

A Note on Huang's Head-Final Convention in Chinese

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Abstract

This paper addresses the empirical problems in Huang (1982), in which he argues for a (Chinese-)specific word order convention, the Head-final Convention, to rule out a range of structures as ill-formed. This convention has to date not been seriously challenged in the literature on Chinese syntax¹. The principal purpose of this paper is to demonstrate the inadequacy of this convention through a detailed examination of relevant data. It also opens up questions concerning Chinese word order that call for more satisfactory solutions.

1 Introduction

One of the major issues in generative grammar is how to give a principled account of the configurational structure of natural language. To put it more precisely, it is not enough just to formulate a set of phrase structure rules that are capable of generating all the well-formed sentences of a particular language, as such rules are merely descriptive devices that are highly language-specific. Ideally speaking, a language-universal grammar should be able to give a minimal but elegant characterization of the syntactic structures of all languages, while the specific properties of word order and constituent structure of individual languages are captured by interaction of the subsystems of principles of UG with a small cluster of parametric properties of a particular language.

The first goal, i.e. a general characterization of the syntactic structures of all languages, has been achieved by X-bar syntax. The two simple rules in

¹I am greatly indebted to Wynn Chao, Ruth Kempson, and Deirdre Wilson for giving detailed comments on the first draft of this paper and for their unfailing encouragements on my research work. I am also grateful to the members of the SOAS Chinese Syntax Seminar for their contributions and comments: Dave Bennett, Wynn Chao, Seranea Tsang, and Xianfu Yu. Errors are, of course, all mine.

¹See Li, A (1990) for a cursory discussion on this convention.

(1) can virtually generate all the possible sentences of any human language, disregarding for the time being the particular ordering of the elements²:

- (1) (a) $X' = X X''^*$
 (b) $X'' = X''^* X'$

The central thesis of X-bar syntax is that any phrase XP contains a head X, which belongs to the same category as its projected phrase X'', together with a complement and a specifier, as is illustrated in (2), order inconsequential:

- (2)
- $$\begin{array}{c}
 X'' \\
 / \quad \backslash \\
 Y \quad X' \\
 \quad / \quad \backslash \\
 \quad X \quad Z
 \end{array}$$
- (Y = specifier; Z = complement)

The claim that every XP is an endocentric structure obligatorily containing a head among other elements captures the fact that no rules will generate elements that are absolutely incompatible with the structures of natural languages, such as (3):

- (3) (a) $AP \rightarrow B' C^*$
 (b) $B' \rightarrow D^*$

X-bar theory also provides us with a mechanism for making an initial prediction on the ordering of constituents and words, on assumption that these elements do observe certain orders. With (1) and (2), we have at least two possible ways of concatenating the elements: head-initial or head-final. But further predictions on word order, within the present framework of GB syntax, have to be made with reference to a particular language and specific phrasal

²See Chomsky (1986:3). X^* stands for zero or more occurrences of some maximal projection and $X = X^0$. X in the same string can denote different syntactic categories. Huang's formulation (1982:34) uses different symbols to represent different categories, as shown in (i); while Li (1990:2) gives a more explicit formulation by incorporating into it the functional implications of X-bar theory, given here as (ii). Any of these three formulations will serve my purpose well. I will therefore use them interchangeably to suit actual exposition.

- (i) $X^0 \rightarrow YP^* X^{n-1}$
 (ii) $X'' \rightarrow \text{SPEC } X'$
 $X' \rightarrow X \text{ COMP}$

categories in that language. English, for example, is generally a head-initial language, as is shown in (4) and (5):

- (4) (a) NP S
 (b) [NP { NP PP }]
 (c) [VP V NP (Y*)]
 (d) [PP P NP]
- (5) (a) the man { that I saw yesterday }
 (b) in black suit
 (c) beat the drum / give him the book
 (d) inside the dragon

However, the language does have some other structures that appear to be head-final, as in (6) and (7):

- (6) (a) [NP AP N']
 (b) [AP ADVP A']
 (c) [VP ADVP V']
- (7) (a) big apple
 (b) extremely unpleasant
 (c) hardly sleep

To summarise, English exhibits both head-initial and head- final word order in different phrasal categories.

(8) *English:*

	Head-initial	Head-final
NP	+	+
VP	+	+
AP	-	+
PP	+	-

(8) also implies the possibility of a word being both head-initial and head-final.

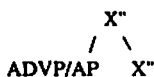
- (9) (a) the red *apple* that John ate yesterday
 (b) hardly *see* anything

Now let us have a look at Chinese. Chinese exhibits both types of word order as well, having its own idiosyncratic distributions:

Head-final:

- (10) (a) $[_{NP} [\text{AP N}']]$
 (b) $[_{VP} \text{ADVP V}']$
 (c) $[_{AP} \text{ADVP A}']$
 (d) $[_{PP} \text{NP P}']^3$
- (11) (a) (i) hong shubao
 red bag
 (ii) Zhangsan zuotian mai de (hong de/ta hen xihuan de)
 shubao
 Zhangsan yesterday buy DE1 (red DE1/he very like DE1
 bag
 "the bag that Zhangsan bought yesterday (which is
 red/which he likes very much)"⁴
- (b) hen kuai de pao
 very fast DE2 run
 "run very fast"

³I have adopted a more inclusive approach to the study of word order in Chinese. I assume that ADVP and AP are part of an NP/VP structure. Hence I do not treat them as adjunction structures:



⁴It is important for non-native speakers to distinguish the three uses of *de* in Chinese: the possessive marker, the state/resultative marker, and the adverbial marker. Each of these uses of *de* has a separate character. Although they are usually pronounced in the same way, they can be differently pronounced when the speaker feels the need to make it clear which *de* he actually means. The possessive marker is emphatically pronounced as *de(55)*; the state/resultative marker as *de(35)*; and the adverbial marker as *di(51)*. I will follow the convention in English linguistic papers on Chinese and annotate the different *des* simply as *DE*. However, to avoid confusion, I will gloss the possessive marker as *DE1*, the adverbial marker as *DE2*, and the state/resultative marker as *DE3*.

- (c) feichang de gaoxing
very DE2 happy
- (d) shubao li
bag in
"in the bag"

Head-initial:

- (12) (a) [_{VP} V NP(Y*)]
(b) [_{PP} P NP]
(c) [_{NP} N' AP]
 ADV
(d) [_{AP} A' { }]
 S
- (13) (a) (i) chi fan
 eat meal
(ii) shonggei ta yiben shu
 give him a book
(iii) pao de hen kuai
 run DE3 very fast
- (b) (i) zai qiang shang
 LP wall on
 "on the wall"
(ii) dui wai maoyi
 toward outside trade
 "international trading"
 (LP = locative preposition)

- (c) ta you ge meimei hen piaoliang³
 he has a sister very pretty
- (d) (i) hong de hen
 red DE3 very
 "very red"
- (ii) hong de xiang huo yiyang
 red DE3 like fire same
 "as red as fire"

(14) Chinese:

	Head-initial	Head-final
NP	+	+
VP	+	+
AP	+	+
PP	+	+

The above description of word order and constituent structure in both English and Chinese is direct and intuitive. I have temporarily ignored various proposals to revise this straightforward classification in order to solve particular theoretical difficulties. It is obvious that many theoretical conjectures, refutations and reformulations are required so as to derive elegant theoretical explanations from the present murky pictures of both English (8) and Chinese (14) as well as other languages.

³(12c) is not a common structure in Chinese. (13c) is from Huang (1982). Its occurrence in a sentence is highly constrained. It seems that the structure can only cooccur with existential verbs. In other cases, it is either ill-formed or should definitely be considered as separate sentences, while head-final NPs can occupy any NP position.

- (i) Zhangsan de meimei hen piaoliang I pro zuotian lai kan wo
 Zhangsan DE1 sister very pretty yesterday come see me
 "Zhangsan's sister is very pretty. She came to see me yesterday." (= sentence boundary)
- (ii) *ta ai Zhangsan de meimei hen piaoliang
 he love Zhangsan DE1 sister very pretty
 "he loves Zhangsan's sister who is very pretty"
- (iii) Zhangsan de hen piaoliang de meimei zuotian lai kan wo
- (iv) ta ai Zhangsan de hen piaoliang de meimei

(iii) and (iv) are head-final NP structures, while (i) and (ii) are head-initial ones. Some people would analyze (13c) in the same way as (i), i.e. treating the former as two sentences. Huang also proposes to treat the post-NP modifiers as appositive elements. But the relationship between the noun and the modifier seems to have much less an appositive nature than phrases like "John Major, the Prime Minister".

This paper is part of an attempt to give an assessment of some recent studies on Chinese word order and constituent structure in GB. I will concentrate on one proposal: the Head-final Convention of Huang (1982).

2 Huang's Head-final Convention

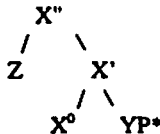
An initial attempt to capture the distribution of words and constituents in Chinese within the framework of GB was made in Huang (1982). Realizing that "Chinese exhibits a full range of head-final constructions, but allows only a limited range of head-initial constructions" (Huang, 1982:14), he claimed that "Chinese ... is trivially head-initial but largely head-final, while English is largely head-initial and trivially head-final" (Huang, 1982:40). Huang therefore set the default value of Chinese word order as head-initial and proposed to deal with the exceptions by setting a parameter for Chinese:

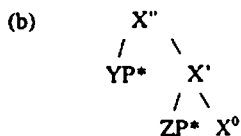
(15) Huang's Head-final Convention (HHFC)

- (a) $[_x^n X^{n-1} YP^*]$ iff $n=1$ and $x \neq N$
 (b) $[_x^n YP^* X^{n-1}]$ otherwise

(15b) states the general head-final property of Chinese, especially in terms of NP, as shown in (10a) ((12c) being set aside by Huang as the structures are rarely used anyhow). The phrase structure is given as (16b). (15a) states that in the internal structure of a major category, provided it is not an NP, the head may expand to the left only once, and only at the lowest level of phrasal expansion. I give the relevant structure in (16a). It is easy to see that the constraint on the left branching of XP in (15a) is driven by the default value of word order in (15b). The structures in (12a,b) therefore receive descriptively adequate treatment in (15a). As (15a) is only an optional derivation for categories other than NP, non-NP categories can still expand according to (15b), i.e. in a head-final fashion. Therefore, the remaining structures in (10) and (12) are supposed to be captured in (15) as well.

(19) (a)





3 Problems of the Head-final Convention: General

Huang assumed that HHFC is a surface structure constraint, construed as a filter applied at the level of PF. He also claimed that many phenomena unique to Chinese syntax, e.g. the linear ordering of frequency and resultative clauses relative to the head verb, the *ba*-construction, passivization, and NP-internal quantifier reading, are all wholly or partially constrained by HHFC, which, according to Huang, is a special constraint in Chinese. Therefore, although HHFC appears to be a mere description of the general word order possibilities in Chinese, Huang uses it as an explanatory device to the greatest possible extent. In fact, Huang himself termed it as X-bar Convention in Chinese, and it has always been referred to by that name in GB literature on Chinese. But this can be misleading because the X-bar syntax in GB theory is also referred to as X-bar Convention sometimes. Moreover, Huang's convention has little bearing to X-bar syntax. It is at once a surface structure constraint at PF, a constraint on the representation of quantification at LF, and a rule which triggers off movement and reduplication at S-structure, the details of which I will give in the ensuing sections. Here, it is important to note that it has no effect on the generation of D-structure. To avoid misunderstanding, I therefore term it as Huang's Head-final Convention (HHFC) in this paper. Before we examine Huang's application of the convention to many actual problems, I want to give a preliminary evaluation of the formulation of this convention.

As I have shown in 1, Chinese exhibits both head-initial and head-final possibilities; any attempt to describe the general head-final tendency of the language should either make the rule no more than an approximate generalization so as to leave room for the head-initial cases or give a stringent formulation and explain away the head-initial examples with other theoretical devices. However, HHFC is formulated in an absolute way and Huang (1982) did not make any explicit attempt to accommodate the exceptions with other sub-theories. Therefore, with HHFC, we first lose the structure of (12c)⁶. Secondly, while Huang claimed that non-NP categories can left-branch once (and once only) and *usually* at X⁰ level, the iff condition in (15a) restricts the left-branching possibility to apply *only* at the lowest level of projection. What is more, the once-only restriction on left branching also excludes the possibility

⁶Cf. fn.5.

of an XP left-branching twice at two levels -- a possibility which I will argue to exist, against Huang's judgements. From a theoretical point of view, HHFC itself cannot tell us why these restrictions exist in Chinese. Why is it that NP should behave differently from other major categories? Huang's explanation of some of these restrictions, which is of a tentative nature, will be examined presently.

To me, the alleged unique status of HHFC in Chinese is highly dubious. In fact, every language exhibiting both head-initial and head-final features has to resort to some other means to supplement the default assumption of a single word order for each language. If the solution is to be sought in formulating a special convention, then there has to be a word order convention in many languages, unless the language only exhibits neat uni-directional word order. There may be different levels of elegance, but HHFC can hardly be called an elegant formulation.

A possible way out of this problem is to claim that HHFC helps to explain many otherwise unexplainable phenomena in Chinese. I therefore turn to examining the evidence given by Huang (1982) in support of the convention HHFC as in (15).

4 X"-left-branching, the *Ba*-construction, and Passivization

Huang (1982) gives the following paradigms of examples, the ill-formed (c) sentences being generated with the head of the VP expanding to the left twice, violating HHFC:

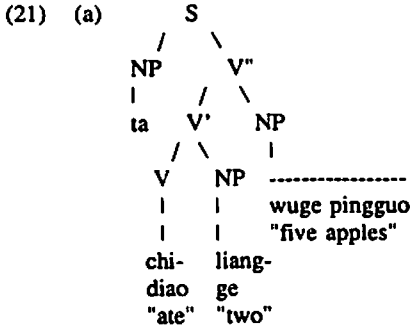
- (17) (a) women ba ta dang shagua
we BA he treat-as fool
"we regard him as a fool"
(b) ta bei women dang shagua
he by we treat-as fool
"he was treated as a fool by us"
(c) *women dang shagua ta
we treat-as fool he
- (18) (a) ta ba zhimen ti-le yige dong
he BA paper-door kick-ASP one hole
"he kicked a hole in the paper-door"
(b) zhimen bei ta ti-le yige dong
paper-door by he kick-ASP one hole
"the paper door got kicked a hole by him"
(c) *ta ti-le yige dong zhimen
he kick-ASP one hole paper-door

- (19) (a) ta ba wuge pingguo chidiao-le liangge
 he BA five apple eat-ASP two
 "of the five apples, he ate two"
- (b) wuge pingguo bei ta chidiao-le liangge
 five apple by he eat-ASP two
 "of the five apples, two were eaten by him"
- (c) *ta chidiao-le liangge wuge pingguo
 he eat-ASP two five apple
- (20) (a) ta ba juzi buo-le pi
 he BA orange peel-ASP skin
 "he peeled the orange"
- (b) juzi bei ta buo-le pi le
 orange by he peel-ASP skin ASP
 "the orange was peeled by him"
- (c) *ta buo-le pi juzi
 he peel-ASP skin orange
 (ASP = aspect marker)

On the (a) structures, Huang's idea is quoted below:

Each of [the (a) sentences] contains a *ba*-phrase, which is normally assumed to be derived from a postverbal object. However, there is also an NP in postverbal position which is already the object of the verb, the so-called "retained object", ... Clearly each of the *ba*-phrases bears some thematic relation (in particular the relation "patient", ...) to some verbal element, but since the verb already has a direct object (which may or may not be patient), it is natural to assume that the *ba*-phrase does not bear a direct thematic relation to the verb. Rather, it is more reasonable to say that the *ba*-phrase is the logical object of the verb-object combination following it. That is, the verb directly assigns a thematic role to the object following it, and then the verb-object phrase compositionally assigns the role "patient" to the *ba*-phrase.
 (Huang, 1982:42)

Taking over Thompson's (1973) proposal, Huang represented the underlying structures of (17a-20a) as (17c-20c), with the structural analyses (21), which Huang also took to be the underlying structures of (17b-20b):



- (b) [_S ta [_V [_V buo-le pi] juzi]]
 he peel-ASP skin orange
- (c) [_S ta [_V [_V ti-le yige dong] zhimen]]
 he kick-ASP one hole paper-door
- (d) [_S women [_V [_V dang shagua] ta]]
 we treat-as fool he

None of the (c) sentences in (17-20) are well-formed. In Huang's opinion, this is because their structures as represented in (21) violate HHFC which is a well-formedness condition on surface structures in Chinese. To salvage these structures, we have to resort to the *ba*-construction or passivization. The resulting sentences, i.e. examples (a,b) of (17-20), become grammatical, as they do not violate (15), the HHFC in Chinese. Therefore, although there are other cases of the *ba*-construction and passivization which have nothing to do with underlying structures like (21), in the present case, the constraint imposed by HHFC actually motivates the forming of *ba*-constructions (whether by movement or otherwise) and the passive constructions (through NP-movement).

However, the idea that (21) can be the underlying structure of (17a,b-20a,b) is to be seriously questioned. *Ba*-structure formation and *bei*-passivization create sentences that are not semantically equivalent to each other, nor are they equivalent to the [V NP NP] structures which, I will show presently, do exist as well-formed sentences. *Ba* is sometimes called a dispensive word; it puts the following NP in focus to emphasize how the verb predicates on that NP. And passive sentences containing a *bei*-structure are certainly different in meaning from their active counterparts. Moreover, it is already well-established in GB that passive sentences do not share the same underlying structure as active sentences and are therefore not derived from the

latter through movement. If, on the other hand, the *ba*-construction is base-generated, it is hard to see how it can have an underlying structure like (21).

We should also bear in mind that there are other sentences with *ba* and *bei* constructions that do not have any relationship with the structural analyses in (21):

- (22) (a) wo ba pingguo chidiao-le
I BA apple eat-ASP
"I ate the apple
(b) pingguo bei wo chidiao-le
apple by I eat-ASP
"the apple was eaten by me
(23) (a) wo ba zhimen zuanghao-le
I BA paper-door fix-ASP
"I fixed the paper-door
(b) zhimen bei wo zuanghao-le
paper-door by I fix-ASP
"the paper-door was fixed by me"

If there is some other motivation for *ba* and *bei* constructions, whether syntactic, semantic, or pragmatic, this may also motivate the (a,b) sentences in (17-20). There is no need to correlate the two constructions with HHFC at all.

Huang's discussion ignores another paradigm of sentences which are given below:

- (24) wo ti-le zhimen yige dong
I kick-ASP paper-door one hole
"I kicked a hole in the paper-door"
(25) women dang ta shagua
we treat-as he fool
"we regard him as a fool"

Several characteristics can be observed from these sentences: First, they both violate HHFC, but are perfectly grammatical. Second, neither of them contains the *ba* or *bei* constructions. Third, they are exactly equivalent to (21c,d) in meaning, the latter being syntactically ill-formed. Fourth, the two NPs in the VP have exactly the opposite linear order to those in (21c,d), which are Thompson's analyses. These clues cast doubt on the validity of HHFC and Huang's claimed correlations of HHFC, (21), and (17a,b-18a,b).

Further questions can be raised about the soundness of Thompson's inner and outer object analysis in (21). The inner object, dominated by V', is

said to have a closer relationship with the head verb than the outer object, which is dominated by V". Huang (1982:45) also gave some English analogues:

- (26) (a) John made fun of Mary
 (b) [_S John [_V{_V made fun } Mary]]
 (27) (a) John took advantage of Bill
 (b) [_S John [_V{_V took advantage } Bill]]

However, the linear order of the two NPs in the VP in (21) *never* appears in any grammatical sentence, while the reverse order *does* appear in well-formed sentences, as shown in (24) and (25). What is more, the inner object and the verb are not an idiom chunk, as in (26) and (27). Even in English, such a representation as (28b) would be highly non-intuitive:

- (28) (a) We consider him a fool
 (b) [_S We [_V{_V consider a fool } him]]

If the picture is already clear enough with (24) and (25) in terms of word order and grammaticality, it is not at all necessary to stipulate another representation as in (21), thus complicating the whole story. I therefore take (21) as an incorrect representation, which results in (17c) and (18c).

But this is not yet the whole story. My discussion still leaves (18c) and (19c) unaccounted for; even with the reverse order, one is still ungrammatical:

- (29) *ta chidiao-le wuge pingguo liangge
 he eat-ASP five apple two
 (30) ta buo-le juzi pi
 he peel-ASP orange skin
 "he peeled the orange"

We are left with the task of explaining the asymmetry in grammaticality between (29) and (30).

A closer examination reveals a different semantic relationship between the two NPs in the VP in these examples and those in (24) and (25). While the latter exhibit a general object + complement relationship, the former exhibit a part-whole relationship. The part-whole relationship can be made explicit by establishing a possessive relationship between the two, a process called *de*-insertion in Chinese. The execution of this process need not concern us here. I think it will have the same nature as *of*-insertion in English in examples like (26b) and (27b). The resulting structures are well-formed⁷:

⁷The resulting structure of (31) and (32) bears no similarity to (21), i.e. (i) is not a mere exchange of the positions of the two NP objects of (21), though (24) and (25) can

- (31) ta chidiao-le wuge pingguo de liangge
 he eat-ASP five apple DE1 two
 "he ate two apples out of five"
- (32) ta buo-le juzi de pi
 he peel-ASP orange DE1 skin
 "he peeled the orange"

The *de* in (32) can be omitted, yielding a structure in which *orange* modifies *skin*, which is also a possible reading, the meaning being "he further peeled the orange skin; the orange need not be there". That is why (30) is grammatical. But the two NPs in (31) have only a part-whole or possessive relationship, never a modifying one. Therefore, *de* cannot be omitted. Compare (31) with (33), in which the numerical modifier before *orange* forces the possessive reading. As a result, *de* cannot be omitted either.

- (33) ta buo-le wuge juzi *(de) pi
 he peel-ASP five orange DE1 skin
 "he peeled five oranges"

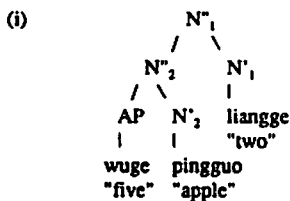
This new analysis is strengthened by the fact that the *de*-insertion process cannot be applied to (24) and (25), resulting (34) and (35):

- (34) *wo ti-le zhimen de yige dong
 I kick-ASP paper-door DE1 one hole
- (35) *women dang ta de shagua
 we treat him DE1 fool

Further support is lent by the difference in behaviour between (29), (30) and (24), (25) in topicalization. The topicalized structures are shown below:

- (36) (a) wuge pingguo ta chidiao-le liangge
 (b) ta wuge pingguo chidiao-le liangge
 "of the five apples, he ate two"

be analyzed in the same way as (21).



- (37) (a) wuge juzi ta dou buo-le pi
 five orange he all peel-ASP skin
 (b) ta wuge juzi dou buo-le pi
 "of the five oranges, he peeled them all"⁸
- (38) (a) ?ta women dang shagua
 (b) *women ta dang shagua
- (39) (a) ?zhimen ta ti-le yige dong
 (b) *ta zhimen ti-le yige dong

While this difference in sentence-initial topicalization and post-subject topicalization between (36-37) and (38-39) supports my suggestion that they have different semantic relationships, I have no ready explanation to give concerning topicalization.

5 Frequency Phrases and Resultative Clauses in VP

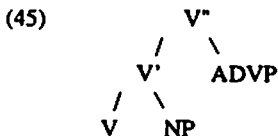
The second piece of evidence offered by Huang (1982) in support of the HHFC (15) concerns VPs with two post-verbal constituents: an NP argument plus an adverbial phrase denoting extent, result, description of state, duration, frequency, or manner. For ease of exposition, I will treat them as two groups: frequency phrases proper and resultative clauses which cover all the other cases. Again, Huang's examples are given first; the starred ones are claimed to be ungrammatical because, in Huang's opinion, they violate HHFC.

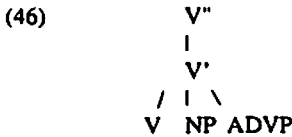
- (40) (a) yu xia-guo le
 rain fall-ASP ASP/SFM
 "it has rained
- (b) xia-guo le yu le
 fall-ASP ASP rain SFM
 "it has rained
- (c) [_S yu [_{V-} xia [de hen da]]] le
 rain fall DE3 very big ASP/SFM
 "it has been raining very heavily now"
- (d) * [_S [_{V-} xia [de hen da] yu]] le
 fall DE3 very big rain ASP/SFM
- (e) * [_S [_{V-} [_{V-} xia yu] [de hen da]]]le
 fall rain DE3 very big ASP/SFM

⁸The addition of the numerals in (37) is to make the sentences sound more natural due to phonological reasons. Even without the numerals, the sentences should still hold.

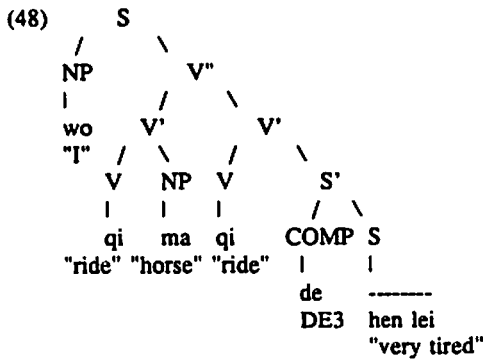
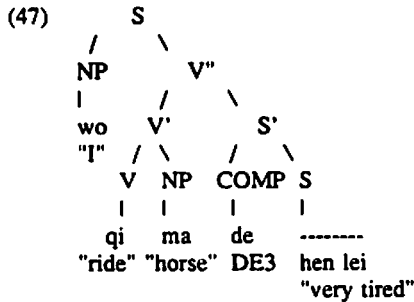
- (f) xia yu xia de hen da le
 fall rain fall DE3 very big ASP/SFM
 "it has been raining very heavily now"
- (41) (a) *wo qi ma de hen lei
 I ride horse DE3 very tired
 "I rode a horse until I got very tired"
- (b) wo qi ma qi de hen lei
 I ride horse ride DE3 very tired
 "I rode a horse until I got very tired"
- (42) (a) *ta chang ge de hen haoting
 he sing song DE3 very good-to-the-ear
 "he sings very well"
- (b) ta chang ge chang de hen haoting
 he sing song sing DE3 very good-to-the-ear
 "he sings very well"
- (43) (a) *ta nian shu le sange zhongtou
 he read book ASP three hour
 "he studied for three hours"
- (b) ta nian shu nian le sange zhongtou
 he read book read ASP three hour
 "he studied for three hours"
- (44) (a) *ta kai che le liang ci
 he drive car ASP two time
 "he drove twice"
- (b) ta kai che kai le liang ci
 he drive car drive ASP two time
 "he drove twice"
- (SFM = sentence-final marker)

Following Mei (1978), Huang treats the adverbial phrases in these structures as VP complements, not V complements. Therefore, he adopts the structural description in (45) instead of (46):





For Huang, because of the filter HHFC banning the ungrammatical examples that are generated with the structure (45), there occurs an important process to salvage these sentences -- verb reduplication, which transforms (47) into (48):



After verb reduplication, a new V' node is created dominating the reduplicated verb and the following resultative clause. Now, according to Huang, the new verb is the head of the newly created V' node, which in turn has become the head of the V" node. On the other hand, the original V' is now

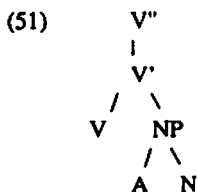
taken to be a maximal projection itself, having no relationship with V⁹. Since the path of the new head-projection of VP left-branches only once, HHFC is at last bypassed and the problem of word order solved, i.e. if we are still happy with all the above stipulation and ad hoc solutions.

My own study of the phenomenon has arrived at different conclusions from those of Huang. I will make the following points: First, there is a group of examples that Huang ignored which, though analyzed as in (45), and hence violating HHFC, are actually well-formed sentences. Second, the starred examples in (40-44) are ungrammatical for reasons other than violation of HHFC. Third, the relationship between sentences with verb reduplication and their single-verb counterparts should be seen in a different way.

First, let's look at Huang's examples one by one, comparing them with my own examples. (40d) is certainly ungrammatical, but my example, (49), which equally violates HHFC, is well-formed, and substituting the degree phrase with a duration phrase also yields a well-formed sentence, which violates HHFC as well:

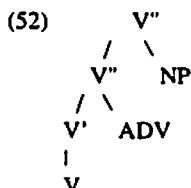
- (49) xia-le hen da yu le
 fall-ASP very big rain ASP
 "it has rained heavily"
 (50) xia-le san tian da xue
 fall-ASP three day big snow
 "it snowed for three days"

In these two examples, the adverbial phrases precede rather than follow the NP arguments, just as in (40d). Some people may suggest another analysis, treating the pre-NP element as an adjective phrase modifying the NP, yielding the structure (51), which does not violate HHFC:



⁹Huang (1982: 97) also suggests that the original V' is now taken to be a maximal projection in itself. "Every node that is not the head of a higher node is automatically a maximal category."

While I consider (51) a possible reading, it does not exclude the other reading, i.e. (52), in which the pre-NP phrase is a degree/duration adverbial phrase modifying V¹⁰:



Although the (a) sentences of (41-44) are ill-formed, the sentences become grammatical if we take away the aspect markers *de* and *le*:

- (53) wo gangcai qi ma hen lei, suoyi zuo-le qiche
I just now ride horse very tired, therefore take-ASP car
"I got very tired just now through riding. So I took the car"
- (54) ta zuotian nian shu sange zongtou
he yesterday read book three hour
"he read for three hours yesterday"
- (55) ta kai che lianci, mei ci dou hen jinzhang
he drive car twice, each time all very nervous
"he drove twice, each time very nervous"
- (56) ta chang ge hen haoting
she sing song very good-to-hear
"she sings very well"
- (57) (a) zhi lu wei ma
point deer for horse
"to take a deer for a horse / to deliberately distort"
- (b) lei tu cheng fang
beat earth into square
"to press the earth into bricks"
- (c) hua di wei jie
draw ground for border
"to divide the territory by drawing a line on the ground"
- (d) ju qi wei hao
raise flag for signal
"to give a signal by raising the flag"

¹⁰(52) seems a strange representation, in which the object NP is on a higher level than the ADV. It is likely that some form of movement is involved. For the ungrammaticality of (40c), a tentative explanation is suggested at the end of this section.

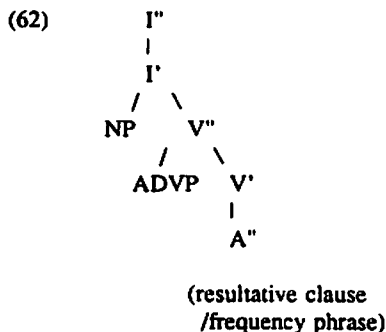
- (e) ming qiang wei hao
fire gun as signal
"to fire a gun as a signal"
- (58) (a) hua gange wei yubo
transform spear for jade and silk
"to turn animosity into friendship"
- (b) hua beitung wei liliang
transform sorrow into strength
- (c) hua yuyan wei xindong
transform language into action
- (d) hua jingsheng wei dongli
transform spirit into motivation
- (59) (a) wei zhi ru hu lang
fear him like tiger wolf
"to fear someone as if he were a tiger or wolf"
- (b) shi zhi wei xing fu da huan
look him as heart stomach big sickness
"to consider someone as one's biggest threat"
- (c) shi zhi wei yan zhong din, rou zhong ci
look him as eye within nail, flesh within thorn
"to consider someone as one's biggest eye sore"
- (d) shi zhi wei hongshui mengshou
look him as flood fierce animals
"to consider someone/something as catastrophic elements"
- (60) (a) jing zhi ru tian bing tian jiang
respect him as sky soldier sky general
"to respect a troop as if it were a heavenly army"
- (b) jing zhi ru fu mu
respect him as father mother
"to respect someone as if he were like one's parents"
- (61) guang shou tianxia haojie wei yuyi¹¹
widely collect world hero as aid
"to widely recruit the heroes of the country as one's aids"

Some people may argue that (57-61) are fixed idiomatic structures and should therefore not be taken as strong evidence against HHFC. I would like to point out two important factors that made me include them as convincing

¹¹I am aware that *wei* can be understood as the shortened form of the verb *yiwai* ("take as"). But in modern Chinese, *wei* has evolved into a preposition. On the other hand, it is more difficult to find a verb origin for the preposition *ru*. Moreover, even prepositions like *ba* and *gei* were verbs in classical Chinese. This fact does not affect our understanding of these words in their modern roles.

evidence against HHFC. First, the structures exhibited by (57-61) are still frequently employed to coin new expressions. They are by no means obsolete or obsolescent structures that can be ignored. For example, while (57a) is an expression that can be traced back to more than two thousand years ago, (57e) is obviously a modern coinage. The same contrast exists between (58a) and (58b-58d). This is not restricted to four-character idioms, but is applicable to expressions with more than four characters as well. So long as the old idioms are still frequently used, and so long as new expressions are constantly produced, modelled the old expressions, they constitute a set of living counter-examples to HHFC, something that no child can afford to ignore when acquiring the language.

Other people may give a totally different analysis to examples (53-56). They may take the verb as a manner adverb which should not be treated as the predicate of the sentence at all. Consequently, all of the sentences (53-56) would have either a resultative clause or a frequency phrase as the predicate, yielding a structure like (62):



As adjective phrases can serve as predicates in Chinese, the adjective head in the resultative clause could be the main predicate, and frequency phrases, which cannot stand alone without cooccurring with verbs, could be analyzed as "it is ... times", thus working equally well as predicates. Since this structure does not violate HHFC, (53-56) would not count as counter-examples. The manner adverb here also works as a topic phrase. But Huang's examples cannot be analyzed in this way, because in (41-44), the verbs are followed by the aspect marker *le* or the extent marker *de*, which only cooccur with a predicate verb.

My answer to this line of reasoning rests on several arguments against it. First, Chinese is a language that can express tense and aspect without inflection of verbs. Sometimes, it makes use of certain expressions as tense and aspect morphemes to achieve the same effects as verb inflection in English;

sometimes, no special morphemes are used at all -- the verb can be interpreted at will in terms of time and aspect, while other elements such as time adverbs, contextual clues, etc. help to narrow down the interpretation of the verb and the proposition it is contained in. It is easy to see that although (41-44) contain finite verbs as main predicates, (53-56), which do not contain overt aspect markers, can also contain finite verbs, which should not be taken as manner adverbs. Second, if Huang claims that the (a) sentences in (41-44), which are ungrammatical, can be salvaged by verb reduplication, it is also possible to take exactly the same verbs, which do not have aspect markers, as predicate verbs instead of manner adverbs, because it is these verbs that are reduplicated. Third, if we carry the manner adverb argument further, it is still possible to consider the verbs in Huang's examples, together with even the reduplicated verbs, as topic chunks, alias manner adverbs, which precede the predicate adjectives of the sentence. It is worth noting that *de* (DE3) is not an aspect marker in the strict sense. It should at best be taken only as a degree morpheme having the sense *until*, whereas *le* can also be understood as a sentence final marker (cf.(40)). They are by no means valid diagnostics of main verbs. Fourth, even though adjectives can serve as predicates, they are also heavily restricted in distribution. Therefore, while it is always possible to use verbs as predicates, adjectives cannot always perform this role:

- (63) (a) ta kai che wang bei
 he drive car toward north
 "he drives towards north"
 (b) ta kai che
 (c) ??ta wang bei¹²
- (64) (a) ta chang ge hen haoting
 he sing song very good-to-hear
 "he sings well"
 (b) ta chang ge
 (c) *ta hen haoti
- (65) (a) ta nian shu sange zhongtou
 he read book three hour
 "he read for three hours"
 (b) ta nian shu
 (c) *ta sange zhongtou

Lastly, VP anaphora cases also show that in structures like (53) - (56), the verbs should not be interpreted as manner adverbs, if VP anaphora are only bound by a predicate verb:

¹²(63c) can only be used as a shortened form with the verb omitted.

- (66) ta zai xiu che, yijin gan-le sange zhongtou-le
 he TS repair car already do-ASP three hour-SFM
 "he is repairing the car and has been doing that for three hours"
- (67) ta cao shu sange zhongtou, lei de zeng xiang bu gan- le
 he copy book three hour tired DE3 really want not do- SFM
 "he copied book for three hours. he became so tired that he wanted to stop doing it"¹³
 (TS = tense marker)

The above discussion argues against HHFC in the case of frequency/resultative structures. However, I am still left with the burden of explaining why the (a) examples in (41-44) are ungrammatical for reasons other than the constraint HHFC. A first observation is that *le* and *de* can co-occur with intransitive verbs (whether one character or two character words) but does not co-occur with transitive verbs. This can probably be explained in terms of phonology, especially syllabic restrictions. The syllabic structure of transitive verbs + object may be different from the structure of intransitive verbs. This is no more than a tentative suggestion. More convincing arguments are still required.

6 Double Objects

Yet another obvious counter-example to HHFC is the double object structure, which has the following representation:

¹³The following sentences can also support my argument:

- (i) ta zuotian xiu che san xiaoshi, ta gan de hen hao
 he yesterday repair car three hour he do DE3 very well
 "he repaired cars for three hours yesterday. he did well"
- (ii) A: ta xiu che hen shulian
 he repair car very skilfully
 "he repairs car very skilfully"
 B: dui, ta gan de hen shulian
 yes, he do DE3 very skilfully
 "yes, he does it skilfully"

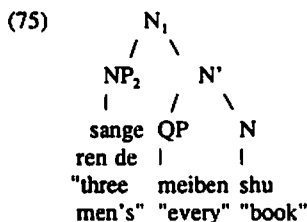
Some people may argue that the VP-anaphora in the second sentence in (i) refers to all of the first sentence except for the subject. Therefore, it cannot prove that the *gan* anaphora refers to the verb only, and is hence the predicate. But (ii) shows convincingly that the V + object in the first sentence is what the VP anaphora refers to.

the left is interpreted as having narrow scope with respect to the quantifier on the right. Thus, in (69), the only possible interpretation is that every walk of life has some people who like jazz, but not that there are some people such that for every walk of life they are in, they like jazz. (70) means that there is a key congressional committee such that each member in it voted for the amendment; it does not mean that each person is such that for some congressional committee of which he is a member, he voted for the amendment. The same scope possibilities apply for (71) and (72).

However, as Huang observes, the above single interpretation for each sentence is the "right" one not because it is the only available construal for such quantificational structures. It is not inherently impossible to derive the "wrong" interpretations as illustrated above. Language users are denied this line of interpretation, i.e. an interpretation of the quantified structure in the normal linear order, for purely pragmatic reasons. For example, in (72), it is virtually impossible, according to our knowledge of the world, for one person to live in every city at the same time. Therefore, this interpretation is judged as impossible because it is impractical and, consequently, irrelevant in most cases. (It is possible to work out a more detailed explanation in terms of pragmatics, within the framework of Relevance theory.) To sum up the case in English briefly, (69-72) each has two scope readings, and due to pragmatic reasons, the "inversely linked quantification" (right-to-left) reading is favoured over the linear-order (left-to-right) reading.

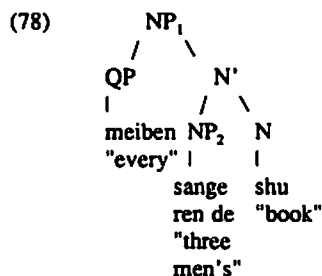
The picture in Chinese is rather different. Huang (1982) argues that although instances of both the linear-order reading and the inversely-linked reading can be found in Chinese in structures where one Q-NP is properly contained in another, they only exist in separate structures. That is, no such sentence is ambiguous in having both readings, as in English. The relevant examples as given by Huang are the following, with their structures illustrated as well:

- (73) wo mai-le [_{NP} sange ren de meiben shu]
 I buy-ASP three man DE1 every book
 "for three men x, I bought every one of x's books"
- (74) wo mai-le [_{NP} meige ren de sanben shu]
 I buy-ASP every man DE1 three book
 "for every man x, I bought three of x's books"



(76) wo mai-le [_{NP} meiben sange ren de shu]
 I buy-ASP every three men DE1 book
 "I bought every book that belongs to three men"

(77) wo mai-le [_{NP} sanben meige ren de shu]
 I buy-ASP three every man DE1 book
 "I bought three books, each of which belongs to everybody"

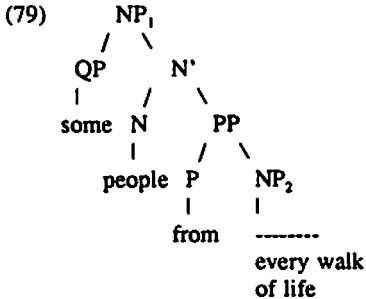


Each of the bracketed NPs in (73) and (74) contains a quantifier and a possessive NP which in turn contains a quantifier of its own. As is shown in (75), which is the structural description of the two sentences, NP₁ properly contains NP₂. In both these cases, the less inclusive possessive Q-NP (NP₂) is taken to have wider scope than the more inclusive Q-NP (NP₁) which properly contains the possessive. Huang calls this reading of the scope of quantifiers the NP-external reading. However, for this structure (75) the other possible reading, in which the more inclusive Q-NP has wider scope than the less inclusive possessive NP, is never available in Chinese.

Now let us look at (76) and (77), with their structural description (78). In (78), the less inclusive possessive Q-NP(NP₂) occurs to the right of the QP of the more inclusive Q-NP, presenting the opposite situation to the one in (75). For this structure, the possessive Q-NP is construed as having a scope not wider than the NP in which it is properly contained. This is called the "NP-internal" scope interpretation of the possessive Q-NP. But for this structure

(78), there does not exist another interpretation on which NP₂ has wider scope than NP₁ -- the NP-external reading.

Returning to the English examples (69-72). We have already seen that each of these sentences has two interpretations. But there is only one surface structure available:



In (79), the Q-NP in PP can have both the NP-internal reading, with a scope no wider than NP₂, and the NP-external reading, with a scope wider than the QP *some*. In Chinese, the two scope readings have to be realized in two sentences with two different structures.

A natural question to ask, then, is why is it that Chinese sentences with two Q-NPs, one properly contained in the other, are not ambiguous. Huang seems to have a ready explanation. For our present discussion, it is not necessary to go into the details of Huang's exposition, which involves many technical problems concerning quantifier raising in LF. I will only pick out the points relevant to our study of word order. Huang suggests that the linear structure (Det)-N-PP in English may be analyzed hierarchically either as [_{NP}[_{NP}(Det) N']PP], or as [_{NP}(Det)[_{N'} N PP]], before QR applies. This difference in analysis yields two corresponding sentences, with corresponding differences in meaning:

- (80) (a) [_{NP}[_{NP} some people][_{PP} from [_{NP} every walk of life]]]
 (b) [_{NP} some[_{N'} people[_{PP} from [_{NP} every walk of life]]]]

Huang assumes that in English each string of the form (Det)-N-PP base-generated in either of the two forms optionally undergoes restructure α and takes on the other form before QR applies, which then yields the appropriate reading. But this dual analysis is not available in Chinese, nor is the restructuring process, because of the constraint HHFC, which states that Chinese noun phrases are strictly head-final. Any restructuring process extraposing an element from the NP and placing it after the NP will create a

structure with a head-initial NP, which is ruled out by HHFC. That is why, according to Huang, this type of ambiguity is not possible in Chinese.

So far so good. If Huang's argumentation carries through, at least HHFC plays a crucial role in the treatment of this issue. But again it seems that Huang was not aware of a set of examples which have scope ambiguity in Chinese and do carry an inversely-linked interpretation which is pragmatically preferred to the linear-order interpretation. And some of these examples are in fact easily obtainable by simply constructing the semantic equivalents of (69) and (70):

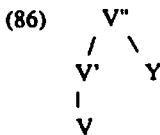
- (81) wo jian-dao-le [_{NP}yixie]_{[PP]laizi} gehanggeye de] daibiao}
I see-ASP-ASP some from every-trade DE1 representative
"I saw some representative from every trade"
(a) From every trade x, there are some representatives y that I saw.
(inversely-linked/NP-external reading)
(b) There are some representatives y who are from every trade x that I saw.
(linear-order/NP-internal reading)
- (82) wo jian-dao-le [_{NP}yixie]_{[AP]sanjiaojiuliu} de] renwu}
I see-ASP-ASP some three-religion-nine-school DE1 people
"I saw some people following all sorts of ways of life"
- (83) [_{NP}yixie]_{[AP]gejunbingzhong} de] jiangjun]chuxi-le huiyi
some every-army-troop-type DE1 general attend-ASP conference
"some generals from all armies attended the conference"
- (84) [_{NP}yixie] [_{PP}laizi shijie ge di] de pengyou]
some from world every place DE1 friend
"some friends from all over the world"
- (85) [_{NP}meige]_{[AP]lishu guojia ge buwei} de] jiguan]dou yao pai ganbu xia
jiceng
every belong country every ministry DE1 office all must dispatch cadre
down grass-root-level
"every office belonging to every national ministry and commission
should all dispatch cadres to establishments on the grass-root-level"

These examples contrast sharply with (73-78), which only allow one fixed manner of interpretation. It seems that at present in the GB study of Chinese, analyses of one quantified NP properly contained in another all deal with the former case, and are therefore unable to give a satisfactory account of the latter case. In fact, it is difficult for the current treatments of Chinese quantification to reconcile themselves with the examples (81-85). An adequate theory on this issue should be able to explain both the unitary interpretation of (73-78) and the ambiguous interpretations of (81-85) and, possibly, the pragmatic factors involved in the latter case. At present, it is sufficient for me

to observe that Huang's evidence in support of HHFC based on quantified NP structures does not seem to hold either.

8 Head-final Convention Revisited

Now I want to go back to HHFC and point out another problem in the formulation of the convention. In (15a), the "iff $n=1$ " condition absolutely requires that the only possible left-branching for the head of XP has to be at the X^0 -level. No left-branching is allowed at any higher level. But from our previous discussions, we have observed that Huang puts all right-branching frequency/resultative clauses on the X' -level, i.e. making the head left-branch on that level. That is why, according to Huang, the sentences are out. However, it is easy to find examples in which there is an intransitive verb followed by a clause, yielding a structure like (86):



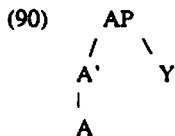
- (87) ta zhou de lei-le
 he walk DE3 tired-ASP
 "he got tired from walking"
- (88) ta chi de tai kuai-le
 he eat DE3 too fast-le
 "he ate too fast"
- (89) ta qi de fafong-le
 he angry DE3 get-mad-ASP
 "he got mad because of anger"

The same applies to adjective phrase structures¹⁴:

¹⁴But Huang's (1982) example (i) is an ill-formed one:

- (i) * ta hen gaixin zhejian shi
 he very happy this thing
 "he is very happy about this"

I think this is because a predicate adjective can never take an NP object in standard Mandarin Chinese.

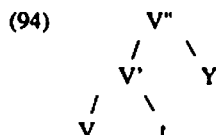


(91) hao de hen
good DE3 very
"very good"

(92) hong tou-le
red through-le
"thoroughly red"

(93) hong de xiang huo yiyang
red DE3 like fire same
"red as fire"

Huang (1982:51-4) looks at a similar case. When an object of the verb is moved out of the VP phrase, leaving a trace in its original position, as in (94), HHFC does not hold any more.



Huang suggests that this is because the sentences in question undergo a restructuring process, by which the Y become sisters of the verbs under the domination of V', thereby satisfying the HHFC. The restructuring rule is listed below:

(95) Restructure α , α a category.

However, it seems extremely dubious that such a process applies also to (86-93), because here no movement ever takes place at all. The only motivation for (95) in these cases will have to be the need to save HHFC from inaccuracy.

In fact, Huang was not the first to propose the ideas embodied in HHFC. C.N. Li (1975) also makes a similar remark:

"In general, in modern Mandarin, the verb may not be followed by more than one constituent (the notable exception being the indirect object construction)."

Y.R. Chao (1968) even sets out to give semantic reasons for such an observation. Huang only makes it more arbitrary. By now, we can state with confidence that we have enough evidence to conclude that this constraint is not adequate for Chinese.

In spite of all these points, for Huang, HHFC represents something very substantial:

"It should be easy to see that the facts we have discussed are largely unexplained in semantic or pragmatic terms, but are very much configurational in nature. In fact, it is hard to imagine that a language without morphology, like Chinese, will not make full use of some rigid structural principles (in terms of linear as well as hierarchical order) to signal grammatical and/or semantic properties of its sentences..."

While the above observation is in general true, the whole picture in Chinese appears to be more complicated. There do seem to exist some rigid structural principles in the language, but they may appear for less superficial reasons than HHFC.

Huang also claims that HHFC is an easy parameter for the child to fix for Chinese. This is only apparently the case. As our above discussion has revealed, there are so many exceptions which call for restructuring and reanalysis that a child's task in acquiring Chinese becomes a stupendous one, not to mention that the child has no way of acquiring the well-formed sentences which are supposed to be filtered out by the Head-final Convention.

9 Conclusion

In this paper, I have given an extensive discussion on Huang's Head-final Convention in Chinese. Examinations on various types of data in Mandarin Chinese as well as discussions on Huang's analyses on individual cases have shown the Convention to be inadequate. Although no alternative solution is given in this paper, I hope to provide some more satisfactory answers to the problems of word order in Chinese in Jiang (in preparation).

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