Types of questions, new information and isomorphism in Mandarin Chinese*

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Abstract

In this paper I study how both functionalists and formalists account for the distribution of new information and for scope phenomena in simple as well as in complex sentences in Mandarin Chinese. In both types of approaches, isomorphism (with a left to right direction) is taken for granted. For functionalists, the linearization of word order and the structure of information are isomorphic. For formalists, a deep level and a surface level of (syntactic) structures are isomorphic. But, because Chinese is *both* a head initial and a head final language, by definition scope relations function in *two* (not one) directions. So far, inverse scope phenomena (with a right to left direction) have received little attention in the literature. To account for scope relations and for information structure in a better way, I propose to pair affirmative and interrogative sentences.

O. INTRODUCTION

In this paper I would like to show that the principles which have been proposed so far to account for the relationship between the informational level and the syntactic level in a Chinese utterance are unable to predict some interesting and regular facts of that language, both in simple and in complex sentences.

To my mind, only the study of the different types of question formation in Mandarin Chinese reveal in a much better way than isomorphic principles, not only the management of information in a Chinese sentence, but also the scopal properties of certain lexical items or constructions.

In sum, the study of the forms (V-Neg-V vs. *shi bu shi*) and of the position of *shi bu shi* 'is it ?' in an interrogative utterance provides a solid distributional test which unequivocally indicates where the new information lies. Hence, appealing to the pairing of affirmative and interrogative sentences, rather than using flat or hierarchical structures, might be a better approach to locate where the new information lies in a Chinese utterance.

I.   PREVIOUS ANALYSES : The functional paradigm

Functional as well as formal analyses have offered principles which try to relate the scope of operators, such as negation or question — hence the domain of new information— to the (surface) syntactic level.

I.1.   The iconic properties of word order

Functional linguists have associated one of the general typological characteristics of Chinese, i.e. topic prominence, with iconic properties of word order. In such a perspective, the direction of word order, that is from left to right, is directly correlated with the position of old and new information. Old information stands in pre-verbal position, whereas new information stands in post-verbal position (see Müllie (1937), Tai (1989), Tsao (1990), among others). Tai's and Tsao's principles read as follows :

Tai (1989) PIC or *Principle of Information Center* :

« PIC: The asserted part of a sentence is ordered after the presupposed part … PIC is also compatible with the topic-comment structure in Chinese (cf. Li and Thompson 1976) …. one single principle familiar in linguistic literature that is   The given is ordered before the new. »

Tsao (1990) *Principle of end focus position*.

« Pre-verbal position is equated with topic(s) position and post-verbal position is equated with focus position. »

Both these principles account nicely for the obligatory postverbal positioning of durational complements in affirmative sentences, such as *san   nian* 'three years' in (1).

(1)   ta   jiao   hanyu   jiao-le   **san   nian**
         he   teach   Chinese   teach-Suf.   three year
        He has taught Chinese for three years.

The fact that the durational complement *san nian* 'three years' does carry new information is seen in the way the alternative question formation operates. Whereas questioning with the interrogative particle *ma* does not allow us to predict the locus of new information in a sentence, cf. (2), the fact that the two other questioning strategies stand in opposition – in (3a) and (3b) – directly indicates at the level of surface structure where the new information lies. Compare the unacceptability of (3a) to the well-formedness of (3b). In (3a), questioning by means of the auxiliary verb *you* 'have' is not allowed, while in (3b) questioning by means of *shi bu shi* 'is it ?' is well formed.

(2)   ta jiao   hanyu   jiao-le   san   nian   **ma** ?
         he teach Chinese teach-Suf.   three year   F.P.
        Has he taught Chinese for three years ?

(3a)   ?? ta jiao   hanyu   **you mei you** jiao   san   nian?
         he teach Chinese   have Neg. have teach   three year

(3b) ta jiao   hanyu **shi bu shi** jiao-le   san nian ?
he teach Chinese be Neg. be teach-Suf. three year
Is it during three years that he has taught Chinese ?

Moreover the ungrammaticality of (4a) and the grammaticality of (4b) is revealing. (4a) does not contain the durational complement, whereas (4b) does. The necessary presence of the durational complement in (4b) in the answer to (2) proves that this constituent carries new information.

(4a) *shi, ta   jiao hanyu   (jiao-le)
be   he   teach Chinese   (teach-Sfx.)

(4b) shi, ta (jiao   hanyu)   jiao-le   **san nian**
be   he (teach Chinese)   teach-Sfx.   three year
Yes, he has taught (Chinese) for three years.

To my knowledge, Li and Thompson (1979) are the first to have established the differences between a neutral question and a non-neutral question and to have correlated this pragmatic difference to a morpho-syntactic difference. « The V-not-V question is used only in a neutral context whereas the particle questioner may be used in a neutral or a non-neutral context » ... « A neutral context is one in which the questioner has no assumptions concerning the proposition which is being questioned and wishes to know whether it is true or not. Whenever the questioner brings to the speech situation an assumption about the truth or falsity of the propostion, then that context is non-neutral with respect to that question » (*ibid* : 202).

In other words, whenever a sentence contains a presupposition, a question formed by means of V-neg-V is not acceptable. To remedy this situation, there exists another means of question formation, i.e. *shi bu shi* 'is it ?', which clearly indicates, at the surface level, how the

assertion and the presuposition can be distinguished. Paris (1988, 1999) has used the test of question formation by means of *shi bu shi* 'is it ?' to establish unequivocally what is the domain of new information in an utterance. (3a) is not well formed because the question bears on the verb, which is presupposed : as is well known what is presupposed can neither be negated nor questioned. In contrast, (3b) is well-formed, because the scope of the question is the new information, embodied by the durational complement.

From the principles and the facts stated above, one can predict the existence of scope transparency in Mandarin Chinese, i.e. the linearity of scope assignment. Scopal operators like verbal question markers and negators should immediately preceed the elements they bear upon. In a way, this prediction is true. Contrary to English, 'negative transportation' is not frequently attested in Chinese. Whereas in English, the negative marker *n't* modifies the matrix verb in (5), its scope is not on the matrix verb, but on the subordinate verb. Thus, the most natural interpretation of (5) is (6), where the verb in the subordinate clause is negated. In Mandarin, on the contrary, (7), which is built on the same pattern as (5) is ill-formed, but (8) is natural. In (8), there is no discrepancy between the position of the negative marker *bu* in the subordinate clause and its (small) scope.

(5)   I do**n't** think he will be here today.

(6)   I think he wo**n't** be here today.

(7)   ??wo **bu**   xiang   ta   jintian hui   lai   le
        I   Neg.   think   he   today   can   come   F.P.
        I do**n't** think he will come today.

(8)   wo   xiang ta   jintian **bu**   hui   lai   le
        I   think he   today   Neg.   can   come   F.P.
        I do**n't** think he will come today.

The facts described above seem to confirm the existence of a strict parallelism between the syntactic structure (word order) and the informational structure in Chinese. Unfortunately, other facts can be adduced to show that this is not the case.

In the next section, I will use simple sentences and compare some constituents which occupy the same position : the preverbal position.

I.2. Problems with the iconicity of word order

In this section I will deal with simple sentences. In the next one, I will deal with complex sentences.

I.2. 1.   In simple sentences

If, as proposed by Tai (1989) and Tsao (1990), (all) preverbal constituents carry old information, the comparison between the *ba* phrase in (9) and the *bei* phrase in (10), which are both preverbal, should yield identical informational results.

(9)   ta   **[ba   beizi]** da-po-le
       he   O.M.   cup   break-Sfx.
       He broke the cup.

(10)   beizi   **[bei   ta]** da-po-le
       cup   A.M. he   break-Sfx.
       The cup was broken by him.

From the pair of questions in (11) and (12), which are formed with the final particle *ma*, one should expect the same results : that is to say the answers (13) and (14) should be similar, but they are not. Answering the question in (11) just by means of the verb *da-po-le* 'is broken'

gives rise to a well-formed utterance in (13), but answering (12) by means of (14) is not acceptable .

(11)   ta **ba**   **beizi**   da-po-le   ma?
       he O.M. cup   break-Sfx.   F.P.
       Did he break the cup?

(12)   beizi **bei**   **ta**   da-po-le   ma ?
       cup   A.M. he   break-Sfx.   F.P.

       Was the cup broken by him?

(13)   da-po-le   (14)   ??da-po-le

       break-Sfx.   break-Sfx.
       yes, he did

The natural answer to (12) is (15), where the *bei* phrase is repeated.

(15)   **bei** **ta**   da-po-le
       A.M. he   break-Sfx.
       (It was) broken by him.

Following the pattern of (15), if the *ba* phrase is added to (13), as in (16), the result is not grammatical.

(16)   ??ba   beizi   da-po-le

       O.M. cup   break-Sfx.

What the contrast in grammaticality between the pairs (13)-(14) and (15)-(16) shows is that, contrary to what is posited by the functionalists, it is not the case that *all* preverbal constituents carry the same informational values. The *ba* phrase is not repeated in (13), because it carries

old information. An answer should, by definition, carry new information. On the contrary, the *bei* phrase is mandatory in (15), because it carries new information. In conclusion, the two preverbal constituents studied above do not carry the same informational values[1]. We will use more tests below to prove our point.

As is well-known, a cleft constituent carries both new and contrastive information : it is not simply an information focus, but an identificational focus in E. Kiss' (1998) terminology. (For cleft constructions in Chinese, see Paris (1979), Shi (1994), Shyu (1995), Lee H. (2005), Cheng (2008), Paul & Whitman (2008), among others). Hence, if a *bei* phrase, contrary to a *ba* phrase, carries an informational focus, it can be predicted that both a cleft *bei* phrase will be grammatical and that a cleft *ba* phrase[2] will not, as seen in the contrast of grammaticality in the pair of examples (17)-(18).

(17) beizi shi ***bei/gei***   *Zhangsan*   dapo de, bu shi

      cup be A.M.   Zhangsan   break *de* Neg. be
      The cup was broken by Zhangsan, not (broken) by Lisi.
      bei/gei *Lisi* dapo de
      A.M.   Lisi break *de*

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[1]   When both the *bei* and the *ba* phrases cooccur, their informational values remain identical. In (i) below, the *ba* phrase and the subject/topic phrase are entertain a relationship of possession and both represent old information.
(i)   Zhangsan *bei* gou *ba*   tui yao-shang-le
      Zhangsan A.M. dog O.M. leg bite-hurt-Sfx.
      Zhangsan was bitten on the leg by the dog .
      Zhangsan's leg was bitten by the dog.

[2]   This does not mean that a contrast cannot be produced in a *ba* phrase, nor that a *ba* phrase never enters a cleft construction. It can, but in that case, it is the first verb of the resultative compound which can be contrasted, and not the *ba* phrase, as in (i) below :
(i)   Z. shi ba   beizi ***da***-po de, bu shi (ba   beizi) ***xi***-po   de
      Z. be O.M. cup break   *de* Neg. be (O.M. cup)   wash-break   *de*
      Z has broken the cup by hitting it, not by washing it.

In (i) a contrast is established between the verbs *da-po* (to break) and *xi-po* (to break by washing).

(18) *Zhangsan shi **ba** *beizi* dapo de, bu shi

      Zhangsan be O.M. cup break *de* Neg. be

      ba *huaping* dapo *de*

      O.M. vase break *de*

I.2. 2.   In complex sentences

Complex sentences in Chinese show two main characteristics : their neutral word order is fixed (the subordinate clause precedes the matrix clause[3]) and both the subordinate and the main clauses contain markers which hold a tight (semantic) relationship. Subordinators are in construction with connectors[4], which co-vary according to the logical relationship between clauses. Thus, for instance, the connector of hypothetical clauses (*jiu*) is different from the concessive connectors (*keshi, ye*) or the causal connectors (*suoyi*). Within conditional clauses[5], one can draw a (semantic) distinction between sufficient (or wide) conditionals containing *jiu* and necessary (or narrow) conditionals containing *cai*. Even though both types of conditional clauses are treated alike, that is as topics by Tsao (1990), i.e. as carrying old information, I would like to show that this is not the case. Briefly, I would like to demonstrate that conditionals which are in the scope of *jiu* are presupposed, while conditionals which are in the scope of *cai* are asserted. As I did above, I will oppose their different behaviors by using the tests of verbal and of *shi bu shi* questioning.

I.2.2.1   Conditionals with *jiu*

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[3]   But note that Chinese subordinate purpose clauses, apart from those marked by *wei-le,* follow their matrix clauses, see Ma (1994 : 246-247) and Eifring (1995 : 190-191, 201).

[4]   For an overview of such a relationship, cf. Eifring (1995) and Paris (1981, 1983) for *jiu* and *cai*.

[5]   Causal and temporal clauses, too.

In (19) below, the interrogation is marked by the sentence final particle *ma*, whose scope is both wide and unclear. Just looking at the word order does not allow us to predict whether *ma* bears on the subordinate clause only, or on the matrix clause only or on the relation between both clauses.

(19)   ruguo tianqi   hen leng,   Lisi *jiu*   hui   qu   mai

      if   weather   very cold   Lisi *jiu*   can   go   buy

      shu   **ma**?

      book   F.P.

      Is it the case that if it is cold, Lisi will go and buy books?

One way to disambiguate a question marked by *ma* is to use its verbal counterpart, called the A-not-A question. Its scope is necessarily small: its does not appear in sentence final position. Within one given clause, it shows up at the level of the predicative phrase, on the first verb. The verb of the subordinate clause in (19) is the stative verb *leng* 'to be cold'. If it is questioned as in (20) below, the sentence is ungrammatical.

(20)   *ruguo   tianqi   **leng bu leng**,   Lisi jiu hui qu

      if   weather   cold-Neg.-cold   Lisi *jiu* can go

      mai shu?

      buy book

The ill-formedness of (20) is expected: in general, as a (sufficient) conditional clause is presupposed, it can neither fall under the scope of negation nor of question. So, we predict that only the (first) verb of the predicate of the *matrix* clause of (19) should allow questioning. This is confirmed by the sentence (21), which is well formed (but note in passing that the connector *jiu* should be deleted)[6].

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6   If *jiu* is in the scope of *hui-bu-hui*, the sentence is acceptable, cf. (i), but its meaning is different from that (21). The locus of the question resides in the relationship between the two clauses. As this relationship is marked by *jiu*, *jiu* must remain in the matrix clause. In (21), the question bears on the matrix clause only.

(i)   ruguo tianqi   hen leng, Lisi **hui bu hui** **jiu** qu mai shu   (ne)?

      if   weather very cold Lisi can-Neg.-can *jiu* go buy book   (F.P.)

      If it is cold, would Lisi (then) go and buy books?

(21)   ruguo tianqi   hen leng,   Lisi   Ø   **hui bu hui**
       if   weather   very cold Lisi   Ø   can-Neg.-can
       qu   mai shu?
       go   buy book

I will now study conditionals which use *cai* as a connector in their matrix clauses.

I.2.2.2   Conditionals with *cai*

(22) below is built on the same pattern as (19) above. The interrogative final particle *ma* follows the sequence subordinate + matrix clause.

(22)   ni   zhiyou yong   zhei ge banfa   *cai* neng xue-hao   **ma**?
       you only   use   this Cl. method *cai* can   study-well   F.P.
       Is it the case that only if you use this method you will succeed in   learning?

Contrary to what is the case with conditional *jiu* in (21) above, the verb in the matrix clause cannot be questioned. Neither (23) nor (24) are acceptable. (23) does not contain *cai*, (24) does.

(23)   *ni   zhiyou yong zhei   ge   banfa   **neng bu neng**
       you   only   use   this   Cl.   method can-Neg.-can
       xue-hao?
       study-well

(24)   *ni   zhiyou yong zhei   ge   banfa **cai**   **neng bu neng**
       you   only   use   this Cl.   method *cai*   can-Neg.-can
       xue-hao?
       study-well?

Thus, the predicate of the subordinate clause *yong* 'to use' is the only one left available for questioning. But again, such a question is not acceptable, cf. (25).

(25) *ni   zhiyou   **yong bu yong**   zhei ge   banfa
      you   only   use-Neg.-use   this Cl.   method

      cai   neng   xue-hao?
      cai   can   study-well

Only (26) below is acceptable. In its matrix clause, the question operator is marked not by the verb contained in the clause, but by an 'extra' verb, the copula *shi* 'be'. The presence of *shi* is to indicate that there is a presupposition[7]. Notice that contrary to (21) above where the connector *jiu* is absent, the connector *cai* is present in (26).

(26) ni **shi bu shi**   zhiyou   yong zhei ge   banfa

      you be-Neg.-be   only   use   this Cl.   method

      cai   neng   xuehao?
      cai   can   study-well

      Is it the case that only if you use this method you will succeed in   learning?

To sum up, conditionals marked by *jiu* and those marked by *cai* behave very differently under questioning. Both the question markers and their positions vary. The (auxiliary) verb *hui* 'can'/'will' in the matrix clause is questioned in (21), while *jiu* is deleted. The copula *shi* 'to be' is questioned in the subordinate clause of (26) , while the connector *cai* remains present. Hence we can conclude that conditionals containing *jiu* and those containing *cai* do not play the same informational role. A *jiu* conditional is indeed a topic: it cannot be questioned[8]. On the contrary, a *cai* conditional is not a topic: it does carry new information and falls in the scope of the question operator.

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[7]   For the use of meta-linguistic *shi*, see Teng (1974).

Another test proves that conditionals with *jiu* and those with *cai* play different informational roles. The contents of a topical subordinate clause, such as *ruguo ni zai tuici* 'if you refuse again' in (27), can be anaphorized by a resumptive pronoun[9] *zhe* 'this' or *na* 'that' in the matrix clause, as shown in (28) below. The contents of a focal subordinate cannot : from (29), (30) cannot be derived.

(27)   ruguo ni   zai   tuici,   jiu bu heshi   le
        if   you again decline   *jiu* Neg. adequate F.P.
        If you refuse again, it won't be accepted.

(28)   ruguo ni   zai   tuici,   **zhe/na** jiu bu   heshi   le
        if   you again decline this/that *jiu* Neg.   adequate F.P.
        If you refuse again, it won't be accepted.

(29)   yaoshi duo   lianxi   cai   tigao   chengji
        if   much   practice   *cai*   increase grade
        It is only if you practice a lot that you will have better grades.

(30)   *yaoshi duo   lianxi, **zhe/na**   cai tigao   chengji
         if   much practice this/that *cai* increase grade

In this first part, I have tried to show that the iconic (isomorphic) principle that establishes a strong parallelism between the directionality of (surface) word order and that of informational structure is not always factually grounded. In my opinion, the pairing of an affirmative sentence and its interrogative counterpart reveals in a better way how information is displayed by word order. In the following, I will present some formal analyses.

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8   See note 19 below.

II.   PREVIOUS ANALYSES : The formal paradigm

In this section I will present data which belong to simple sentences. I will not deal with the linear order of the constituents, but with their hierarchical order.

II.1.   Simple sentences (and scope relations)

Contrary to functional linguists, formal linguists posit an abstract *hierarchical* level of analysis, called LF (Logical Form), where meaning is computed. In that vein of research, Ernst (1994: 245) — among others[10] — posits the isomorphic principle (IsoP), which accounts for the ungrammaticality of (31) as opposed to the grammaticality of (32)[11]. This principle reads as follows: « If an operator A has scope over B at SS (surface structure), then A has scope over B at LF ».

(31)   *ta   yiding   **qu bu qu**?
         he   definitely   go-Neg. go

(32)   ta   **shi bu shi**   yiding   qu?
         he   be-Neg.-be   definitely   go
         Is he definitely going?

The ungrammaticality of (31) « can be accounted for by assuming that the A-Not-A form [+ Qu] raises to Comp at LF and that any adjunct which c-commands [+ Qu] at SS must also raise to c-command it at LF....If the adverb is incompatible with scope over [+ Qu] , as most core adjuncts are, the result will be ruled out. » (*ibid*.: 260). As the reader can see, first, if the ungrammaticality

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9   The presence of a resumptive clitic is symptomatic of topicality (= old information), cf. Cinque (1990: 63, 180).
10   See Tai (1973: 400) and also Huang (1982, 1983) or Aoun and Li (1989). For the assginment of scope at surface structure, cf. Huang (1981).

of (31) finds a mechanic description, nothing is said about the fact that the question, which cannot be realized as *qu bu qu* 'do you go ?' needs to be marked with *shi bu shi* 'is it (the case) that ... ?'. Second, how can the difference between (31) and (32) be accounted for, except by stating the following tautology: *yiding* 'definitely' is marked as incompatible with question marking on the verb, hence the ungrammaticality of (31), while *jiujing* 'finally' is marked as compatible, hence the grammaticality of (32)? What is the reason which explains why *yiding* 'certainly' 'is incompatible with scope over [+Qu]', but *jiujing* 'finally' [12]is compatible with scope over [+Qu], cf. (33). ?

(33)   ta   jiujing   **qu bu qu**?
       he   finally   go-Neg.-go
       Finally, is he going?

Firstly, the facts presented in the pair (31) and (33) present a problem for the IsoP because the two adverbials *yiding* 'certainly' and *jiujing* 'finally', which occupy the same syntactic position – i.e. between the subject and the verb phrase, behave differently under interrogation : hence, for some unknown (semantic ?) reason, they have different scopal properties. Secondly, if IsoP is indeed a valid principle, this entails that inverse scope should be impossible in Mandarin Chinese.

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[11]   (31) and (32) are numbered (9b) and (12a) in Ernst (1994).
[12]   Ernst (2009) provides a semantic explanation for the (in)compatibility between certain adverbs and negation or question. He also accounts for the (syntactic) linear order of speaker-oriented adverbs. Arguing that speaker-oriented adverbs (SpOA) are PPI (positive polarity items), he establishes three classes of (English) adverbials :
        (i) Strong PPIs, i.e. strong evaluative adverbs like *unfortunately, sadly*, which are blocked in all non veridical contexts. Strong PPIs reflect « the strongest speaker commitment, and, semantically the greatest sensitivity to positive polarity constraints » (*ibid* : 540). « Non veridical operators do not preserve the truth value » (*ibid* : 511) …
        (ii) Weak PPIs or weak evaluatives/modals, like *mysteriously, conveniently* and *probably, surely* … represent a lesser commitment to the truth of a proposition are blocked in antiveridical contexts (*ibid* : 512). « Antiveridical operators, loosely, reverse the truth value ».
        (iii) Non PPIs or evidentials, like *obviously, evidently*, are allowed in all non veridical contexts.

The following example illustrates the existence of inverse scope[13]. In (34) two preverbal scopal elements follow each other. According to the IsoP, their surface word order should direclty represent their scopal properies. Thus, the adverb *jiu* 'only' precedes the modal verbal *neng* 'can': hence *jiu* 'only' should have scope over *neng* 'can' . But, as the English translation shows, the scope of *neng* 'can' is wider than that of *jiu* 'only'. Whereas *neng* modifies the whole verb phrase, *jiu* modifies only the numeral phrase *yi bei* 'one glass' in the object position.

(34)   ta   **jiu**   **neng** he   yi   bei   jiu
        he   only can   drink one   Cl.   alcohol
        He can only drink one glass of wine.

In other words, if IsoP were to apply, the word order that would correctly represent the semantic relationships should be (35). But (35) is not well-formed. But note that the interrogative counterpart of (34), that is (36), is fully grammatical. In (36) *neng* 'can' precedes *jiu* 'only'.

(35)   *ta   **neng** **jiu**   he yi bei   jiu
        he   can   only   drink one Cl.   alcohol

(36)   ta   **neng-bu-neng**   **jiu**   he yi bei   jiu ?
        he   can-Not-can   only   drink one Cl.   alcohol
        Can he only drink one glass of wine ?

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[13]   "An expression *a* has inverse scope over an expression *b* iff *b* is in the semantic scope of *a* but *a* does not c-command *b* at S structure", De Swart (1998). See also Buring (1997). (i) below is acceptable because the negation marker has inverse scope on the negative polarity item. Its semantic scope is wider than its syntactic scope. Inverse scope is felicitous if the wide scope interpretation of negation entails a positive statement, or pragmatically carries a positive implicature.
      (i) [a doctor who knew *anything* about acupuncture] was not available

(36) corroborates what I have claimed above — cf. (21) and (26) — about the basicness of interrogative word order in Chinese.

 Other numerous examples of inverse scope can be found in Mandarin Chinese[14], especially within the Noun Phrase. Lexemes which indicate numeral approximation and which are composed of locatives markers such as *shangxia* 'around'/'about', *qianhou* 'around'/'about' and *zuoyou*[15] 'around'/'about' modify the numeral phrase which *precedes* them (not which follows them), as seen in the three examples below, (37)-(39).

(37) jiu   shi   wan   tong   **zuoyou**
      nine   ten   thousand   barel   around
      900,000 barrels approximately

(38) si   shi   sui   **shang xia**
      four   ten   year   around
      about forty years old

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[14]   Lee, Yip and Wang (1999) have demonstrated that inverse scope in Chinese is influenced by both the lexical properties of quantifiers and by the thematic roles played by objects. Thus, for instance, inverse scope is more readily available to goal/location objects, especially when quantified by *mei* + Classifier 'every' than they are to theme objects, especially when such objects are quantified by *suoyoude* 'all'. Hence (i), where the object *suoyoude ge* 'all the songs' is a theme, shows no inverse scope effect, while inverse scope is possible for (ii). In (ii), which has two readings, the object *mei ge wuding* 'every roof' is locative.
(i)   zai zhei ci yinyuehui-shang, you **liang ge** gexing chang-le   **suoyoude** ge
        at this Cl. concert-on   have two Cl. star   sing-Sfx.   all   song
        At this concert, two singers sang all the songs. (*liang ge > suoyoude*)

(ii)   zai na tiao jie,   you **liang ge** qiqiu   piao-guo-le   **mei ge**   wuding
        at that Cl. street have two Cl. balloon float-Suf.-Sfx. each Cl.   rooftop
        On that street two balloons floated to every roof. (*mei ge > liang ge; liang ge > mei ge)*

[15]   For more details about *zuoyou* 'around'/'about', cf. Paris & Vinet (2010). Note that adverbs like *dayue* 'approximately', *jihu* 'as if', *chabuduo* and *chayidian* 'almost' also indicate approximation, but they take their scope on the right.

(39)   zai   yi-jiu-si-jiu   nian   **qianhou**

         at   one-nine-four-nine   year   around

         around 1949

Apart from the cases of scope inversion described above, which (only) concern constituents within a Chinese sentence, the most blatant examples of inverse scope which concern the whole sentence are, for instance, the final interrogative particles *ne* or *ma*, as illustrated in (2), (19) and (22) above. Such particles follow the strings which are in their scopes.

In the following I will present some data related to complex sentences.

II.2.   **Complex sentences**

As far as complex sentences are concerned and in order to capture the 'topic prominence' of the Chinese language, Gasde and Paul (1996) introduce a functional projection called 'Topic Phrase' which can be occupied by two types of subordinate clauses. Generating adjunct clauses in the specifier position of a Topic Phrase automatically provides them with the surface order subordinate + matrix clause. In their perspective, both conditional and causal clauses, as illustrated in (40) and (41) respectively[16], occupy the same position. « To generate adjunct clauses in the specifier position of TopP allows us to automatically derive the rigid word order "adjunct clause - main clause" observed in complex sentences with causal[17] and conditional clauses » (*ibid*.: 285).

(40)   ruguo ni   yao   mai   fangzi (de hua)   wo jiu

        if   you   want   buy   house (if)   I   *jiu*

---

[16]   (40) corresponds to (41) and (11) to (21a) in Gasde and Paul' s paper.

[17]   Note that Wang (1995) has shown that, in conversation, Mandarin causal clauses present word order properties which distinguish them from temporal, conditional and concessive clauses. Besides they present new information (*ibid*. : 240). See also Biq (1995). The same dichotomy applies to French, see Le Querler (1993).

jiegei ni qian

lend you money

If you want to buy a house, I will lend you some money.

(41)   yinwei ta pingshi zhuyi duanlian, suoyi   shenti yizhi

because he usually mind exercise therefore body always

hen hao

very good

Because he practices sports regularly, he is in excellent health.

Tsai (1995a, 1995b, 2001) has shown very convincingly that Gasde and Paul's analysis fails to account for many distributional facts which differentiate conditional clauses from causal ones[18]. She uses eight tests (deletion of the subject of the matrix clause, topicalisation, embedding in tensed clauses, relative clause formation, focussing, constituent questioning in the matrix clause, the scope of the *shi-bu-shi* operator and anaphoric pronominalization in the matrix clause) to prove that conditional clauses and causal clauses present different informational properties. She demonstrates that conditional clauses and causal clauses have opposite informational values. Whereas a subordinate conditional carries old information, a causal subordinate clause carries new information. As a consequence, question formation varies in the two types of subordinate clauses. The affirmative/interrogative pair (42)-(43) attested for conditionals sentences has no causal counterpart, cf. (44)-(45)[19]. The conditional matrix in (43) contains an interrogative pronoun *shei* 'who?' which is the locus of new information; the causal matrix of (45) cannot, because it is presupposed.

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[18]   Lu (2003, 2008 : 125) demonstrates that conditionals and causals do not occupy the same positions. Conditionals behave in the same way as speaker oriented adverbials : they belong to the CP level. In contrast, causal clauses, like temporal and locative adverbials, can be attached to three different positions : CP, Ip and Pr P.

[19]   (42)-(45) correspond to (18a, b) and (19a,b) in Tsai (1995a).

(42)   ruguo Zhangsan shengbing, Lisi hui qu mai yao

       if   Zhangsan be ill   Lisi can go buy medicine

       If Zhangsan falls ill, Lisi will go and buy medicine.

(43)   ruguo Zhangsan shengbing, **shei**   hui qu mai yao?

       if   Zhangsan be ill   who? can go buy medicine

       If Zhangsan falls ill, who will go and buy medicine?

(44)   yinwei Zhangsan shengbing, Lisi hui qu mai yao

       because Zhangsan be ill   Lisi can go buy medicine

       Because Zhangsan is ill, Lisi will go and buy medicine.

(45)   *yinwei Zhangsan shengbing,   **shei** hui qu mai yao?

       because Zhangsan be ill   who? can go buy medicine

If it is true that a constituent which inherently carries old information cannot be cleft, as shown with a *ba* phrase in (18) above, one should expect that a conditional clause can neither be cleft nor questioned; on the contrary, a causal can. Compare the ill-formedness of (47)-(48) to the well-formedness of (50)-(51). Morever, as clefting and questioning are allowed when the adjunct precedes the matrix, as in (50)-(51), this proves that a causal proposition cannot occupy a functional projection labelled Topic Phrase. By definition, a topic cannot be cleft nor questioned[20].

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[20]   In my view, a topic can neither be cleft - cf. Paris (1979 : 142, 155-156) and Tang (1983), Chiu (1993) - nor questioned. Therefore I disagree with Gasde (1998) who admits questioning on topics. According to him, « *shi bu shi* [...] is able to appear sentence-initially before "Chinese style" topics, taking scope over them » (*ibid*.: 30).
To my mind, in his example ([26] = (iii), the question operator *shi bu shi* 'is it?' cannot have small scope (on the topic) : it can only have wide scope on the entire utterance. (Generally speaking, *shi-bu-shi* has two scopes : either a small scope on the constituent adjacent to it or a wide scope on the whole chunk which follows it) .
Gasde (1998: 51) agrees with the wide scope interpretation of (iii), but still maintains that « *yes/no* question operators in general are able to take scope over « Chinese style topics » » (1998: 52).

(46) ruguo tianqi   hen   hao,   wo jiu   hui   lai
     if   weather   very good   I   jiucan   arrive
     If the weather is fine I will come.

(47) ***shi** ruguo tianqi   hen   hao,   wo   jiu   hui   lai   de
     be   if   weather   very   good I   *jiu*   can   arrive *de*

(48) ***shi bu shi** ruguo tianqi   hen   hao,   ni   jiu   hui   lai ?
     be-neg.be   if   weather   very   good you *jiu*   can   arrive

(49) yinwei   tianqi   hen   hao wo   cai   lai   de
     because   weather   very good I   *cai* come *de*
     I came because the weather is fine.

(50) **shi**   yinwei   tianqi   hen hao wocai lai   de
     be   because   weather   very good I   *cai* come   *de*
     It is because the weather is fine that I came.

(51) **shi bu shi**   yinwei   tianqi hen hao ni   cai   lai   de ?
     be-Neg-be   because   weather very good you   *cai* come *de*
     It is because the weather is fine that you came ?

In the preceding section I have tried to show that   there is no one-to-one correspondence

between three levels of linguistic analysis: the informational level (topic), the tagging level

(subordinate clause) and the (syntactic) word order level (left to right, subordinate before main

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(iii)   shi bu shi   da   chengshi   Beijing   zu   luan?
     be-Neg.-be   big   city   Peking   most chaotic?
     Is it or is it not the case that [among] the big cities, Beijing is the most chaotic   one?
(Gasde's translation)
     As for big cities, is it Peking which the most chaotic one?(my translation,
     M.C.P.)

clause). In other words, in my view, the (automatic) association between the terms of the triplet <topic, subordinate clause, and left position> is ill-grounded.

In the next section I will go back to the study of simple sentences. I will study some properties of questions and answers of some indicators of time and space.

III   DIFFERENT QUESTION OPERATORS AND DIFFERENT INFORMATIONAL PROPERTIES

I will now go back to simple sentences and try to explain their word order. Firstly, I will study the opposition between stage-level vs. individual level sentences and then their behavior under question. Secondly, I will briefly study the ordering of some adverbials and how they are questioned.

III. 1 The ordering of time and locative constituents

The comparison between a pair of two simple sentences which both contain a locative adverbial, cf. (52)-(53), but whose difference only lies in the presence of an aspectual marker is revealing. The verb in (52) does not carry an aspectual marker, whereas that of (53) does.

(52)   ta   zai   gongyuan-li pao-Ø bu
      he   at   park-in   run-Ø   step
      He runs in the park.

(53)   ta   zai gongyuan-li pao-**guo**   bu
      he   at park-in   run-Sfx.   step
      He has (already) run in the park.

If questioned by means of the final interrogative particle *ma*, both sentences have different answers. Compare the two triplets of questions/answers (54)-(56) and (57)-(59). Apart from the general use of the marker of confirmation *shi* 'to be'/ 'yes' in (55a) and (58a), the affirmative answers to sentences which are deictically anchored, as opposed to those which are not, is revealing. When the answer just contains the verb, as *pao(bu)* 'to run' in (55b) and *pao-guo bu* 'to have run' (58b), there is a difference in grammaticality. (55b) is ill-formed, but (58b) is not.

(54) ta   zai   gongyuan-li   pao-Ø bu   ma ?
      he   at   park-in   run-Ø   step   F.P.
      Does he run in the park ?

(55a) shi   (55b) *pao(bu)
       be   run(step)
       Yes.

(56) bu, (ta bu zai gongyuan-lipao-Ø bu),   ta   zai   xuexiao-li   paobu
      neg. (he Neg at park-in   run- Ø step he   at   school-in   run-step
      No, (he does not run in the park) he runs at school.

(57) ta   zai   gongyuan-li pao-**guo**   bu   ma ?
      he   at   park-in   run-Sfx.   step   F.P.
      Has he (ever) run in the park ?

(58a) shi   (58b) pao-guo
       be   run-Sfx.
       Yes.   Yes, he has.

(59) mei you (ta zai gongyuan-li mei you   pao-**guo**   bu)
      Neg have (he at park-in   neg have run-Sfx.   step
      ta zai gongyuan li shui-guo   jiao
      he at   park-in   sleep-Sfx   sleep
      No, he has not run in the park, he has slept in the park.

The comparison between (55b) and (58b), on the one hand, and between (54) and (57) on the other hand is revealing. In a sentence containing an individual-level predicate, the verb cannot by itself constitute an answer, hence the locative can be interpreted as new information, cf. (56). In a stage-level sentence, because it carries the new information, the verb constitutes an answer ; but, as a consequence, the locative constituent cannot. What (54) and (57) show is the relative weight of the constituents indicating time vs. those indicating location. In terms of scope relations and also in terms of information structure, time has precedence over location[21]. The absence of any time/aspect marker allows for the new information to fall on the locatives. In the presence of time/aspect maker, the locative adverbial stands for old information. Time has precedence over location, time has wider scope than space. This is corroborated by the respective order of time adverbials and locative adverbials : time adverbials precede locatives, as shown in the contrast between (60) and (61). (61) is ill-formed, because the locative constituent *zai zhe-li* 'here' precedes the time adverbial *xianzai* 'now'.

(60)   ni   xianzai   **zai zhe-li**   xiuxi
           you   now   at here   rest
           Now you can rest here !

(61)   *ni **zai zhe-li** xianzai xiuxi
           you at here   now   rest

From the word order difference between (60) and (61), one can conclude that

the more a constituent is deictically anchored with respect to the speaker,

the more it appears on in a higher structural position[22].

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[21]   But note that (53) presents another case of scope inversion. The aspectual suffix *–guo* follows the verb, but its scope is above the verb.
[22]   If true, this would nicely account for the fact that speaker oriented adverbials not only occupy the sentence initial position and cannot be negated nor questioned, while subject

In the next section I will study the relative order of certain adverbials and will show that their relative order obeys the same scale. The more an adverbial is deictically anchored in the speech act, the wider its scope.

III. 2 The ordering of some adverbials

Tang (1990, 2001) is the first to have studied the hierarchical structure of the order of adverbials in a Chinese sentence in relation to their semantic/scope properties. In her analysis, the four heads CP, IP, Pr P and V may licence various kinds of adjuncts (1990 :131). To these heads correspond the following surface positions : the initial position (CP), the premodal verb position (IP), the post modal verb position (PrP) and the post V position. When adjuncts which are licensed by the same heads exhibit different distributions, such as for instance the temporal

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oriented adverbials do not occupy the sentence initial position and can be negated or questioned.

More generally, expressions which convey the speakers's attitude, like those which indicate exaggeration, can neither be negated nor questioned. The speaker cannot strongly commits him/herself to the truth of what s/he is saying and, at the same time, question its validity. As shown by Wen (2012 : 31), 'neutral' measure phrases can be questioned, but those which indicate the speaker's attitude cannot. Compare (i) and (ii) to (iii) and (iv). In (i)—(ii) the measure phrase *yi mi ba* ' 1,80 m' is neutral. In (iii) the the measure phrase *ba bai bian* 'eight hundred times' is not : it is exaggerated, hence (iv) is ill-formed. (i) and (ii) are numbered (15) and (15a') and (iii) and (iv) (16)c and (16)c' , respectively, by Wen.

(i)   Lao Li de   shengao   you yi mi   ba
        old Li *de*   height   have one meter eight
        Old Li is 1, 80 metre tall.
(ii)   Lao Li de   shengao   **you mei you yi**   mi   ba ?
        old Li *de*   height   have Neg. have one   meter eight
        Is Old Li 1,80 metre tall ?
(iii)   ba   ta   de langman shi   jiang –le   you   ba   bai   bian
        O.M. she *de* romantic story   tell-Sfx.   have eight hundred time
        [She] told her romantic story eight hundred times/over and over again.
(iv)   *ba   ta   de langman shi   jiang –le **you mei you** ba   bai   bian?
        O.M. she *de* romantic   story tell-Sfx.   have Neg. have eight hundred time

adverbial *jintian* 'today', which follows *huoxu* 'perhaps' or precedes it in (62) and (63)[23] respectively, this distributional variation can be accounted for either by base generation or by movement.

(62) ta   huoxu   **jintian** keyi   lai

he   perhaps   today   can   come

Perhaps he can come today.

(63) ta   **jintian**   huoxu   keyi   lai

he   today   perhaps   can   come

Perhaps he can come today.

If we return to the distribution of time adverbials mentioned above, following Tang's analysis, we can predict that the same time adverbial can be generated under three different heads, and therefore we can predict their scope differences, but we are be unable to determine which position is basic. Thus, for example, in (64)-(66) *zuotian* 'yesterday' occupies the sentence initial, the post-subject and the post-manner adverbial positions, respectively.

(64) **zuotian**   lao Li guyi   da-le   Zhangsan

yesterday   old Li   on purpose beat-Sfx.   Zhangsan

Yesterday old Li beat him Zhangsan on purpose.

(65) lao Li   **zuotian** guyi   da-le   Zhangsan

old Li   yesterday on purpose   beat-Sfx.   Zhangsan

Yesterday old Li beat Zhangsan on purpose.

(66) lao Li   guyi   **zuotian** da-le   Zhangsan

old Li   on purpose yesterday beat-Sfx. Zhangsan

Old Li beat Zhangsan on purpose yesterday.

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23   (62)-(63) and numbered (86)a and (86)b in Tang (1990 :129).

But corresponding to the three different orders of *zuotian* 'yesterday' in (64)-(66), there corresponds *only one* well-formed question, i.e. (68). (67), where the temporal adverbial is in sentence initial position and (69), where it follows the manner adverb, are not acceptable.

(67) ***shenme shihou**   lao Li guyi   da-le   Zhangsan?

      when?   Old Li   on purpose beat-Sfx. Zhangsan

(68) Lao Li **shenme shihou**   guyi   da-le   Zhangsan?
      old Li   when?   on purpose beat-Sfx.   Zhangsan
      When did old Li beat Zhangsan on purpose?

(69) *lao Li   guyi   **shenme shihou**   da-le   Zhangsan?
      Old Li   on purpose when?   beat-Sfx.   Zhangsan

Hence only (68) shows where the base position for time constituents lies. Note that this position also corresponds to the clefting position of time adverbials contained in stage-level predications[24]. (70) is the cleft sentence derived from (68). In Chinese, clefting takes place *in situ*, i.e. at the same place where a constituent is questioned.

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[24]   A time adverbial is cleft outside the *shi* VP *de* part in an individual level-predication, cf. *yiqian* 'before' in (i) and cleft inside the *shi* VP *de* part in a stage-level predication, cf. *jingchang* 'often' (ii), cf. Paris (1998).

(i)   women **yiqian** shi   hen   shu   de
            we   before be   very   familiar *de*
            Before we were close.
(ii)   tamen shi   **jingchang**   chaojia de
            they   be   often   quarrel *de*
            It is often that they quarrel.
As seen in the ungrammaticality of (iii) and (iv) a different order of adverbials is not permitted.

(iii)   *women shi   **yiqian**   hen shu   de
           we   be   before   very familiar   *de*
(iv)   *tamen **jingchang** shi chaojia   de
        they   often   be   quarrel   *de*

(70)   Lao Li shi **shenme shihou**   guyi   da de   Zhangsan?

old Li   be   when?   on purpose beat *de*   Zhangsan

When was it that old Li beat Zhangsan on purpose?

Neither (71) nor (72), which are based on (67) and (69) respectively, are well-formed.

(71)   *shi   **shenme shihou**   lao Li guyi   da   de Zhangsan?

Be   when?   Old Li   on purpose beat   *de* Zhangsan

(72)   *lao Li   guyi   shi   **shenme shihou**

Old Li   on purpose be   when?

da   de Zhangsan?

beat   *de* Zhangsan

CONCLUSION

In this paper I have tried to show that, in simple as well as in complex sentences, the locus of new information does not stand where either functional or formal linguists have predicted it to appear. To do so, I have paired affirmative and interrogative sentences.

Firstly, I have shown why the parallelism drawn by functionalists between the surface structure and the informational structure does not hold. In simple sentences, the *ba* and *bei* constituents, which are both preverbal, are not informationally identical. In complex sentences, *jiu* conditionals and *cai* conditionals do not behave identically under question formation, even though their basic word orders are identical : a subordinate clause precedes its matrix clause. In both cases I have used the test of questioning and incidentally that of clefting. Hence the *flat structure* of linear order cannot be used to account for the informational structure of Chinese sentences.

Secondly, I have used the *hierarchical structure* proposed by formalists : in that approach scope interpretations are accounted for by c- command relations. In simple sentences the existence of inverse scope phenomena in Chinese questions the strict parallelism described above between

semantic scope and syntactic structure. Moreover, if the use of different levels of structure elegantly accounts for the three positions occupied by time and locative adverbials, it nevertheless does not allow one to determine which order is basic. By pairing a question and its answer, I have also tried to explain why time adverbials precede locative adverbials. In complex sentences, by using the tests of questioning and of clefting, I have proven that conditional and causal clauses cannot occupy the same projection.

Both the functional and the formal approaches have laid emphasis on isomorphism in Chinese. For the functionalists, isomorphism is a direct relation between world events and linguistic word order or between word order and informational structure. For the formalists, it is a relation between (syntactic) word order and (semantic) scope/interpretation. I hope I have clearly indicated that isomorphism in Chinese may not be as transparent as thought of until now. It is because Chinese evidences properties of both VO *and* OV languages, i.e. head initial and head final languages, that isomorphism cannot apply across the board.

The existence of diverse strategies of question formation at the sentential level in Chinese — the final particle *ma*, the verb-Neg-verb and the *shi-bu-shi* patterns — is the direct syntactic translation of the different choices that a speaker has when asking a question. A question can bear on a whole proposition (*ma*), on an eventuality (Verb-neg.-Verb) or only part of it (*shi-bu-shi*). *Shi-bu-shi* is the most versatile question marker because, contrary to *ma* and to Verb-Neg-Verb, its position is not fixed and because its scope is narrower. At surface structure *shi-bu-shi* directly indicates where the asserted chunk of information lies.

List of abbreviations : A.M : Agent Marker, F.P. : Final particle, O.M. : Object Marker, Sfx : Suffix.

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