chinese, in addition to denoting static situations, can also denote change-of-state situations. This latter property is usually seen in verbs, but not in adjectives.

(11) a. **張三很高**

b. **張三高了李四五公分**

c. **這朵花很紅**

d. **這朵花紅了**

Content words in Chinese also include:

(12) P: **向 從 跟 用 在 由**

Prepositions in Chinese generally have resulted from grammaticalization of verbs, and they still retain verbal characters. For example, most prepositions in Chinese can take aspectual markers, which is a privilege of verbs or adjectives. Besides, most of the prepositions in Chinese can function as the main predicate of the sentence.

(13) a. **張三向著太陽（大叫）**

b. **小美跟了張三（去英國）**

c. **張三用了三隻筆（寫信）**

d. **張三在房間裡（看書）**

e. **這件事就由他（出面解決）吧**

Function words in Mandarin Chinese

Mandarin Chinese also has function words. Many of them are affixes. They include prefixes:

(14) Prefix: **老/小 第 初 可 好/難**
(15) **老大 老三 第三 第一 初五 可愛 可笑 好吃 好拿 難吃 難拿**

And also infixes:

(16) Infix: **得/不**
(17) **推得開 推不開 吃得完 吃不完**

And also suffixes:

(18) Suffix: **兒 們 學 家 化 子 頭**
(19) **這兒 鳥兒 他們 學生們 科學家 藝術家 工業化 惡化 梯子 褲子 饅頭 木頭**

The adverbial marker **地** is a function word as well.

(20) **漂亮地 很快地 很用力地 跑步一般地 睡覺似地 旗幟鮮明地**
(Note: ***跑步地 *睡覺地 *吃飯地**)

These function words (in fact, bound morphemes, not really words) are elements that help to build words.

Syntactic function words in Mandarin Chinese

On the other hand, there is a special group of function words which are more syntactic in nature. They include the resultative & descriptive marker **得**:

(21) **吃得很快　　跑得很快**
吃得很累　　跑得很累

And duration & frequency marker 了:

(22) **開車開了三天　去台北去了五年**
開車開了三趟　去台北去了五次

And the aspectual markers:

(23) Perfective**了** (**了**$_1$)　**去了 吃了 死了 跑了**
Durative **著**　**吃著 看著 坐著 寫著**
Experiential **過**　**去過 吃過 寫過 找過**
Progressive **在**　**在吃 在寫 在看 在找**
Delimitative **一**　**吃一吃 寫一寫 看一看 找一找**

And also the sentence-final particles

(24) **了** (**了**$_2$)　Currently relevant state (new situation); perfect aspect
張三吃了飯了　花紅了三天了　李四去台北了
呢　Response to expectation; progressive aspect
老王有三條牛呢　小李正吃著飯呢　這件事才麻煩著呢
吧　Solicit agreement
走吧　死吧　吃了吧　説吧
喔　Friendly warning
小心喔　要做功課喔
啊/呀　Reduce forcefulness
誰啊　是啊　吃飯啊　我沒犯錯啊
嗎/呢　Question
老王買了什麼呢？
老王去不去台北呢？
這件事是你做的嗎？

Also the classifiers:

(25) a. Measure words: words that represent measure units.
一磅肉　五公尺布　一磅的肉　五公尺的布
三杯水　三箱書　三杯的水　三箱的書

一打粉筆　一盒巧克力　一打的粉筆　一盒的巧克力

b. Classifiers: the "true" classifiers, which don't have denotations but only classify things.

三支筆　一盞電燈　*三支的筆　*一盞的電燈

五面牆　兩個杯子　*五面的牆　*兩個的杯子

四條粉筆　四個西瓜　*四條的粉筆　*四個的西瓜

These function words are said to be syntactic because they may head their own projections in the phrase structure. For example, the classifier may be the head of the projection Classifier Phrase (in NP/DP), and *de* may be a complementizer introducing a complement clause. Thus they are very different from the former group of function words, which merely contribute to word formation.

Compounds

Mandarin Chinese has productive compound words. A compound word is a word composed of two or more words. A compound can be formed by reduplication or by compounding of other independent owrds.

(26) *Reduplication*

V: 教教我　走走路　研究研究　考慮考慮

Adj: 紅紅的　胖胖的　舒舒服服的　乾乾淨淨的

Measure: 條條大路通羅馬　天天洗衣服　個個有來頭

Kindship: 爸爸　姊姊　公公　奶奶

Misc.: 毛毛雨　剛剛　常常　零零碎碎的

(27) *N-N compounds*

床單　唇膏　砲彈　政府機關　網球拍　雨衣　汗斑

書包　家鄉　蜂蜜　大理石地板　飯館　肺病　春天

電燈　鬼臉　牛角　煤礦　大學校長　光復路　保險代理人

The problem of *de*: *de* is usually considered a "modification marker," which introduces a modifier to modify an NP.

(28) a. AdjP-*de*-NP

[$_{AdjP}$ 紅] 的花　[$_{AdjP}$ 很高] 的樹　[$_{AdjP}$ 很有錢] 的人

b. NP-*de*-NP

[NP **老王**] **的車**　[NP **昨天**] **的天氣**　[NP **小李**] **的態度**　[NP **桌子**] **的腿**

c. S-*de*-NP

[S **我昨天遇到**] **的學生**　[S **花旗銀行破產**] **的消息**　[S **老王煎魚**] **的味道**

When *de* introduces an NP-modification (e.g. (28b)), the relationship between the NP-modifier and the head NP can be quite liberal. This is in sharp contrast with the genitive case (*'s*) of English.

(29) a. Time and location

昨天的天氣　**去年的經濟**　**台北的交通**　**前面的紅綠燈**

b. Possessor

老王的車　**小李的錢**　**我的書包**

c. Thematic argument

羅馬的攻擊　**廣島的毀滅**　**老王的態度**　**小李的死**

d. Others

學校的學生　**人口的密度**　**水的痕跡**

(30) a. yesterday's whether

last year's economy

Taipei's traffic

*front's traffic light

b. John's car

Mary's money

my bookcase

c. Rome's attack

Hiroshima's destruction

John's attitude

Bill's death

d. *the school's student

*the population's density

*water's trace

Also, *de* can introduce clause-modifiers that are not permitted in English.

(31) a. the student that I met yesterday

the boy who John failed

b. the news that Citibank is going to be bankrupt

the rumor that John will fail all the students

c. *the smell that John fried the fish

*the sound that Mary plays piano

Some N-N compounds can have *de* inserted between the two Ns, but some others can't.

(32) ***床的單　*唇的膏　*砲的彈　政府的機關　網球的拍（子）*雨的衣**
汗的斑　*書的包　*家的鄉　蜂的蜜　大理石的地板　*飯的館
肺的病　春的天　*電的燈　鬼的臉　牛的角　*煤的礦
大學的校長　*光復的路　保險的代理人

The major difference between N-N compounds and N-*de*-N constructions is that the former have a sense of specificity in meaning, whereas the latter don't

(33) **台灣的土狗　台灣土狗**
清華的人　清華人
加州的紫杉　加州紫杉
老王的家　老王家
兄弟的棒球隊　兄弟棒球隊

Verbal compounds

Chinese has productive nominal compounds. English also has nominal compounds *(girlfriend, blackboard, Watergate*, etc.), though not as productive as in Chinese. On the other hand, Chinese has productive verbal compounds. English ***doesn't*** have verbal compounds. This is a sharp contrast between the two languages.

Chinese has several types of verbal compounds.

(34) Resultative verbal compounds (RVC) (**結果複合動詞**)
V_1-V_2, where V_1 is an action and V_2 the result caused by the action of V_1.

(35) Parallel verbal compounds (coordinated verbal compounds) (**並列複合動詞**)
V_1-V_2, where V_1 and V_2 are identical or similar in meaning.

(36) Modifier-Modified verbal compounds (**偏正複合動詞**)
X-V, where V is the head of the compound and X provides a modification to V.

(37) SP (subject-predicate) compounds
N-V, where N functions as if it is the subject of the predicate P.

(38) VO compounds
V-N, where N is the object of V.

There still some other minor types.

The Resultative Verbal Compounds (RVC) can be further distinguished into 4 subtypes.

(39) Cause **我把茶杯打破了**
他把門拉開了

(40) Achievement **我把那個字寫清楚了**
他買到了那本字典

(41) Direction **他跳過去了**
他們跑出來了

(42) Phrase **他的錢用完了**
他買到了票了

Characteristics of RVCs:

(43) The potential form; -**得**- and -**不**-.
打破　　打得破　　打不破
拉開　　拉得開　　拉不開
寫清楚　　寫得清楚　寫不清楚
But:
跑丟　（張三跑丟了錢包）　　*跑的丟　*跑不丟
氣暈　（張三氣暈了）　　*氣得暈　*氣不暈

(44) No reduplication; **活動活動**, but ***拉開拉開**.

(45) No insertion of aspectual markers into RVCs, except for directionals.
a. **打破　　打破了（窗子）　　*打了破（窗子）**
拉開　　拉開了（門）　　*拉了開（門）
用完　　用完了（錢）　　*用了完（錢）
b. **跳過去　　跳過去了　　跳了過去**
跑出來　　跑出來了　　跑了出來

The Parallel Verbal Compounds have two types:

(47) V_1 and V_2 are synonymous

慈善　疲乏　單獨

艱難　貧窮　奇怪

(48) V_1 and V_2 are similar in meaning

痛苦　正確　悲傷

破舊　圓滑　漂流

Modifier-Modified verbal compounds

(49) X-V, where X can be V, N, or Adj.

暗殺　刺殺　槍殺　勒殺　謀殺　擊殺　硬殺　軟殺　悶殺

合唱　獨唱　慢跑　默寫　單打　雙打　蛇行　昏睡　死硬

SP Compound:

(50) **嘴硬　眼紅　臉嫩**

手緊　心酸　膽小

VO compounds

(51) **睡覺　畢業　開刀**

滿意　結婚　幫忙

Some VO compounds can be nouns or adverbs:

(52) N: **當局　領事　炒飯　枕頭**

Adv: **當時　到底　照樣　轉眼**

Other minor types:

(53) Antonymous Adj ⇒ N

好壞　冷熱　快慢　真假

(54) A-N

香水　大門　美術

(55) Adv compounds

反正　向來　根本

(56) N-Measure

馬匹　書本　船隻

(57) N-V

(Most instances (if not all) of this type belong to the Modifier-Modified compounds)

槍斃　口試　步行

(58) Adv-V

自動　自殺　自治

4. Transformation

Why transformation?

Why do we need transformation? The answer is simple: the PSRs are not sufficient to characterize the grammar of a language. A language typically has transformational phenomena, which the PSRs cannot capture.

Consider the following examples:

(1) a. John likes Mary.
b. Who does John likes __?
c. Who does Bill says that John likes __?
d. Who does Jane thinks that Bill says that John likes __?

(1a) is a sentence with a transitive verb *like*, which takes an object *Mary*. Suppose we form a question sentence out of this sentence by converting the object *Mary* into a *wh*-word *who*. We know that, in English, the *wh*-word has to appear in the sentence-initial position, and this gives us sentences like (1b, c, d).

The question with the PSRs is that, can we generate sentences like (1b, c, d)? Answer: No.

(1a) can be generated with the following PSRs:

(2) a. S → NP (Aux) VP
b. VP → V NP

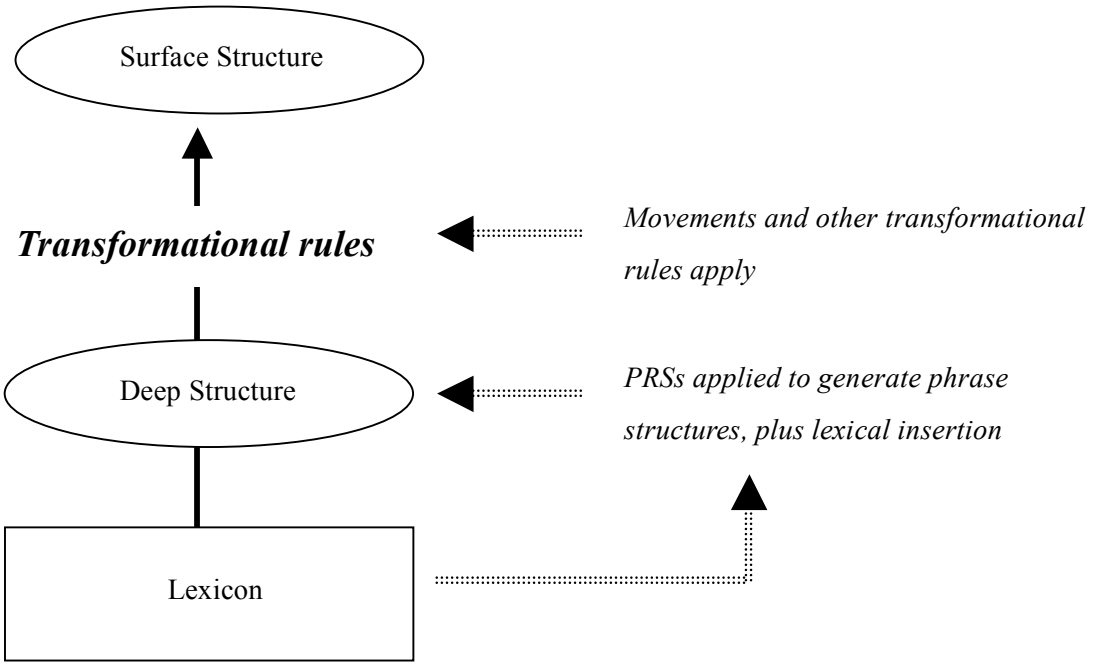
And since the verb *like* is a transitive verb, the appearance of the object *Mary* in (1a) perfectly fits the environment provided by the PSRs. So far so good.

But problems arise if we check (1b, c, d). In these sentences, the object NP of the verb *like* is gone (marked by underlines). Where does it go? Intuitively, it goes to the initial position of the sentence, that is, *who*. But the verb *like* remains transitive, and it requires an object according to the PSRs and its argument structure. If this is all we have, how can we distinguish grammatical sentences like (1b, c, d) from those ungrammatical sentences like the following?

(3) a. *John likes.
b. *Bill says John likes.
c. *Jane thinks that Bill says John likes.

Conclusion: An independent kind of rules, called transformational rules, must be used to deal with movement phenomena like (1b, c, d). That is, we assume that the PSRs generate basic sentences like (1a). The these basic sentences are input to transformational rules such as ***Move Wh-Phrase***, which moves a *wh*-word to the initial position of the sentence.

(4)



Another example of transformation is the placement of tense in English. In English, tense is realized in the first member of the sequence of Aux verbs plus the main verb.

(5) a. John sang.
b. John was singing.
c. John had been singing.
d. John would have been singing.
e. *John will had been singing.

This pattern of distribution cannot be accounted for using PSRs, because, suppose that we have the

rule in (6) (every auxiliary and verb can potentially have tense realization), how can we exclude the case in which all auxiliaries and verbs are realized with tense, as in (7)?

(6) Aux → (Modal) (Perf) (Prog)
([+Tns]) ([+Tns]) ([+Tns])

(7) *John would had was sang.

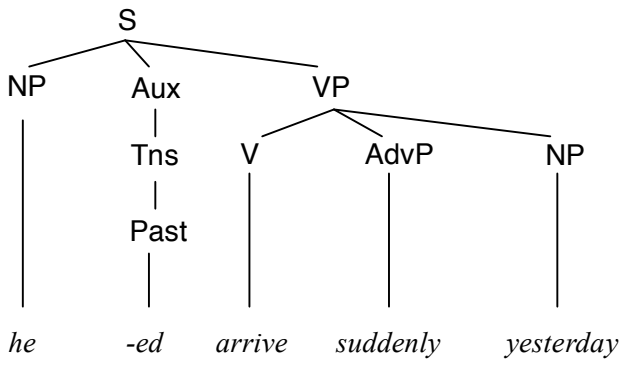
Thus we need a transformational rule: Affix Hopping.

(8) a. Aux → Tns (Modal) (Perf) (Prog)

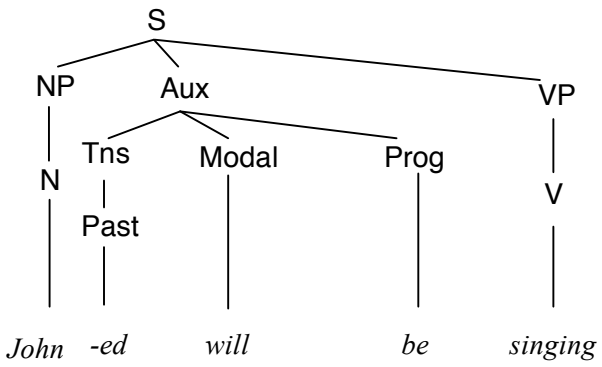
b. Tns → $\begin{Bmatrix} \text{Present} \\ \text{Past} \end{Bmatrix}$

c. Present → {*-es*}
Past → {*-ed*}

(9) a.



b.



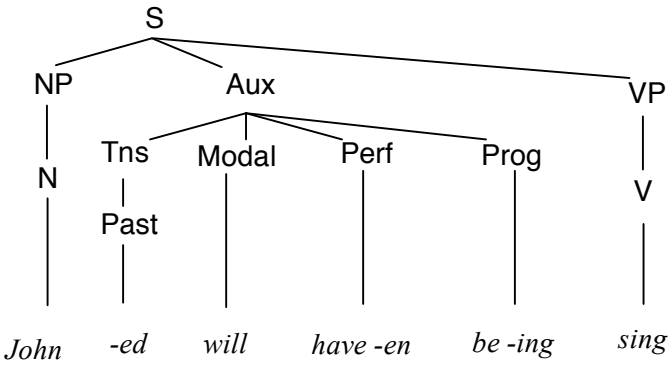
The application of Affix Hopping is as (10)

(10) X φ V Y → X [V-φ] Y

The perfective and progressive can be treated in the same way:

(11) a. Perf → *have -en*
b. Prog → *be –ing*

(12)



(13) *Affix Hopping*

SD:	Aff	X	(SD: structural description)
	1	2	
SC:	0	2+1	(SC: structural change)

Condition: 2 = [+V]

One more example of transformation: Auxiliary Inversion. Exactly like the placement of Tense, Aux inversion in English affects the first member of the sequence of Aux verbs + the main verb. (exception: *do*-support).

(14) a. Will John have been singing?
b. Has John been singing?
c. Is John singing?
d. Does John sing?
e. *Have John will been singing?

Again, the PSRs cannot appropriately account for these facts.

(15) ✖ S → (Aux) NP (Aux) V.....

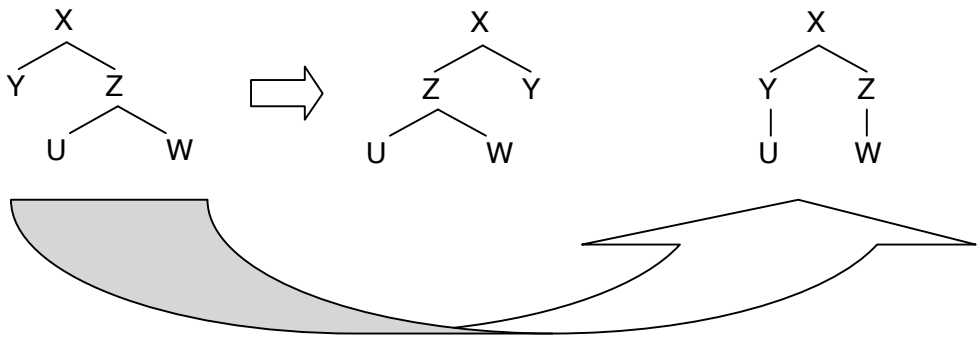
What is transformation?

Literally, *transformation* means "change the form." Given a basic form, we change its appearance – that is transformation. For example, suppose we have a string *aabbbaaabbbb*. We can perform innumerably many transformations to this string, including:

(16) a. *bbaaabbbaaaa*
(replace all *b*'s by *a*, all *a*'s by *b*)
b. *ccdddcccdddd*
(replace all *a*'s by *c*, all *b*'s by *d*)
c. *bbbbaaabbbaa*
(rearrange the order to its mirror image)
d. *bbbbaabbbaaa*
(move the final substring *bbbb* to the initial position)
e. *bbbaaabbbbaa*
(move the initial substring *aa* to the final position)
d. *aa*
(delete everything but the initial substring *aa*)
e. ∅
(delete everything)

Of course, transformations are not limited to strings only. Structures can be transformed.

(17)



Though there can be imaginably innumerable transformations for a given object, it is obviously not true that natural language permits arbitrary transformations. Transformations are restricted in natural language. This is an important subject matter that we will return to.

Transformations in English: Movement

Passivization

Two problems posed by the passive sentences in English:
First, Subcategorization and selectional restriction are violated (in fact, *must be* violated).

(18) John cheated Mary.
*John cheated.
John was cheated (by Mary).
*John was cheated Mary.

Second, complementary distribution between the "missing object" and passive subject:

(19) *John hit Mary* ⇒ John did hitting, Mary suffered hitting.
Mary was hit ⇒ Someone did hitting, Mary suffered hitting.
John scared Mary
Mary was scared
**John scared the table*
**The table was scared*

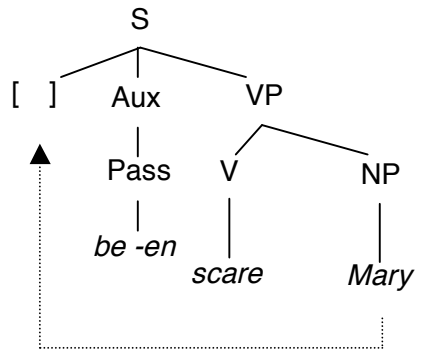
Descriptively, the passivization transformation can be as follows:

(20) Passive Rule:

SD:	NP	Aux	V	NP	(SD: *structural description*)
	1	2	3	4	
SC:	4	2 *be en*	3	*by* 1	(SC: *structural change*)

The current view on the passive transformation is that the object argument undergoes movement to the subject position, as follows.

(21)



Raising

Also called Subject-to-subject raising. In fact, all cases of raising targets the subject position. Passivization can be regarded as object-to-subject raising.

(22) It seems that John is happy.
John seems to be happy.
It is likely that John wins.
John is likely to wins.
It appears that John has lost the game.
John appears to have lost he game.

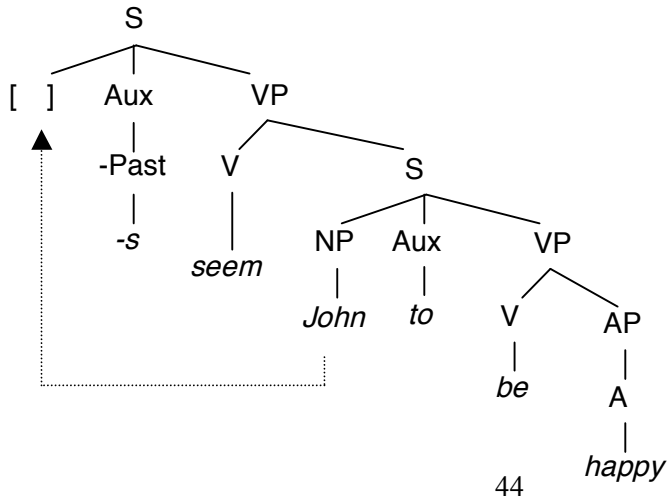
Characteristics of raising:

(a) Alternation between the normal NP subject and the expletive subject *it*.

(b) The raising verb (*a.k.a.* raising predicate) doesn't assign a specific meaning to the normal NP subject; it is modal-like. To put the matter in a different term: the raising predicate has a *sentential scope*.)

(c) The embedded clause alternates between finite and non-finite tense.

(23)

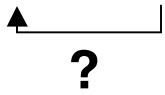


Control

There are sentences that look like cases of raising (in that they also involve infinitival clauses) but in fact are not cases of raising.

(24) John wants to win the game.
John promises (Mary) to win the game.
John persuades Mary to win the game.

(25) John wants [__ to win the game]



(26) John persuades Mary [__ to win the game]

We have evidence indicating that these examples are of a different type, called *control structure*. In a control structure, the embedded infinitival clause has an empty pronominal, PRO, as the subject *controlled* by the matrix subject.

(27) John wants [PRO to win] (= *John wants himself to win*)
John persuades Mary [PRO to win] (= *John persuades Mary that she is to win*)

Characteristics of control sentences:

(a) No alternation between the normal subject NP and the expletive subject *it*.

(28) *It wants that John wins the game.
*It promises that John will win the game.

(b) The infinitival clause in the control structure can be altered into a finite clause.

(29) John wants to win.
John wants that he win.
John promises Mary to win.
John promises Mary that he will win.

(c) Control verbs (a.k.a. control predicates) usually refer to the volition or intention of the subject NP; that is, they assign concrete meanings to the subject NP.

There are several types of control of PRO:

(30) [$_S$ John$_i$ wants [$_S$ PRO$_i$ to win the game]] *(Subject control)*
[$_S$ John$_i$ promises (Mary) [$_S$ PRO$_i$ to win the game]] *(Subject control)*
[$_S$ John persuades Mary$_i$ [$_S$ PRO$_i$ to win the game]] *(Object control)*

A special type of control: Arbitrary PRO:

(31) *To smoke 5 packs of cigarettes a day is harmful to health.*
[$_S$ PRO$_{arb}$ to smoke 5 packs of cigarettes a day] is harmful to heath
To see is to believe.
[$_S$ [$_S$ PRO$_{arb}$ to see] is [$_S$ PRO$_{arb}$ to believe]]

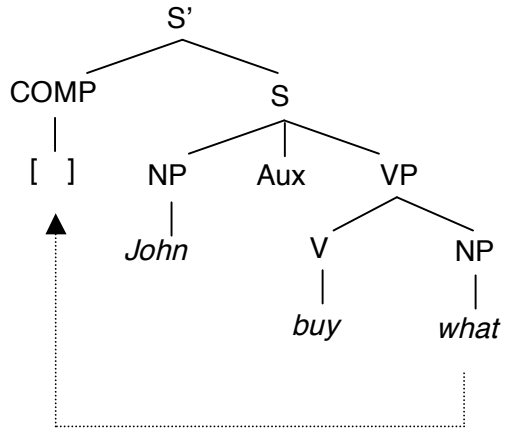
Wh-movement

Wh-questions pose the same problems as the passives do with respect to subcategorization, selectional restriction, and complementary distribution.

(32) What did John buy?
John bought a book.
*John bought
*What did John buy a book?

A *wh*-element undergoes movement to COMP:

(33)



Direct questions and indirect questions: Some verbs select a [+wh] complement clause, but some verbs don't.

(34) John wonders what Mary will buy.
John knows what Mary will buy.
*John thinks what Mary will buy.
*John wonders that Mary will buy a book.
John knows that Mary will buy a book.
John thinks that Mary will buy a book.

Topicalizaton

Topicalization involves *Wh*-movement, that is, movement to COMP.

(35) That book, Mary already bouhgt.
*That book, Mary already bought a book.
Mary already bought.

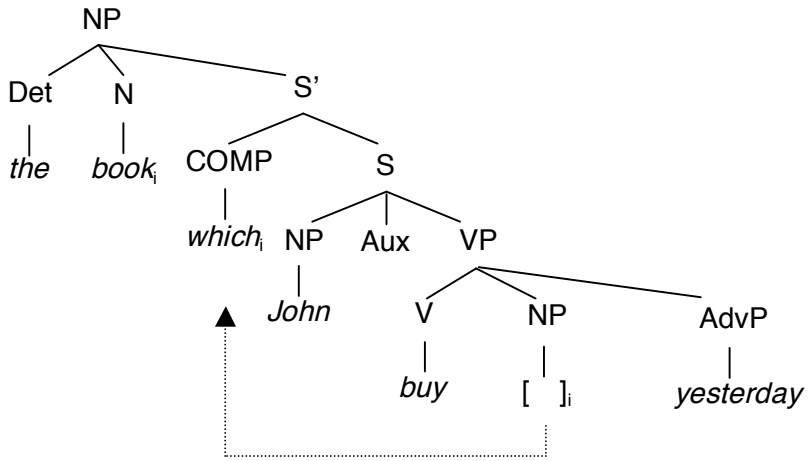
(36) [$_{S'}$ [$_{COMP}$ *that book*] [$_{S}$ *Mary already bought* __]]

Relativization

Relativization also involves *Wh*-movement.

(37) the book (which) John bought yesterday
*the book (which) John bought a book yesterday
*John bought yesterday

(38)



Wh-movement without a *Wh*-phrase:

(39) *the book John bought yesterday*
the book that John bought yesterday

(40) *the book*$_i$ [$_{S'}$ [$_{COMP}$ Ø/*that*$_i$] [$_S$ *John bought* __ *yesterday*]]

Extraposition

In English, when the subject is itself a clause, the subject clause can be shifted to the right end of the sentence. The original subject position is then filled by the expletive *it*. Verbs that permit extraposition are typically those that represents mental attitudes.

(41) That the professor is going to flunk everyone annoys John.
It annoys John that the professor is going to flunk everyone.

(42) (People) generally believes that science progresses in a unidirectional way.
That science progresses in a unidirectional way is generally believed (by people).
It is generally believed (by people) that science progresses in a unidirectional way.

Heavy NP Shift

In English, when the subject NP is "too heavy" (namely, too long), part of the subject NP (typically the modifiers) can be shifted to the right end of the sentence.

(43) The author who wrote the famous book *An Investigation on 9/11* will be in town.
The author will be in town who wrote the famous book *An Investigation on 9/11*.
I bought a photo of Washington's birthplace today.
I bought a photo today of Washington's birthplace.
An argument against John's proposal was raised last night.
An argument was raised last night against John's proposal.

Transformations in English: Deletion

Imperative Formation

In English, an imperative sentence is formed from a sentence with *you* as the subject, by deleting

you.

(44) You go home!
Go home!
You stand up!
Stand up!

Notice that the invisible subject of the imperative sentences in English must be *you*, since in the tag question it is *you* rather than any other expression that appears.

(45) Stand up, don't you? (*Stand up, doesn't he/she/…)
Go home, don't you? (*Go home, doesn't he/she…)

VP Ellipsis

In English, a VP can be deleted if it has an antecedent.

(46) John will buy a book, and Mary will <u>buy a book</u> too.
John will buy a book, and Mary will too
John will buy a book, so does Mary
John ate a burger, and Mary <u>ate a burger</u> too.
John ate a burger, and Mary did too.
John ate a burger, so did Mary.

Notice that, when there is a modal verb in the sentence, the VP simply deletes. If there is no modal verb, the "expletive modal verb" *do* must be inserted in order to carry tense. The element *so* in the above examples can be regarded as a pro-VP.

Gapping

Sometimes we don't delete the whole VP, but just the verb, retaining the object.

(47) John will buy a book, and Mary <u>will buy</u> two books.
John will buy a book, and Mary, two books.
John will buy a book, and Mary, two.
John ate a burger, but Mary ate two burritos
John ate a burger, but Mary, two burritos.

More on transformations

What elements undergo transformation?

Textbooks of linguistics tell us that only constituents can undergo transformation.

(48) a. John brought that book to the classroom.
b. That book, John brought __ to the classroom.
c. *That book to, John brought __ the classroom.

To be precise, only *maximal projections* and *heads* can undergo transformation. (49) provide examples for head movement in English. In (49a-b), the auxiliary *will* moves to the initial position of the sentence to form an interrogative sentence; in (49c-d), the tense element [+past] movement to the initial position of the sentence, supported by the default auxiliary *do* (realized as *did*). This latter operation (a transformation also) is known as ***Do Support***.

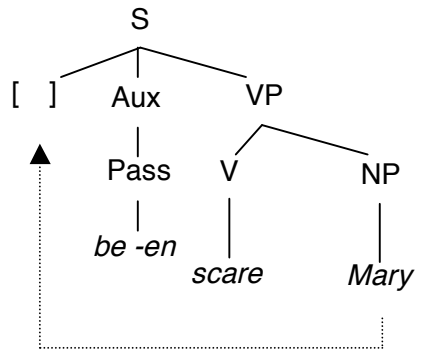
(49) *Head movement in English*
a. John will have arrived at the station by 9:00 pm.
b. Will John __ have arrived at the station by 9:00 pm?
c. John arrived at the station by 9:00 pm.
d. Did John __ arrive at the station by 9:00 pm?

Structure preservation

Transformation does not destroy the structure; it ***preserves*** the structure.

All leftward movements in English move an element to a position that already exists. Raising moves an element to the subject position. *Wh*-movement (movement of *wh*-phrases, topicalization, relativization, etc.) moves an element to COMP, which has been there already. In other words, movement does not create new position, nor does it create new branches for the tree structure.

(50)



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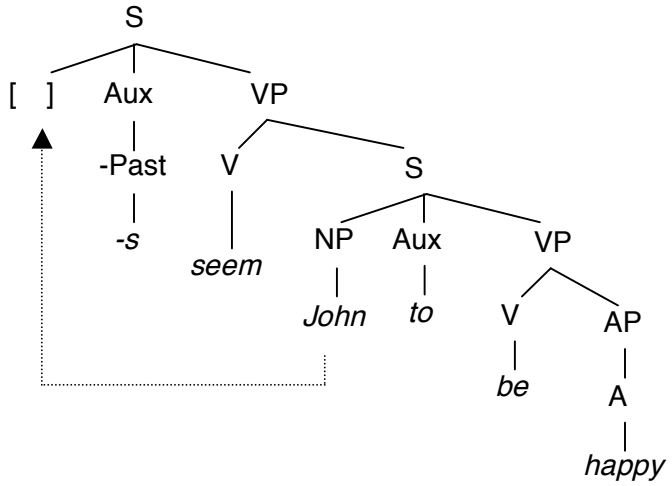

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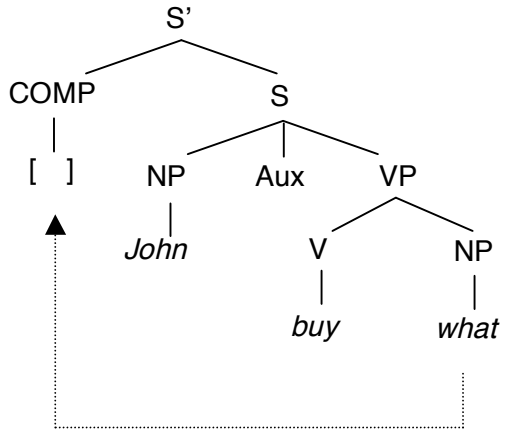
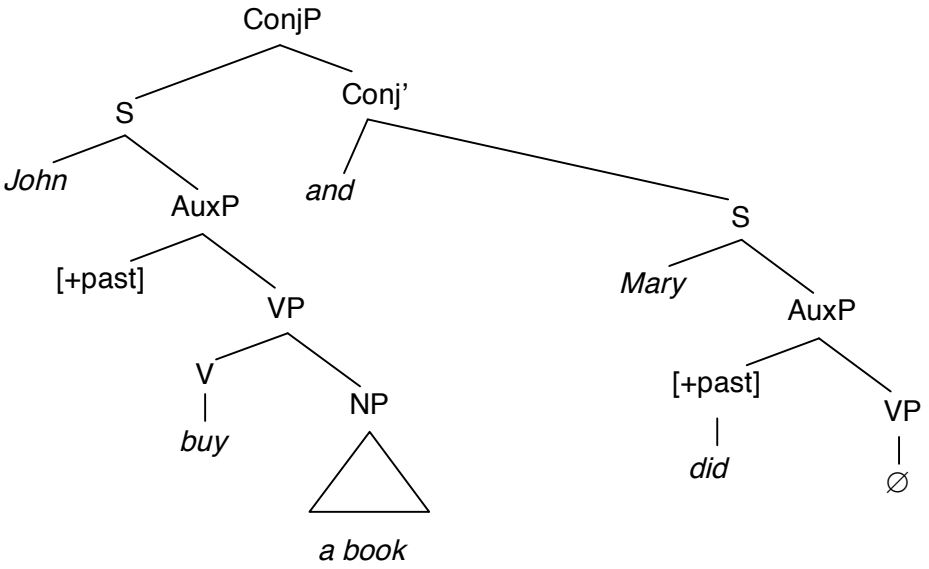


Deletion also obeys the condition of structure preservation. Notice that, whatever is deleted must be *recoverable*. In Imperative Formation, the missing subject must be *you*, in VP Ellipsis and Gapping, the elided elements must correspond to the VP or verbal elements in the preceding clause. This is known as the ***Recoverability Condition for Deletion***. As a consequence, there is no deletion in natural language which targets an arbitrary element and elides it without chance for recoverability (e.g. *John likes Mary* ⇒ **John likes* __).

In this sense, deletion is also ***structure-preserving***. Incidentally, when a structure undergoes deletion, we assume that the node of the constituent that is deleted is preserved.

(53) a. John bought a book, and Mary did, too.

b.



Adjunction

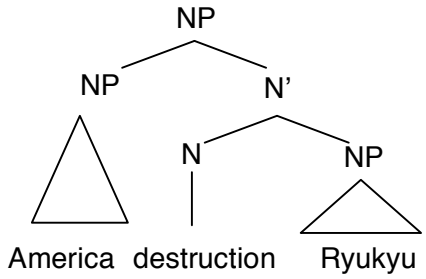
What is adjunct?

Adjuncts are modifiers which are neither arguments nor main predicates. They are adjoined to the structure – adjunction.

A phrase-structure perspective

A constituent is a maximal projection. A maximal projection starts from a head, which keeps projecting until the point it does not project anymore. Two elements are crucial to the projection of a head: *complement* and *specifier*.

(54) America's destruction of Ryukyu



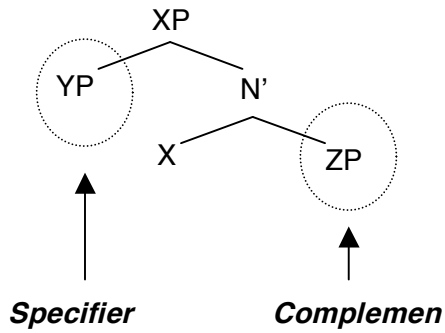
In (54), the N *destruction* first combines with the NP *Ryukyu*, taking it as complement and projecting to N'. Then the N' further combines with *America*, taking it as specifier and projecting to NP. We assume that complement and specifier are essential elements of a maximal projection.

(55) The X'-Convention

a. X' → X Compl

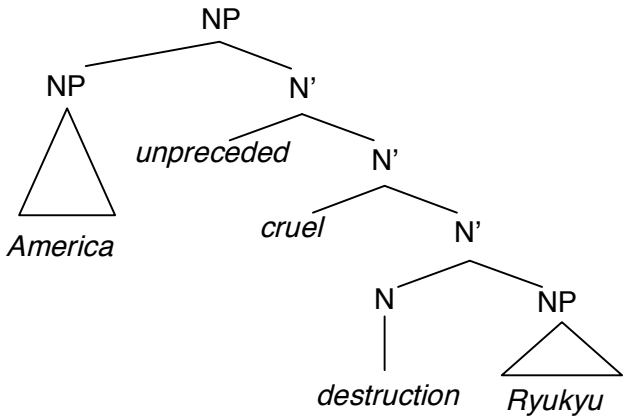
b. XP → Spec X'

(56)



But sometimes a phrase structure does not contain the Spec and Compl only; modifiers may come into play, such as *America's cruel destruction of Ryukyu*, and *America's unpreceded cruel destruction of Ryukyu*. These examples involve adjunction of modifiers. In the following structure, and adjectives *unpreceded* and *cruel* are adjoined to the structure at N'; they are adjuncts in the structure.

(57)



(58) The X'-Convention

c. X' → Adjunct X'

Adjunction adjoins an element to the X' (X single-bar) level of the phrase structure. Notice that adjunction only causes X' iteration; it does not create new structure. In this sense, adjunction can be said to be structure-preserving as well.

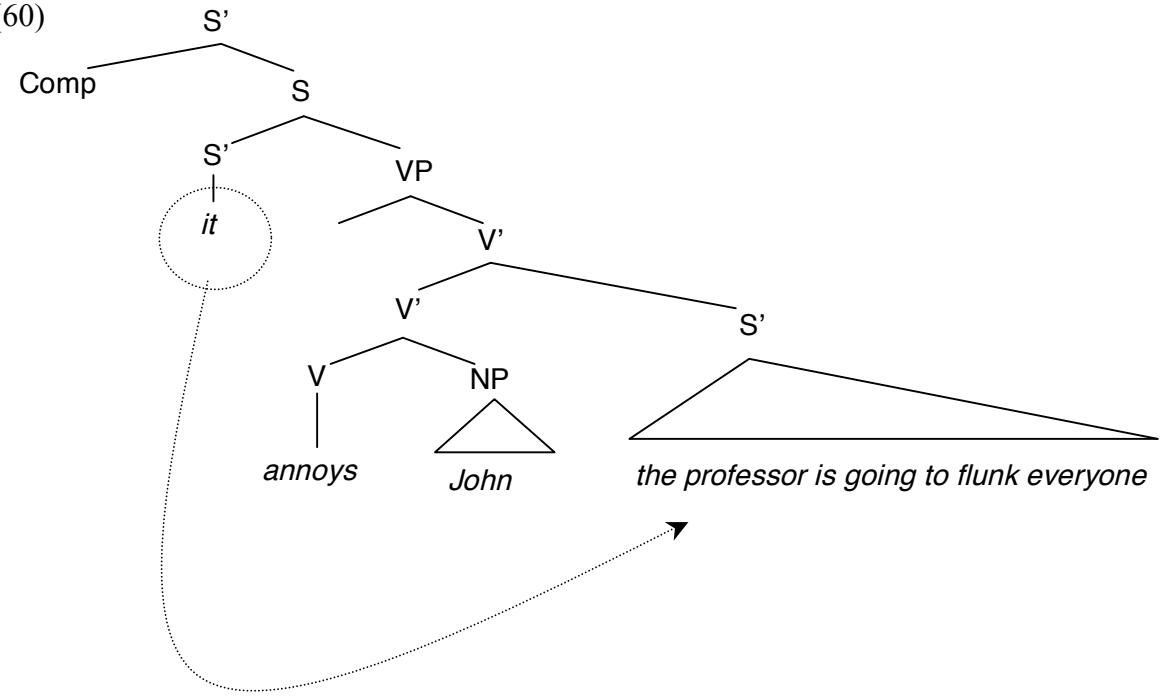
Rightward movement in English

Rightward movements in English are cases of adjunction. Elements (the sentential subject clause or the "heavy element" in a heavy NP) are moved rightward and adjoined to V'. (In the case of Extraposition, the expletive subject *it* then fills the subject position.)

(59) That the professor is going to flunk everyone annoys John. ⇒ (Extraposition)

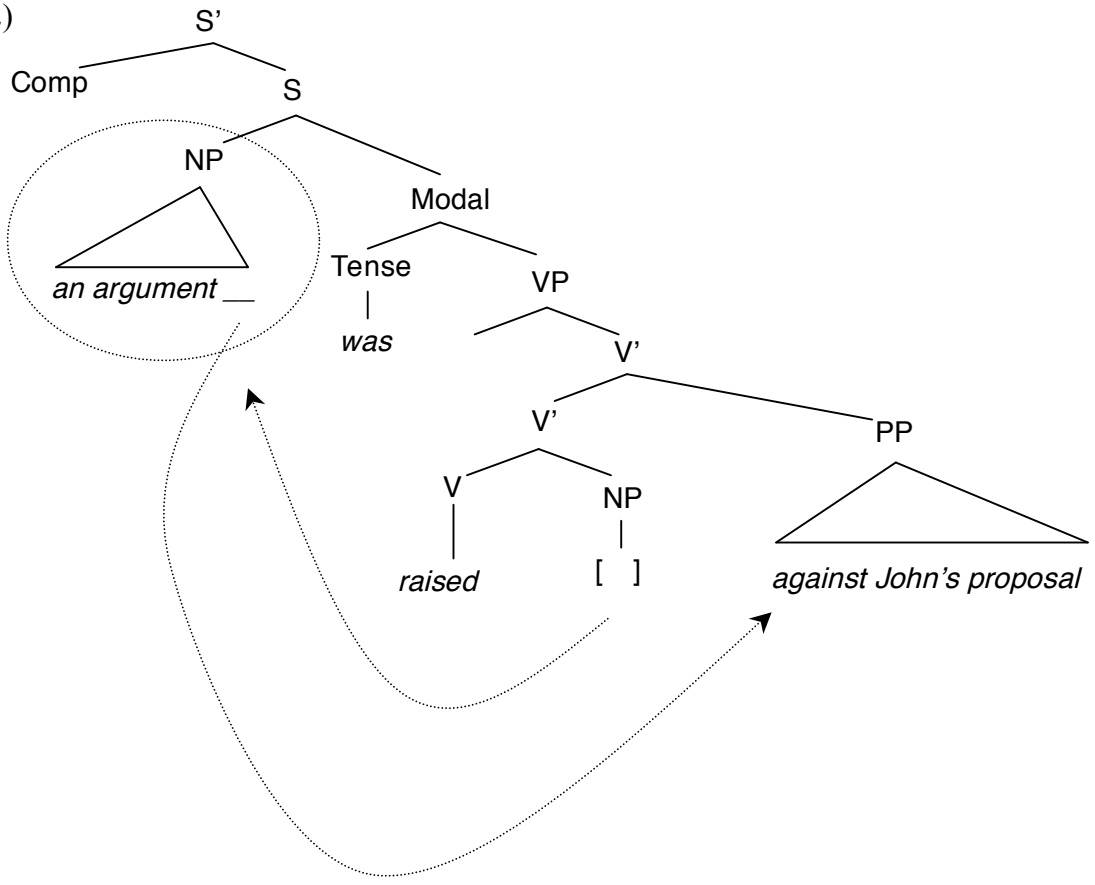
It annoys John that the professor is going to flunk everyone.

(60)



(61) An argument against John's proposal was raised. ⇒ (Heavy NP Shift)
An argument was raised against John's proposal.

(62)



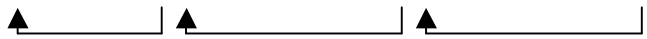
In conclusion, structure preservation is an essential property of transformations in natural languages. In English two cases are distinguished. In the case of leftward movement, an element moves up to a position already prepared for it. In the case of rightward movement, an element is adjoined to V'.

Cyclicity of movement

A transformational rule can apply for more than once. This is particularly true for leftward movement.

(63) *Cyclic application of raising (including passivization)*

[$_{S'}$ John seems [$_{S'}$ __ to be likely [$_{S'}$ __ to be awarded __]]]



(64) *Cyclic application of wh-movement*

[$_{S'}$ [$_{Comp}$ who] does John say [$_{S'}$ [$_{Comp}$ that] Mary thought [$_{S'}$ [$_{Comp}$ that] Jane liked __]]]

But rightward movement in English cannot apply cyclically. An extracted element (that is, a moved element) can only adjoin to the local (that is, the closest) V'. Adjunction to a higher V' will result in ungrammaticality.

(65) John said that [that Mary will come surprises everyone] in the library
John said that [it surprises everyone that Mary will come] in the library
*John said that [it surprises everyone] in the library that Mary will come

(66) Mary said that [an argument against John's proposal was raised] in the meeting
Mary said that [an argument __ was raised against John's proposal] in the meeting
*Mary said that [an argument __ was raised] in the meeting against John's proposal

Why is there such an asymmetry between leftward and rightward movement? This, again, has to do with the principle of structure preservation. A sentence always has a Comp position and a subject position. These positions become the "route" for cyclic movement. Since these positions are located in the left periphery of the sentence, leftward movement can proceed in the cyclic way. On the other hand, no such "route" is available at the right periphery of a sentence; the only means to make use is adjunction. If we ban cyclic adjunction, rightward movement has no chance to escape its local domain.

Transformation in Mandarin Chinese

Some characteristics of transformation in Mandarin Chinese

First, there are very few cases of deletion, and those permitted cases of deletion are severely restricted. Second, there is no rightward movement in Mandarin Chinese. All movements are leftward.

Topicalization

(67) **張三最喜歡鮪魚**
(68) **鮪魚，張三最喜歡** [*e*]
(69) **鮪魚，李四以為小李說說張三最喜歡** [*e*]

In English the topic of a sentence must have moved from within the sentence, thus a topic expression must correspond to a gap within the sentence. Chinese, however, doesn't need to mee such requirement. Chinese permits "gap-less" topics. This is the major reason that Chinese is sauid to be "topic prominent," as opposed to English-type languages, which are said to be "subject prominent."

(70) Fish, I like [*e*].
(71) *Fish, I like tuna.
(72) **魚，我喜歡** [*e*]
(73) **魚，我喜歡鮪魚**

A topic in the Chinese sentence can be licensed simply by some kind of "aboutness." This is not possible with English.

(74) **這場火，幸虧消防隊來得早**
(75) *This fire, it is fortunate that the fire fighters were here early.

To reach such "aboutness" effect, English has to make use of introducing elements.

(76) ***As to / talking about*** fish, I like tuna.

(77) ***As to / talking about*** this fire, it is fortunate that the fire fighters were here early.

There is a special type of topic construction in Mandarin Chinese traditionally called the "patient-subject sentence"**（受事主語句）**. This kind of sentences give rise to ambiguity.

(78) **雞吃了**
'The chicken has eaten [something]' or
'The chicken has been eaten [by someone].'

This has to do with the property of *free argument drop* of Chinese (a common property to East Asian languages—Chinese, Japanese, Korean, etc.). In such cases the argument position is filled with the empty pronominal PRO.

(79) **雞吃** [*e*] **了**
(80) **雞**$_i$**，**[*e*] **吃** [*e*]$_i$ **了**

Relativization
Chinese permits "relativization out of a relative clause." This is not possible for English. Relative clause is a syntactic island; namely, nothing can be moved out of a relative clause in Engllish. The fact that an element can be relativied (i.e. moved) out of a relative clause in Chinese indicates that relativization in Chinese may not involve syntactic movement, but perhaps involve control of PRO.

(81) [[[[***e***$_i$ **讀** ***e***$_j$] **的書**$_j$] **很難懂的**] **那個人**$_I$]
(82) **那幾篇** [[e_i **寫** e_j] **的人很聰明**] **的文章**
(83) *the person$_i$ who [the books$_j$ which [e_i reads e_j] are difficult]

Object shift
In Mandarin Chinese, an object can undergo shifting to move to the pre-verbal position.

(84) **張三吃了那個漢堡了**
(85) **張三那個漢堡吃** [***e***] **了**
(86) **張三一隻雞吃了** [***e***] **三天**

The* lian…dou… *construction

(87) **張三連我的錢都偷 [*e*] 了**

The* ba*-construction

(88) **張三當了李四**
(89) **張三把李四當了 [*e*]**

The *ba*-construction is a very interesting construction and it has attracted many researchers attention. The questions that have been studies include whether movement is involved, the status of the morpheme *ba* (verb or preposition), the phenomenon of retained object, the predicates that can be used in the construction, the semantic characteristics of the construction, etc.

The passive construction

(90) **張三當了李四**
(91) **李四被張三當了 [*e*]**

The *bei*-construction is also subject to hot discussion. One particularity of the passive construction in Mandarin Chinese is that it doesn't really need to have a gap. This is not possible for the *ba*-construction.

(92) **張三被李四打出一支全壘打**
(93) ***李四把張三打出一支全壘打**

VP Ellipsis, Gapping, and Sluicing

VP Ellipsis is possible in Mandarin Chinese only when there is an overt auxiliary verb.

(94) **張三去台北，李四也去台北**
(95) ***張三去台北，李四也 [*e*]**
(96) **張三會去台北，李四也會去台北**
(97) **張三會去台北，李四也會 [*e*]**

Gapping is generally forbidden in Mandarin Chinese, except when the object is a numeral expression.

(98) **張三吃蘋果，李四吃漢堡**

(99) ***張三吃蘋果，李四** [*e*] **漢堡**

(100) **張三吃兩個蘋果，李四吃三個漢堡**

(101) **張三吃兩個蘋果，李四** [*e*] **三個漢堡**

Summary: In general transformations in mandarin Chinese perform very different properties compared with those in English.

5. Sentence structure and subject

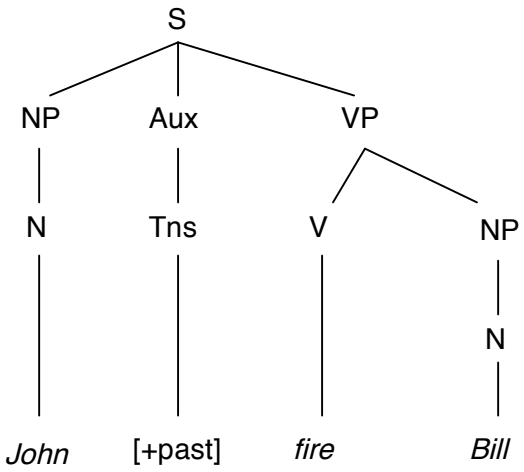
Sentence in English

A sentence in English is defined as the domain of a tense. In a different way of speaking, a sentence in English is a linguistic expression with a subject and a tense. Since the tense must be realized on a verb, so a sentence in English can be also defined as a linguistic expression with a subject and a main verb, the main verb being a tense-inflected verb.

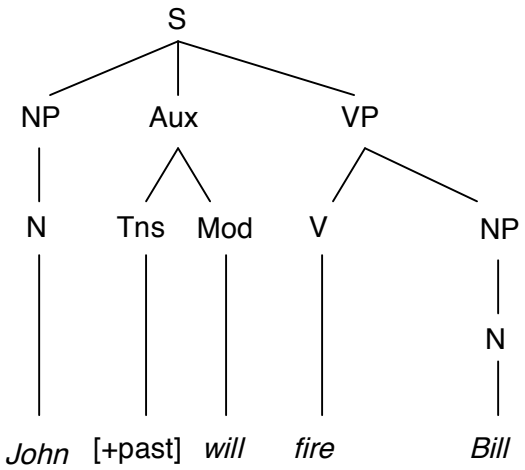
Tense in English

Traditionally, tense has been regarded as an instance of Aux. But in fact more fine-grained distinctions can be made.

(1) *John fired Bill*



(2) *John would fire Bill*



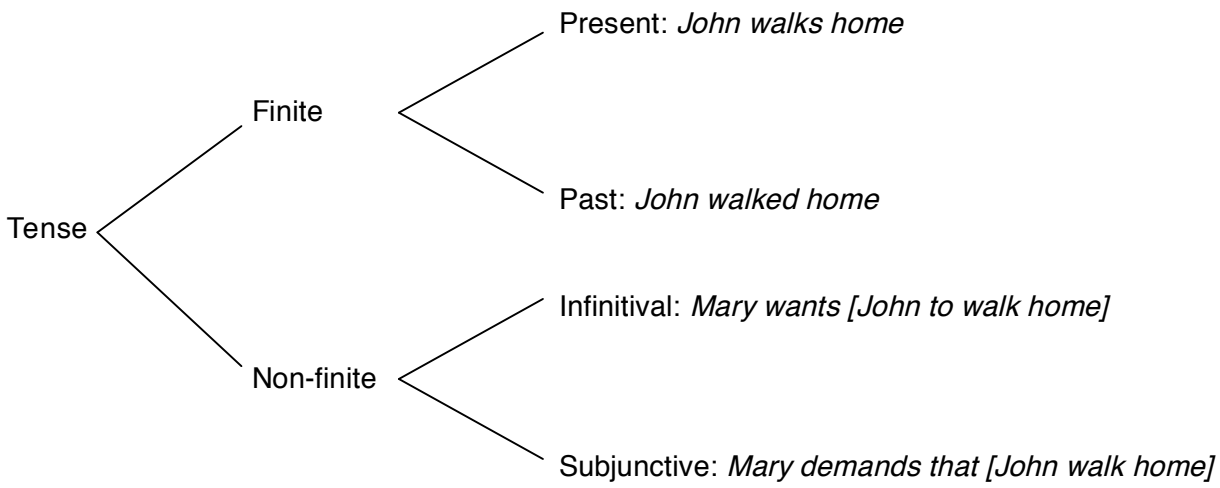
Notice that Tense, in such treatment, amounts to an *independent syntactic category*. There is evidence that this view is indeed correct. The following examples show that tense seems to be "floating" around seeking to "hook" on the first verbal element of the predicate.

(3) a. John walked home.
b. John would walk home.
c. John had walked home.
d. John was walking home.
e. John would have walked home.
f. John would be walking home.
g. John would have been walking home.
h. *John will had walked home.
i. *John will was walking home.
j. *John will had been walking home.
k. *John will have was walking home.

In an English sentence, there is one and only one tense. And since tense has to hook up with a verbal element, the verbal element that is hooked up with tense is the main verb of the sentence. If an English sentence contains more than one verb, all verbs not hooked up with tense must be transformed into different participle forms (or relocated into a different clause) to be interpreted. In this sense, tense looks like the core element of the English sentence. We may even regard an English sentence as a projection of tense – S = TP (Tense Phrase).

Tense in English may assume different values.

(4)



(5) The value of tense in English

Past:	The event time occurs prior to the speech time.
Present:	The event time is co-extensional with the speech time.
Subjunctive:	The event time is not temporally located (the *irrealis* mood).
Infinitive:	The event time doesn't have a value.

There is no future tense in English. *Will* is an *irrealis* modal; it is not a tense. Thus sentences with *will* cannot be said to have future tense; they are sentences with present tense containing the irrealis modal *will*.

Notice that the infinitival *to* is a tense morpheme (or more accurately, tense + modal).

(6) a. John promised Mary [that Bill would walk home].
b. John promised Mary [for Bill to walk home].
c. John told Mary [that she should walk home].
d. John told Mary [__ to walk home].

(7) a. John expects Mary to have walked home by 5:00.
b. John expects Mary to be walking home at 5:00.
c. John expects Mary to have been walked home before.
d. *John expects Mary to will walk home.

So infinitival clauses are complete clauses as well; they have subject (PRO or the trace resulting from raising) and tense (that is, *to*).

Subject in English

Now we see why tense is one of the defining element for a sentence in English – a sentence in English is a Tense Phrase, TP, and, since the tense morpheme needs to hook up with a verb, a sentence in English has one and only one main verb (namely, tense-inflected verb).

But what about the subject? Tense in English does not only hooks up with a verb; it also agrees with the subject.

(8) a. He play***s*** basketball.
b. They play bascketball.
c. He / they play***ed*** basketball.

Tense determines the inflection of the verb; but such inflection is also affected by the subject (singular or plural, for example). This is so because tense has a need to agree with the subject. This is what we call the *Subject-Tense Agreement.* This is usually understood as subject-verb agreement, but in fact it should be an agreement with tense, not the verb. The evidence is the inflection of the verb in subjunctive tense:

(9) a. John demands that Mary arrive at 8:00.
b. *John demands that Mary arrive***s** at 8:00.

A verb in subjunctive tense cannot inflected. If the subject agrees with the verb directly, this shouldn't have been the case. On the other hand, if the subject agrees with the tense, then we can say that the inflection of the verb is determined by the tense, and the ungrammaticality of (9b) is expected.

Since tense has a need to agree with something, a sentence in English must contain an overt subject for the tense to agree with. This is why a sentence in English must have a subject.

Topic and subject in Mandarin Chinese

Topic and subject

Two types of sentence structure:

(10) Topic-comment

大象，鼻子很長

魚，我最喜歡吃鮪魚

老王啊，真的是英雄不怕出身低

這場火，幸虧救火隊來的早

(11) Subject-predicate

這朵花很紅

狗有四條腿

老王蓋了兩棟房子

老王笑了

What is topic, and what is subject? The traditional conception:

Topic: What the sentence is about; something that the hearer already knows about and is further elaborated in the following comment.

Subject: The NP that has a "doing" or "being" relationship with the verb of the sentence; the NP that is ascribed the property represented by the predicate (typically a VP).

Chinese is said to be a "topic-prominent" language; English is said to be a "subject-prominent" language. While Chinese has very productive Topic-Comment type of sentence structures, English only allows Subject-Predicate type of sentence structure.

Li and Thompson's (1981) 4 types of sentences in Chinese

1. Sentences with both subject and topic:

(12) **那隻狗，我已經找到了**

小李的爸爸，我聽說是個很有錢的人

2. Sentences in which subject and topic are identical:

(13) **我喜歡吃蘋果**

老王逃走了！

3. Sentences with a topic but no subject:

(14) **那本書出版了** (cf. **老王出版三本書了**)

房子蓋好了 (cf. **老王把房子蓋好了**)

李四打敗了　　(cf. **張三打敗李四了**)

4. Sentences with no topic:

(15) **沒看過**　　(cf. **我沒看過熊貓**)
下雨了　　(cf. **雨下了三天／得很大**)
來了三個陌生人　　(cf. **有三個陌生人來了**)

Redefine topic and subject: A new conception based on structural positions

To start with, notice that subjects in English do not always bear a semantic import. Subject in English is just a *structural position*.

(16) a. *John is tall*
⇒ *John* has the property of being tall.
b. *John went to Taipei yesterday*
⇒ *John* is committed to the action of going to Taipei yesterday.
c. *There is a man in the classroom*
× ⇒ *There* has a property of being a man in the classroom.
d. *It rained yesterday*
× ⇒ *It* is committed to the event of raining yesterday.
e. *It is important to study English*
× ⇒ *It* has the property of being important to study English.
f. *To the town comes Santa Claus*
× ⇒ *To the town* is committed to the event of the coming of Santa Claus

These examples indicate that the subject of an English sentence is not always a receiver of a property or the "doer" of an action. It can be just a position occupied by semantically empty elements, such as *there* and *it*, or occupied by a locative expression moved from inside the sentence (e.g. *to the town*).

So, what is subject? The subject of a sentence, in English and in Chinese, is the element that occupies the highest position of the S that agrees with the tense of the sentence.

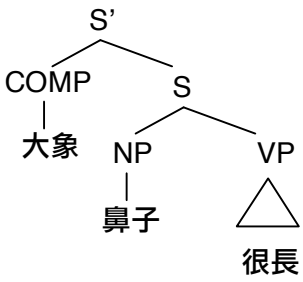
What is topic? From a structural point of view, a topic is an element that appears in the COMP position of S'.

Analyses

Subject: the element dominated by the node S.

Topic: the element(s) dominated by the node S'.

(17)



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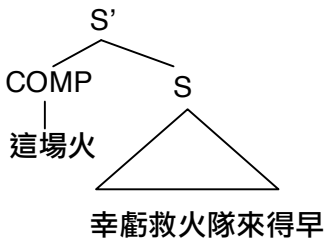

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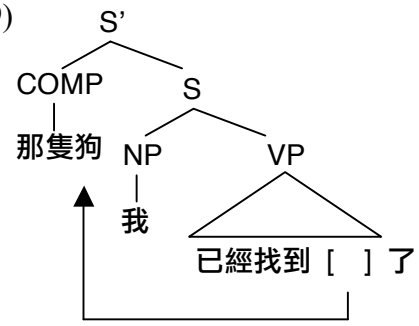

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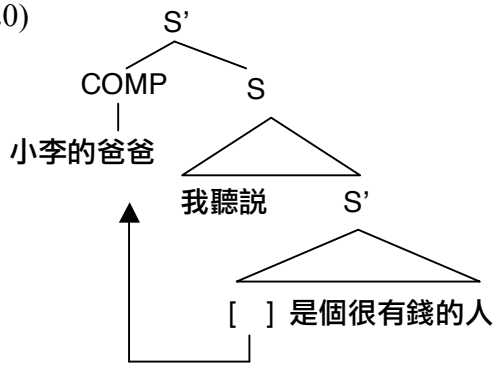

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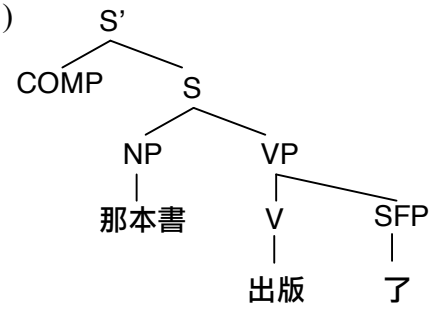

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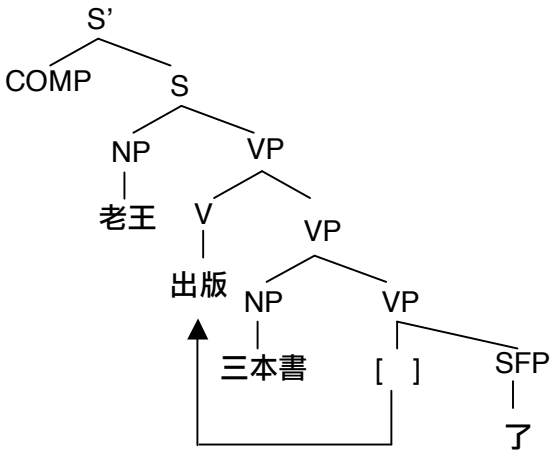


Chinese is a PRO-drop language

In English PRO can only occur in the subject position of infinitival clauses (that is, the *to* clauses),

in Chinese it can occur in virtually any position.

(23) *John wants to go home* ⇒ [$_{S'}$ John wants [$_{S'}$ PRO to go home]]
John bought a book to please to Mary ⇒ [$_{S'}$ John bought a book [$_{S'}$ PRO to please Mary]]
To drive a truck can be dangerous ⇒ [$_{S'}$ [$_{S'}$ PRO to drive a truck] can be dangerous]
**For John to buy can be dangerous* ⇒ [$_{S'}$ [$_{S'}$ For John to buy PRO] can be dangerous]

(24) Q: **張三看見李四了嗎？**
A: (a) **張三看見李四了**
(b) **張三看見了** ⇒ [**張三看見** PRO **了**]
(c) **看見李四了** ⇒ [PRO **看見李四了**]
(d) **看見了** ⇒ [PRO **看見** PRO **了**]

(25) Q: *Did John see Mary?*
A: (a) *Yes, John saw Mary*
(b) *Yes, John/he did*
(c) **Yes, John saw*
(d) **Yes, saw Mary*
(e) **Yes, saw*

Phonetically empty subject

Some verbs, in particular verbs of appearance and verbs of existence, permit phonetically empty subject that denotes understood time/location.

(26) **下雨了** / **台北下雨了** / **昨天下雨了** ⇒ [$_{S'}$ COMP [$_{S}$ { PRO / **台北** / **昨天** } **下雨了**]]

(27) **來了三個陌生人** ⇒ [$_{S'}$ COMP [$_{S}$ PRO **來了三個陌生人**]]
鎮裡來了三個陌生人
昨天來了三個陌生人

(28) **有三個陌生人來了** ⇒ [$_{S'}$ COMP [$_{S}$ PRO **有三個陌生人來了**]]
鎮裡有三個陌生人來了
昨天有三個陌生人來了

(29) (**昨天** / **老王家**) **發生兇殺案了！**
街上 / *PRO / ***昨天** **出現了一隻大怪獸**

高速公路上/ *PRO / *昨天 開著一排坦克車
這座湖裡 / *PRO / *十年前 藏著一個大寶藏
這座叢林裡 / *PRO / *兩百年前 存在著很多奇異的生物

Conclusion: All sentences in Chinese have subject. The subject in a Chinese sentence may be phonetically overt or covert.

So, what is the real difference between English and Chinese?

English has a morphological tense, which needs to agree with something, namely the subject. This is why an English sentence is defined as the minimal linguistic expression with a subject and a tense (a tense-inflected main verb). This is also why English is subject-oriented.

Chinese is a PRO-drop language. The empty pronoun PRO can appear in virtually everywhere. Thus to make the meaning of a sentence clear one often needs to resort to a topic in the context to disambiguate the sentence. This is one major reason that Chinese is topic-oriented.

This doesn't mean that a Chinese sentence doesn't have to have a subject. A Chinese sentence must have a subject; this is required by the argument structure of the verb—the verb *chi* 'eat' needs a eater and the thing to be eaten. These cannot be dispensed with. It's just that the empty PRO subject sometimes blurs the subject requirement.

Also, Chinese doesn't have morphological tense, and therefore no subject-tense agreement. Since there is no agreement, the subject of a Chinese sentence doesn't have to be overtly present.

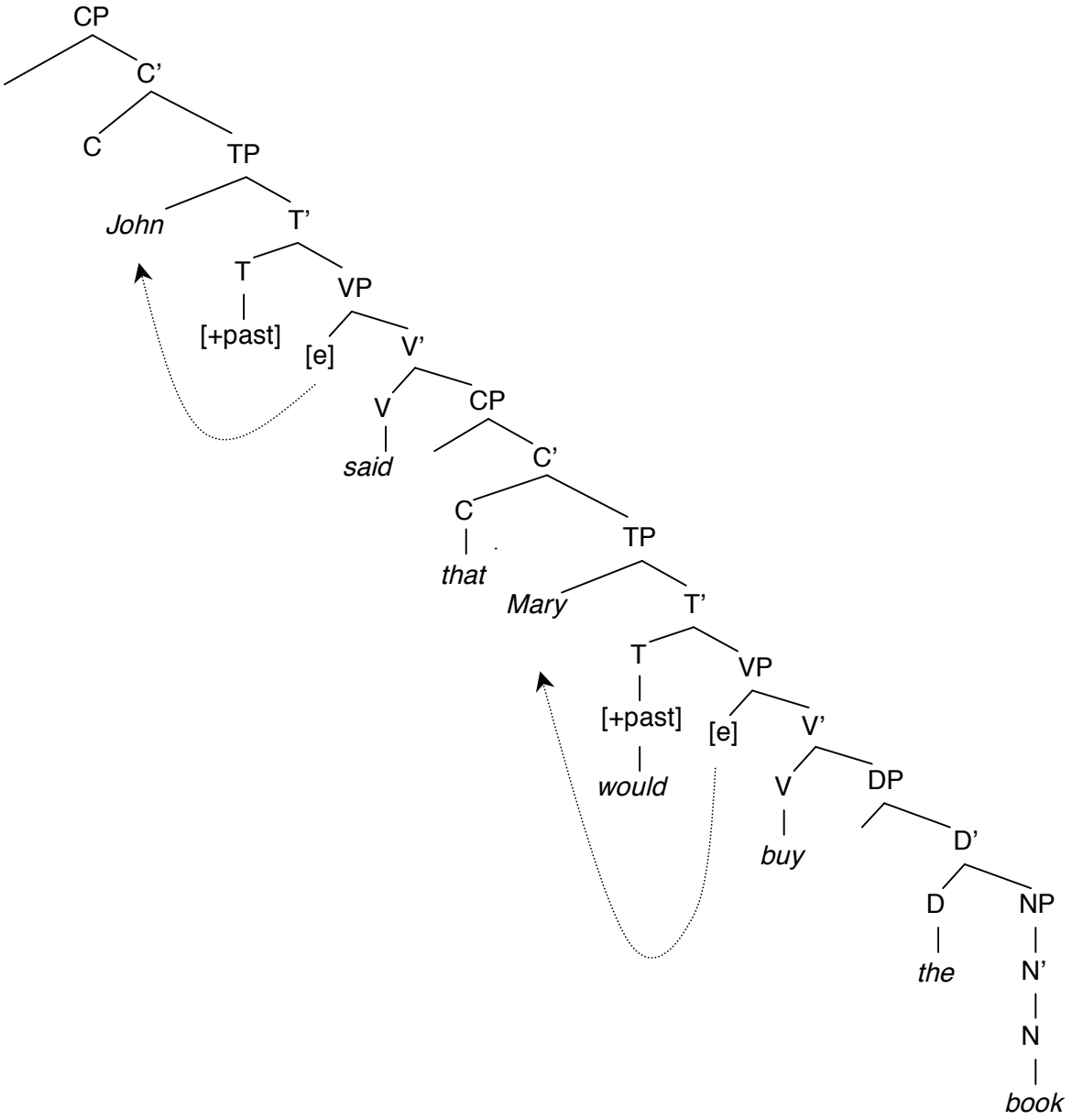
Sentence structure in Mandarin Chinese

Syntactic structure in current syntactic theory

Sentence structure: New categories, C (complementizer), T (Tense), and D (determiner).

(30) CP → Spec C' TP → Spec T' DP → Spec D'
C' → C TP T' → T VP D' → D NP

(31) *John said that Mary would buy the book.*



Some important points

A. The VP-internal Subject Hypothesis. We assume that the subject of the sentence is base-generated (that is, inserted by Lexical Insertion at D-Structure) at Spec of VP, and then moves up to Spec of TP. This hypothesis is based on the following thought: the subject argument of the sentence is part of the lexical properties of the main verb of the sentence, thus it is natural to assume that the subject argument is based-generated within the maximal projection of the main verb. The subject raises to Spec of TP to agree with Tense (T). We assume that all cases of raising in English (such as *It seems that John is rich* vs. *John seems to be rich*) are triggered by the need of Subject-Tense agreement.

B. Even though C may have anything that occupies it, CP is always projected for a clause structure. Spec of CP is the position for the *wh*-phrases when *wh*-movement applies.

C. We assume that the kind of structures as (31) hold in Chinese as well. That is, Chinese sentences have CP, TP, DP, and so on.

In summary, a sentence has three layers. The CP layer, where topic, mood and other speech-act elements occur; the TP layer, where the subject and the tense (whether morphological or not) occurs; the VP layer, where the main verb and the argument(s) (and perhaps other complements) occur.

Predicates in Mandarin Chinese

Types of VPs

There are three types of VP: intransitive, transitive, and ditransitive.

A. Intransitive

1. Adjectival

(32) **張三胖** **這朵花紅**
張三很胖 **這朵花很紅**
張三胖了 **這朵花紅了**
張三胖了三公斤 **這朵花紅了三天**
cf. **張三是胖** **這朵花是紅**

2. Copula

(33) Equational: **掃把星（就）是彗星**
美國現任總統是布希
Attributive: **這些錢是我的**
這輛車是1996**年生產的**
Affirmative: **老王是沒錢**
張三是一片熱誠（你卻冤枉他）
Presentative **明天是我的生日**
前面是一座廟

3. Others

(34) **老王睡在沙發上**
老王七點起起床
鳥兒在空中飛
張三在哭
電影開始了
cf. **老王跳在桌子上** ⇒ Goal
老王在桌子上跳 ⇒ Location

B. Transitive

(35) **張三吃了一碗牛肉麵**
張三批評了李四
老王喜歡小李
老王像他爸爸
老王怕鬼
cf. **張三把牛肉麵吃了** ⇒ *Ba* construction
張三牛肉麵吃了 ⇒ Object Shift construction
cf. **張三很擔心這件事**
張三對這件事一直擔著很大的心
老王在游泳
老王游了三個小時的泳
老王游泳游了三個小時
老王正在走路
老王走了很長的一段路
老王走路走得很累

C. Ditransitive

(36) **我送他一件禮物**
我寄了一封信給他
我介紹張三給李四
我給他打了一通電話
cf. **張三借了李四五百塊** ⇒ Ambiguous: source & goal
張三吃了李四一隻雞 ⇒ Source

張三讀了李四五本書 ⇒ Source

More on types of VPs: dynamic vs. static, permanent vs. transient

Verbal elements can be divided into two groups: dynamic verbs and static verbs

(37) Dynamic verbs

張三跑了

張三哭著

張三吃牛肉麵

張三的錢包掉了

金字塔存在了五千年

(38) Static verbs (adjectives)

張三很高

張三高李四三公分

張三喜歡李四

張三像他爸爸

張三在家

Notice that the distinction between dynamic verbs and static verbs does not correspond to the distinction between intransitive verbs and transitive (or ditransitive) verbs. Intransitive verbs can be dynamic or static; also, transitive verbs can be dynamic or static.

Verbs can also be distinguished in terms of whether they denote permanent properties or transient properties. Permanent properties don't change in time; transient properties change in time.

(39) Permanent properties

張三很高

張三像他爸爸

Transient properties

張三笑了

張三喜歡李四

To decide whether a verb denotes a permanent property of a transient property (that is, whether the property it denotes changes in time), we can use the *when*-clause as a test.

(40) When John smokes, he usually locks himself his room.

When John hits Mary, he usually locks himself in the room.
When John is happy, he usually locks himself in the room.
When John likes someone, he usually locks himself in the room.
*When John likes Mary, he usually locks himself in the room.
*When John resembles his father, he usually locks himself in the room.
*When John resembles someone, he usually locks himself in the room.

(41) **當老王抽煙時，他通常躲在屋子裡**
當老王打小李時，他通常躲在屋子裡
當老王開心時，他通常躲在屋子裡
當老王喜歡某一個人時，他通常躲在屋子裡
***當老王喜歡小美時，他通常躲在屋子裡**
***當老王像他爸爸時，他通常躲在屋子裡**
***當老王像某一個人時，他通常躲在屋子裡**

Complements in Mandarin Chinese

Types of complements in VP

Chinese has various types of complements. Complements are not necessarily arguments, though they have close semantic relationship with the (main) verb. This is why they are different from adjuncts (adverbials)

Descriptive: Introduced by the element *de*.

(42) **老王跑得很快**
老王吃牛排吃得很快 ⇒ Verb copying construction

Resultative: Also introduced by the element *de*.

(43) **老王跑得很累**
老王吃牛排吃得很累

Frequency: Introduced by the aspectual suffixed *le* (*le*1).

(44) **老王跑了三次**

老王吃牛排吃了三次
老王吃了三次（的）牛排

Duration: Also introduced by ***le***.

(45) **老王跑了三個小時**
老王吃牛排吃了三個小時
老王吃了三個小時（的）牛排

Goal: It can a *zai*-phrase or a *dao*-phrase. *Zai* and *dao* may not be prepositions; they can be verbs. Notice that *dao* may introduce a clausal structure which represents the "goal state" of the action.

(46) **老王跑到屋頂上**
老王吃牛排吃到桌子底下去了
老王跳在桌子上
老王跑到（小李）喘不過氣來
老王高到可以摸到天花板

VP: *Lai* and *qu* are aspectual verbs; they can take a VP as complement. Notice that some control structures look as if they involve VP complement, but in fact they don't.

(47) **老王去吃牛排了**
老王來買牛排
老王要吃牛排 ⇒ Obligatory control; ***not*** VP complement
老王希望吃牛排 ⇒ Non-obligatory control; ***not*** VP complement

S' (CP): Some verbs may take a full clause as complement. Whether the clausal complement denote a factual proposition depends on the semantics of the verb.

(48) **張三認為李四買了三本書** ⇒ Non-factive
張三說李四買了三本書 ⇒ Non-factive
張三很遺憾李四買了三本書 ⇒ Factive
張三知道李四買了三本書 ⇒ Factive

Purposive: Notice that the sentence-final directional *qu* is in fact a ***purposive marker***.

(49) **老王去買書了** ⇒ Serial verb construction (a V takes a VP as complement)
老王買書去了 ⇒ Purposive construction

(50) **老王去台北買書了**
***老王買書去台北了**
老王去買書
***老王買書去** (cf. **我們上學去**; but ***老王上學去**)
老王來買書（了）
老王買書來了
***老王買書來**
老王來台北買書（了）
***老王買書來台北了**
老王不去買書（了）
老王沒有去買書
***老王不／沒有買書去**

Aspectual directional: *Qilai* also is ***not*** a real directional complement, but represents the bound of an event.

(51) **張三開心了起來**
張三對李四喜歡了起來
張三和他爸爸像了起來
張三跑／哭了起來
張三把牛肉麵吃了起來
張三把書買／*賣了起來
張三把蛋糕烤了起來
張三把房子蓋了起來
***張三把窗子打破了起來**
***張三把寶藏發現了起來**

Conclusion: Chinese is rich in complements; English doesn't have so many types of complements.

6. Aspects, modals, and adverbials

Aspects in Mandarin Chinese

What is aspect?

Aspect is the temporal property of a predicate.

(1) a. John ate an apple. (An apple-eating event exists; no aspect)
b. John was eating an apple. (An apple-eating event was going on; progressive aspect)
c. John has eaten an apple. (An apple-eating event was finished; perfect aspect)

There are two levels of aspect in Mandarin Chinese: the V-level aspect and the sentence-level aspect.

(2) 老王吃了漢堡了 (Perfect)
老王（正）吃著漢堡呢 (Progressive)

The V-level aspect

The post-verbal aspectual suffixes and the pre-verbal aspectual verbs

(3) -了 Perfective; completion of an action.
-著 Durative; continuation of an action
-過 Experiential; having the experience of undertaking an action
在 Progressive; progression of an action

Sometimes it is claimed that an aspect marker is some kind of "viewpoint" superimposed on a given verb:

(4) 張三吃了牛肉麵
張三吃著牛肉麵
張三吃過牛肉麵

張三在吃牛肉麵

But the fact is not so simple. Actually, there are selectional restrictions between the aspectual markers and the verbs. For example, -*le* can be suffixed to virtually any kind of verb, but the use of *–zhe* is much more restricted. *Zhe* cannot be suffixed to verbs of change. Furthermore, the verb to which *–zhe* is suffixed must denote actions that are initiated by human force. Also, -*guo* can only be suffixed to verbs that can be repeated. *Zai* can only be used with verbs that are initiated by human force.

(5) 老王吃了漢堡
老王踢開了門
火車到了
花紅了
牆上畫了一幅畫

(6) 老王吃著漢堡
*老王踢開著門
*火車到著
*花紅著
牆上掛著一幅畫

(7) 老王去過台北
*老王死過

(8) 老王在吃漢堡
*老王在踢開門
*火車在到
*花在紅
*牆上在掛一幅畫

The sentence-level aspect

Sentence-level aspects are represented by sentence-final aspectual particles: *le*, *ne*, and ∅.

(9) *Le*: Perfect; “new situation”, completion of the old situation and start of a new situation.
Ne: Progressive.
∅: Static aspect

(10) 老王吃漢堡了
老王吃漢堡呢

老王吃漢堡

A crucial difference between the V-level aspect and the sentence-level aspect is that, the V-level aspect is embedded in the event time of the predicate, but the sentence-level aspect is independent from the event time of the sentence.

(11) 1492**年，哥倫布發現了新大陸**
??1492**年，哥倫布發現新大陸了**
1493**年，哥倫布發現新大陸了**

∅ is a special aspect which we call the static aspect. It is the default aspect (that is, if a sentence doesn't have any overt aspect marker, we say that it has ∅ as the aspect). ∅ is associated with general properties, habits, scheduled events, or intentions.

(12)	**老王吃狗肉**	(Habit)
	老虎吃人	(General property)
	（老王明天計畫幹什麼？）老王去市場買菜	(Schedule event)
	（老王想吃什麼？）老王吃牛肉麵	(Intention)

Conclusion: Unlike English, which has only one layer of aspect (*have…en, be…ing*), Chinese has two layers of aspect.

Modals in Mandarin Chinese

Types of modals

Modals (namely, auxiliaries) can be classified into two general kinds: the epistemic modals and the deontic modals.

Epistemic modals: possibility, necessity

(13) **張三可能／應該回家了**
書可能／應該漲價了
那座橋可能／應該垮了
張三會回家
書會漲價

Deontic modals: obligation, ability, permission, volition

(14) **張三應該 / 必須 / 要 / 得回家**
書應該 / 必須 / 要 / 得漲價
那座橋應該 / 必須 / 要 / 得垮

(15) **老王能夠騎腳踏車**
***書能夠漲價**
But: **書能夠漲價，都是張三的功勞**
***那座橋能夠垮**

(16) **老王可以回家**
***書可以漲價**
But: **書（終於）可以漲價了**
***那座橋可以垮**

(17) **老王肯回家**
***書肯漲價**
***那座橋肯垮**

Multiple occurrences of modals in a Chinese sentence

Unlike English, which permits only one modal in a sentence, Chinese permits multiple modals in a sentence. Sentences with two modals are common in Chinese. Sentences with three modals are rare, though not impossible. Sentences with four modals are really uncommon, but some people (very few, though) think they are okay.

When multiple modals occur in a sentence, they occur in a fixed order.

(18) The order of modals:

$$\text{Epistemic} > \text{Obligation} > \left\{\begin{matrix}\text{Ability}\\ \text{Permission}\\ \text{Volition}\end{matrix}\right\}$$

(19)

張三可能必須來	***張三必須可能來**
張三可能可以來	***張三可以可能來**
張三可能能夠來	***張三能夠可能來**
張三必須可以來	***張三可以必須來**
張三必須能夠來	***張三能夠必須來**
張三能夠可以來	***張三可以能夠來**

(20) **張三可能必須能夠來**
張三應該必須可以來
張三可能必須能夠可以來

Modals and aspect

The epistemic modals are compatible with overt aspects, but they are outside the scope of the aspect. Namely, the aspect doesn't cover the modal.

(21) **書可能漲價** (A possibility exists that the book prices are raised)
書可能漲價了 (A possibility exists that the book prices has been raised)

Modals of obligation can occur with overt aspect, too, though they can fall within the scope of the aspect. We can use the adverb *yijing* 'already' as a test for the scope of the perfect aspect *le*, for example.

(22) **老王必須回家**
老王（已經）必須回家了
老王必須（已經）回家了

Modals of ability and permission fall within the scope of the aspect if the aspect is overt.

(23) **老王能夠 / 可以游泳**
老王（已經）能夠 / 可以游泳了
***老王能夠 / 可以（已經）游泳了**

Two special Aux in Chinese:

Two modals in Mandarin Chinese, *hui* 'will' and *yao* 'want', are special, because they have more than one meaning.

(24) **老王會游泳** (Ability)
老王會去台北 (Irrealis / Future)
熊冬天會冬眠 (Generic property)

(25) **老王要錢 / 回家** (Volition)
樹要倒了 (Irrealis / Future)

書要漲價　　(Obligation)

Properties of Aux in Chinese

According to Li and Thompson (1981)--

- A-not-A is OK;　　**老王能不能唱歌？**
  老王唱不唱歌？
- can be negated;　　**老王不能唱歌**
  老王不唱歌
- must be followed by a verb;　　**他能吃狗肉**
  ***他能狗肉**
- no aspectual marker;　　***他能了吃狗肉**
- no intensifier　　**他很能唱歌**　(acceptable to me!)
- cannot be nominalized　　***他是能的**
- cannot occur before subject　　***能他唱歌**　(but: **應該他唱歌**)
- cannot take an object　　***他能那件事**

Li & Thompson (1981) also mention other auxiliaries in Mandarin Chinese, but they may not be real modals. They can be just aspectual verbs or control verbs.

(26)　**情願　希望　想**　　**我情願做總統**
　　我希望去美國
　　我想喝酒

(27)　**繼續　需要　表示**　**我們繼續工作**
　　我們需要駕駛飛機
　　我們表示贊成他的意見

Adverbials in Mandarin Chinese

Adverbials in Chinese are always pre-verbal; they cannot be post-verbal.

(28)　**昨天張三買了一本書**
　　張三昨天買了一本書
　　***張三買了一本書昨天**

(29)　**當我進門的時候，老王正在睡覺**

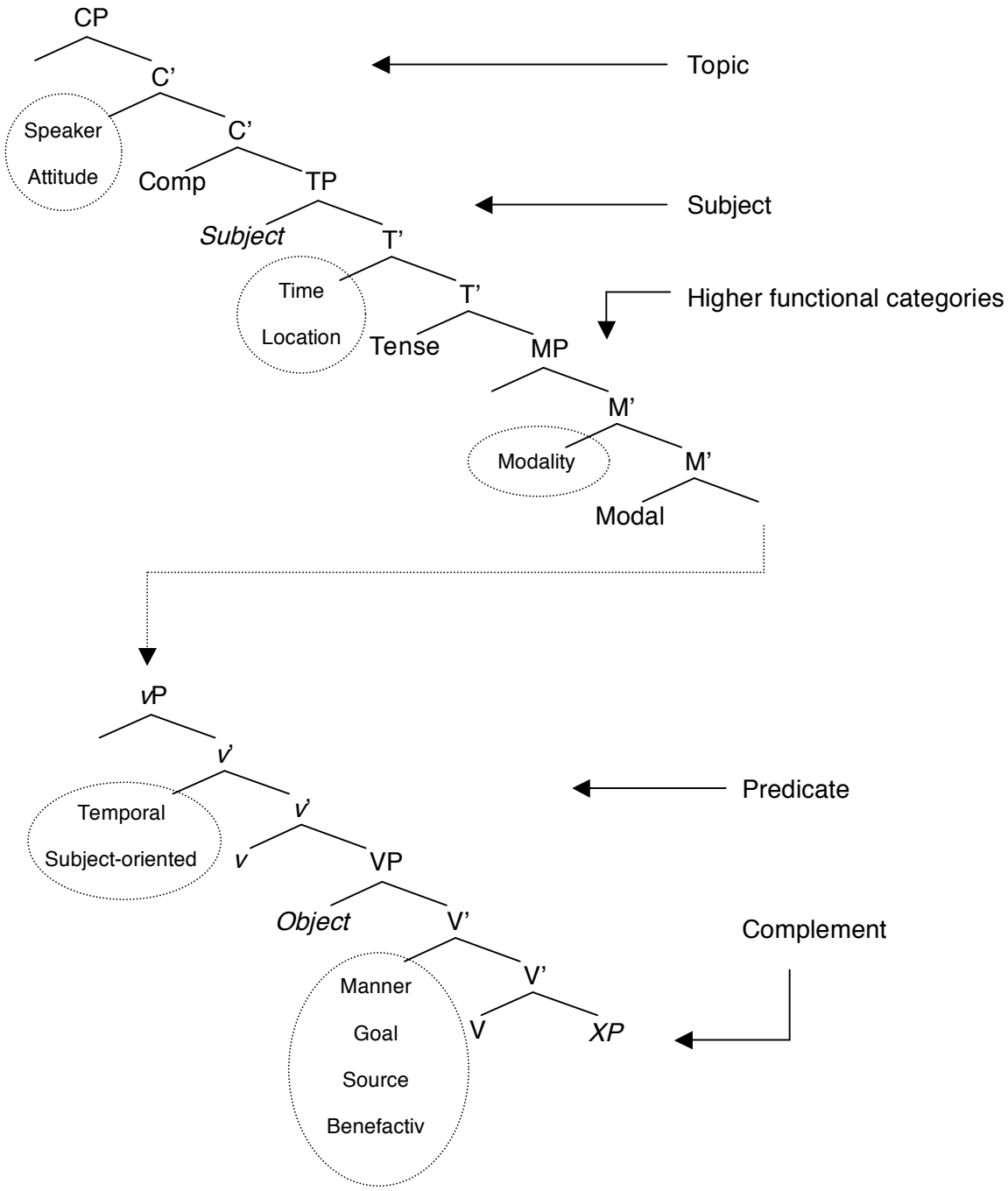
***老王正在睡覺，當我進門的時候**　　(Possible only under “inversion” reading)

Hierarchy of adjuncts (adverbials & PP (= coverbs))

(30)　Speaker attitude > $\left\{\begin{matrix}\text{Time}\\ \text{Location}\end{matrix}\right\}$ > Modality > $\left\{\begin{matrix}\text{Temporal}\\ \text{Subject - oriented}\end{matrix}\right\}$ > $\left\{\begin{matrix}\text{Manner}\\ \text{Goal}\\ \text{Source}\\ \text{Benfactive}\end{matrix}\right\}$

(31)　**老實說，老王 說不定 已經 很小心地 從小李那裡 狠狠地 敲了一筆錢。**
　　老實說，老王 說不定 已經 從小李那裡 很小心地 狠狠地 敲了一筆錢。
　　***老實說，老王已經　說不定　很小心地 從小李那裡 狠狠地 敲了一筆錢。**
　　***老實說，老王　從小李那裡　說不定 已經 很小心地狠狠地 敲了一筆錢。**

Basic sentence structure of Mandarin Chinese



7. The Ba- *and* Bei-*Constructions*

The *ba*-construction

The *ba*-construction is also known as the disposal construction. It is called the *ba*-construction because the morpheme *ba* occurs in it. It is called the disposal construction because usually its meaning is about an agent performs some action and thereby affects upon something. Thus it is sometimes called the affectedness construction.

Properties of the* ba-*construction
Object preposing (at least apparent).

(1) 張三打了李四
張三把李四打了
*張三把李四打了王五

The *ba* NP must be definite or specific; it cannot be indefinite.

(2) 張三打了李四／那個人／對方／三個人
張三把李四／那個人／對方／打了一頓
*張三把三個人打了一頓

Strong transitivity. Specifically, the *ba* predicate must denote a *bound event* (that is, an event that has an end point). As a consequence, *le* is typically present in the *ba* predicate.

(3) 張三把李四打了
*張三把李四打
*張三把李四喜歡了
But: 張三把鑰匙忘了

Retained object: Sometimes *retained objects* are possible in the *ba* construction, in particular the inalienable objects.

(4) **張三把橘子剝了皮**
張三把門塗上油漆
張三把牛肉麵吃了一半
張三李四打斷了手
李寡婦把個兒子死了
But: ***張三把李四打了爸爸**

***The grammatical status of* ba**
It is not a preposition, since it cannot be preposed

(5) **張三在台北買了一本書**
在台北，張三買了一本書
張三用刀切了三個蘋果
用刀，張三切了三個蘋果
張三把強盜打了
***把強盜，張三打退了**

Historically, *ba* was a verb, and it still can be used as a verb.

(6) **醉把茱萸仔細看（杜甫　九月藍田崔氏庄）**
禹親把天之瑞令以征有苗（墨子 非攻下）
無把銚推耨之勞，而有積粟之實（戰國策 秦策）
每冬月，四更竟，即敕把燭看事（南史 梁武帝紀）
莫將天女與沙門，休把眷屬惱人來（敦煌變文）
把著權力不放
把大款
大把大把的鈔票

Structural tests indicate that the post-*ba* elements constitute a constituent. This makes ba look like a

verbal head taking a clausal complement.

(7) **張三把李四打了一拳，王五踢了兩腳。**

Conclusion: *ba* looks more like a verb.

Object predication in the* ba *construction

The *ba* construction is a resultative construction, since its predicate must have an end point – the *resultative state*.

(8)

張三吃牛肉	***張三把錢找了**	***張三把車開了**
***張三把牛肉吃**	**張三把錢找到了**	**張三把車開走了**
張三把牛肉吃了	***張三把李四嚇了**	
張三把牛肉吃光 / 吃完 / 吃掉了	**張三把李四嚇哭了**	

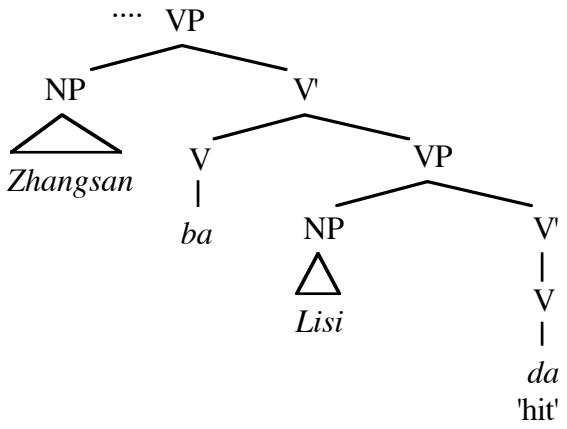
Object predication: The resultative state of the ba predicate denotes the resultative state of the object, not the subject.

(9)

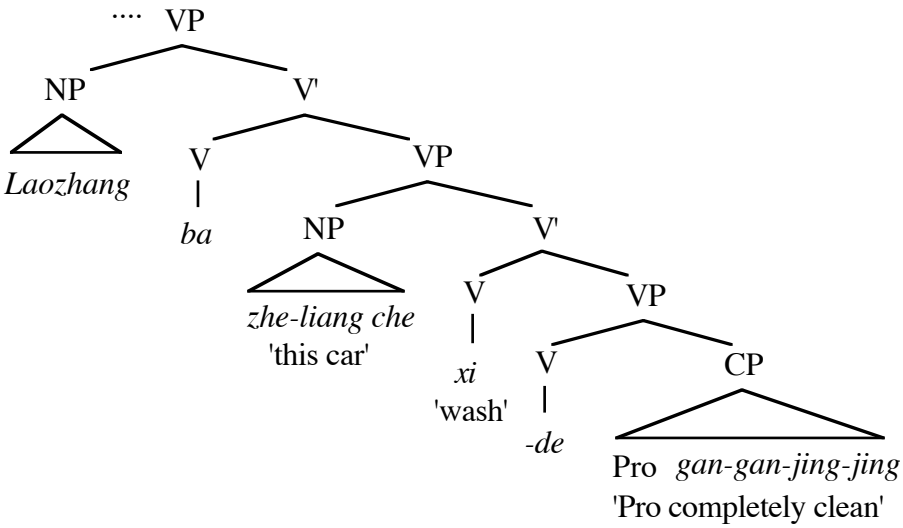
張三騎壞了摩托車 (**張三騎摩托車 ⇒ 摩托車壞**)
張三騎膩了摩托車 (**張三騎摩托車 ⇒ 張三膩**)
張三把摩托車騎壞了
***張三把摩托車騎膩了**
張三說服李四去當兵 **(張三$_i$說服李四$_j$ [PRO$_j$ 去當兵])**
張三答應李四去當兵 **(張三$_i$答應李四$_j$ [PRO$_i$ 去當兵])**
張三把李四說服去當兵
***張三把李四答應去當兵**
張三追李四追得一身是汗 **(張三一身汗是汗or李四一身是汗)**
張三把李四追得一身是汗 **(*張三一身汗是汗, but李四一身是汗)**

Structural analysis:

(10) **張三把李四打了**



(11) **老張把這輛車洗得乾乾淨淨**



According to such analysis, the *ba*-construction doesn't really involve object-preposing; the object is in the pre-verbal position to start with.

The *bei*-construction

Properties of the* bei *construction

Preposing of "logical object," demotion of "logical subject"

(12) **張三$_1$打了李四$_2$** *Mary$_1$ hit John$_2$*
李四$_2$被張三$_1$打了 *John$_2$ was hit by Mary$_1$*

(*But see "Retained object"*)

Adversity: The *bei* construction usually conveys an "adversative" (negative) meaning.

(13)	張三稱讚李四	?李四被張三稱讚
	張三寫了給李四的那封信	*給李四的那封信被張三寫了
	張三痛罵李四	李四被張三痛罵
	張三撕了給李四的那封信	給李四的那封信被張三撕了
	張三看見了李四 (*neutral*)	張三被李四看見了 (*Negative*)
	But: 張三被很多人喜歡	
	這輛車被很多有名的人開過	

Disposal (or transivity): It seems that the *bei* predicate has to meet some sort of transitivity requirement too, like the *ba* construction. But the transitivity requirement for the *bei* predicate doesn't seem to be as strong that for the *ba* predicate. One possibility is that, the bei predicate doesn't have to denote a bound event.

(14)	張三討厭李四	?李四被張三討厭
		李四被張三討厭了
	張三恨李四	*李四被張三恨
		*李四被張三恨了
	張三打破了窗子	窗子被張三打破了
	張三喝光了汽水	汽水被張三喝光了

Retained object: The *bei* construction appears to permit a wider range of retained objects than the *ba*-construction.

(15)	老王被打斷了腿	cf. 張三把老王打斷了腿
	一條牛被剝了兩層皮	老王把這條牛剝了兩層皮
	老王被搶了錢	*張三把老王搶了錢
	老王被犯人逃走了	*犯人把老王逃走了
	張三被老王坐在前面，什麼也看不到	*老王把張三坐在前面，張三什麼也看不到
	日本隊被中華隊打出一支滿分全壘打	*中華隊把日本隊打出一支滿分全壘打

*張三被李四死了爸爸　　*李四把張三死了爸爸
*張三被李四打了王五　　*李四把張三打了王五

Cf. **王勉死了父親**

Bei-NP omission:

(16) **犯人被警察抓到了** (Long passive)
水被李四喝光了
犯人被抓到了 (Short passive)
水被喝光了
老王被捕了 (Lexicalization; idiom)
老王被俘了

***The grammatical status of* bei**

Is *bei* a preposition like *by* in English? It doesn't seem so. Typically, the complement NP of a preposition in Chinese cannot be omitted.

(17) **張三對李四鞠躬**
*張三對鞠躬
Mary hot John
**John was hit by*

Also, like *ba*, *bei* was a verb, though it is hard to find it used as a verbal element in modern Mandarin.

(18) **澤被生民（荀子臣道）**
寡人不祥，被於宗廟之祟（戰國策齊策）
處非道之位，被眾口之譖（韓非子）
被甲上馬（史記 廉頗藺相如列傳）
身被刑戮（史記 魏豹彭越列傳）
被汙惡言而死（史記 酷吏列傳）

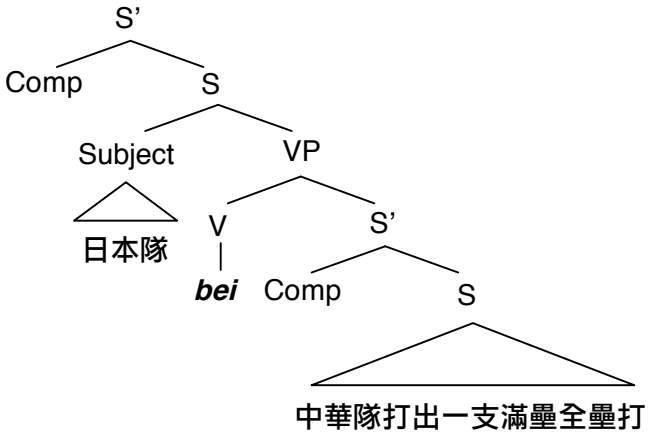
Structural tests also show that *bei* seems to be a head taking a clausal complement.

(19) **張三被李四打了一拳，王五踢了一腳**

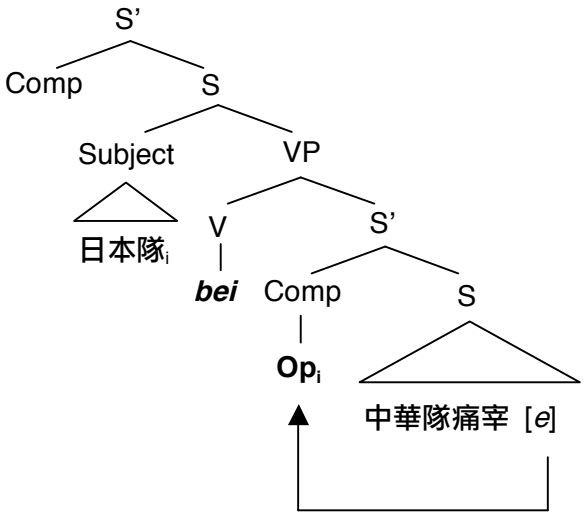
Furthermore, the fact that *bei* can take a complement which does not host a gap indicates that *bei* can be a verb taking a clausal complement (e.g. **中華隊被[日本隊打出一支三分全壘打]**).

Conclusion: *Bei* is a verb.

(20)



(21)



Notice that if **中華隊** is replaced by a PRO, then we get a short passive structure. Also notice that Op, a phonetically null operator, is like an invisible *wh*-phrase co-indexed with an antecedent for fixation of reference.