Pronoun Anaphor and Cataphor in Chinese

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Abstract: Chinese pronoun anaphora and cataphora are different from those in English. The co-indexing judgment tests implemented by the present study indicate that for anaphora, only when the focus is on the head DP of the possessive phrase, the co-indexing between DP at possessive position and anaphor is possible. This can be explained by c-commanding instead of parameterized DP hypothesis since DP at possessive position c-commands pronoun anaphor but the focus shift will lead to the implicit raise of the head DP of the possessive phrase and change the structure. For cataphora, the pronoun cataphor at possessive position fails to co-index with DP and pronoun cataphor in sentences with C head can co-index with DP. It is argued that phase condition and visibility condition can explain cataphora in Chinese instead of the phase commanding theory since both phase condition and visibility condition can ensure the temporary location of cataphor for checking semantic match.

Keywords: pronoun anaphor, pronoun cataphor, Chinese, c-commanding, phase condition, visibility condition

1. Introduction
Anaphora is the use of an expression that depends specifically upon an antecedent expression while cataphora is the use of an expression that depends specifically upon a postcedent expression.

For anaphora, the binding relation either between a reflexive anaphor and an antecedent or between a pronoun anaphor and an antecedent has been successfully explained by the classical condition A and B of the binding theory of Chomsky (1981). However, the binding relation between a pronoun and its antecedent DP at a possessive position cannot be satisfactorily explained by B especially when the language difference is taken into consideration as can be shown in (1) and (2).

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In English sentence (1), it is possible that the pronoun anaphor *him* and *John* at the possessive position co-index. However, it seems to be the case that in Chinese sentence (2), the pronoun anaphor fails to co-index with the possessive DP *Xiaoming*. The former studies (Fukui, 1988; Zlatic, 1997; Boskovic, 2009) tempt to explain this from the structural difference between the English possessive NP phrase and that of Chinese by hypothesizing that English possessive NP is a DP and its counterpart in Chinese, on the contrary is a NP, which, as will be illuminated by the later part of the present study is not pertinent.

For cataphora, the situation can be trickier though the classical condition C can successfully explain the impossibility of co-indexing of *John* and *he* in (3).

(3) He asked Mary to wash John.

It fails to explain the co-indexing differences among (4), (5), (6) and (7).

(4) I met him in Ben’s office.

(5) People worship him in Kissinger’s native country.

(6) He has a lot of talent and Peter should go far.

(7) Mary said that he has a lot of talent and that Peter should go far.

In both (4) and (6), the co-indexing between DP and pronoun is impossible but in (5) and (7) the co-indexing relation holds. In order to better explain this difference, Bruening (2014) proposes to replace the notion of c-command by phase-command and rephrase condition C in terms of the precede-and-command condition.

Problems remain in the sense that though precede-and-command condition has its explanatory power in explaining English co-indexing phenomena as illustrated by the above listed sentences, it loses this power and has explanatory inadequacy when Chinese is taken into consideration. For example, different from English, Chinese normally puts the prepositional phrase before but not after the verb phrase and this reverse word order can make the co-indexing relation for cataphora totally different from that of English (Xu Yulong & He Xiaodan, 2007). Besides, for lack of complementizer element like *that* in Chinese, the cataphora in Chinese coordinated sentences can also be different from that in English (Zhang, 2010).

All the above listed phenomena make the anaphora and cataphora a vague picture worthy of further clarification. And this is especially the case for Chinese pronoun anaphor and cataphor concerning possessive phrase. The paper aims at a better explanation of the Chinese anaphora and cataphora involved here based on the former theoretical studies concerning English and the co-indexing possibility judgment study concerning Chinese.
The paper is organized as follows: In section 2, I will introduce in details the former theoretical studies concerning anaphora and cataphora and what they fail to explain. In section 3, the result of a co-indexing possibility judgment will be given for further analyses. In section 4, the generative approach will be adopted to analyze what the structural factors contributing to the unique features of Chinese pronoun anaphor and cataphor concerning possessive phrase are. Section 5 serves as a short but natural conclusion.

2. Anaphora and cataphora

2.1 Anaphora

The anaphora concerning reflexives and pronouns with the antecedent NP has been successfully explained by Binding Condition A and B as can be seen in (8) and (9).

(8) John loves himself.
(9) John thinks that Mary loves him.

In (8), the co-indexing between John and the third person singular pronoun requires that the reflexive form of the pronoun be used as it is stipulated by Condition A that an anaphor (reflexive) must have a local antecedent. As a contrast, the co-indexing between John and the third person singular pronoun is optional since according to Condition B that a pronoun can have an antecedent as long as the antecedent is not local or does not c-command the pronoun.

Condition B can also help to explain the anaphora phenomenon (the co-indexing relation) in pronoun and its antecedent DP at a possessive position like what happens in (10)

(10) John’s mother likes him.

As has been illustrated by the following Figure 1, DP John is located at a possessive position and then the DP node at the very top position fails to c-command the pronoun him. Therefore, the co-indexing between John and him is possible in tandem with Condition B. However, there exists language difference as for the co-indexing possibility between a pronoun and a pre-nominal possessive DP.

![Figure 1. The derivation of English sentence (10)](image)

For East Asian languages like Chinese, Japanese and south Slavic languages like Serbian, Croatian, the co-indexing between a pronoun and a pre-nominal possessive DP is impossible as illustrated by (11) and (12).
In order to explain this language difference, former studies assume that the combination of parameterized DP hypothesis and c-commanding theory can satisfactorily explain the cross-linguistic variation between English where co-indexing is possible and other languages where co-indexing is impossible.

The parameterized DP hypothesis was first proposed by Fukui (1988) and then further discussed by Zlatic (1997) and Boskovic (2009). The main argument of this hypothesis is that there exist parameter differences across languages. More specifically, for languages like Chinese, Japanese, Serbian or Crotian, the parameter is set as the DP layer is absent; while the same does not hold for English, given that the parameter is set as the DP layer is present. Following Kayne (2002), Despic (2011, 2013) attempts to explain the difference of co-indexing possibility between English and specifically Serbian by showing the structure of the Serbian sentence (12) (Figure 2).

As can be seen in Figure 2, Markov and otac project a NP and the first branching node which dominates NP is TP and this TP also dominates the pronoun njega. Thus, the co-indexing between the pre-nominal possessive NP Marko and the pronoun njega is impossible as Marko c-commands njega. And this same analysis can be applied to Chinese sentence (12). As Xiǎomíng de and bàba can project an NP instead of DP, Xiǎomíng c-commands ta and therefore the co-indexing between them becomes impossible.

However, the combination approach of parameterized DP and c-commanding has its own problem in the following two senses. For the first, as has been emphasized by the analysis of the functional category, the semantic function of D elements “appears to have to do with restricting the range of referents picked out by the nominal that they occur with” (Adger, 2003:203). Languages like Chinese and Serbian do restrict the range of referents of the nominal through other means like demonstratives rather than definite articles. As a consequence, the parameterized DP hypothesis is not true as has been acknowledged by recent studies (Park, 2008; Wang Honglei, 2012).
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For the second, as was pointed out by Laterza (2016), in (12) a demonstrative can be added before Serbian prenominal possessive NP and then we have (13). In (13) the co-reference of Marko and njega is still not allowed. The reasonable deduction is with the insertion of the demonstrative Ovaj ‘this’, the Figure 2 will have a DP projection above NP thus makes c-commanding impossible and this will in turn make co-indexing possible. Unfortunately, this is not the case.

(13) *Ovaj Markovi drug smatra njega veoma apametnim.

‘This friend of Marko, considers him very intelligent.’

In a word, the failure of co-indexing between a pronoun anaphor and a pre-nominal possessive DP as its antecedent in Chinese needs to be further clarified which is indispensable to an anaphora theory with explanatory adequacy.

2.2 Cataphora

Compared with anaphora, the cataphora phenomenon as has been revealed in (4), (5), (6), (7) traps Condition C in a thornier situation since in following precede-and-command condition, the co-indexing is not possible in all these sentences. In order to answer the question what makes cataphora possible in (5) and (7), Bruening (2014) proposes to replace the familiar notion of c-command by phase-command, which stipulates that first, an R-expression is free and second, if there is no y such that y precedes and phase-commands x and x and y are co-indexed. Here, the phase status is designated to CP, vP and DP as it is traditionally defined. By phase-commanding, Bruening (2014) means α phase commands δ if and only if there is no phasal node γ such that γ dominates α but not δ. Condition C based on phase-commanding instead of c-commanding can better explain the co-indexing possibility in English cataphora as the following sentences indicate.

(14) *Hei loves Johni.
(15) His, father loves Johni.
(16) *I met himi in Beni’s office.
(17) People worship himi in Kissingeri’s native country.
(18) *Hei has a lot of talent and Peteri should go far.
(19) Mary said that hei has a lot of talent and Peteri should go far.

In (15), (17) and (19), the separate DP, vP and CP status of his father, worship him and that he has a lot talent make them phase-command John, Kissinger and Peter and thus the co-indexing between these nouns and the cataphor pronouns possible.

What about Chinese? The language tuition shows that for the Chinese equivalent to (15), the co-indexing between tā ‘he/she’ and Xiāomíng seems to be impossible in (20). The parameterized DP hypothesis may provide us with an easy way to answer why it is impossible but just as has been mentioned, the hypothesis has its problems. And for
sentences with prepositional phrases, Chinese has a word order different from that of English since Chinese normally puts prepositional phrase before but not after the main verb phrases. What can be the co-indexing possibility in Chinese sentences (21) and (22)? Can the co-indexing possibility be explained the same way as phase-commanding? Last but not the least, the situation for Chinese coordinated sentence (23) is even more complicated. Chinese hé ‘and’ or bìngqiě ‘and’ function the same as English and. However, (23) sounds very awkward, not to mention the co-indexing possibility no matter it is used independently or embedded in a main clause. The use of yīnwèi ‘because’ and sūoyǐ ‘so’, turning (24) into a subordinated sentence, though can improve the acceptability of the sentence, cannot clarify the co-indexing possibility.

(20) Tā de māma xǐhuān Xiǎomíng.
    he/she POSS mother like Xiaoming
    ‘His mother likes Xiaoming.’

(21) Wǒ zài tā de bàn’gōngshì pèngdào Xiǎomíng.
    I at he/she POSS office meet Xiaoming
    ‘I met Xiaoming at his office.’

(22) Zài tā de jiāxiāng, rénmen jìniàn Xiǎomíng.
    in he/she POSS hometown, people worship Xiaoming.
    ‘People worshipped Xiaoming in his hometown.’

(23) Tā hěn cōngmíng, bìngqiě Xiǎomíng yīdìng néng chénggōng.
    he/she very clever, and Xiaoming should be able to succeed.
    ‘He is clever and Xiaoming should be able to succeed.’

(24) Yīnwèi tā hěn cōngmíng, suoyǐ Xiǎomíng yīdìng néng chénggōng.
    because he/she very clever, so Xiaoming should be able to succeed.
    ‘Because he is very clever, Xiaoming should be able to succeed.’

Above all, the former studies, no matter the parameterized DP hypothesis or phase-commanding, though succeeded in explaining the pronoun anaphor and cataphor in English to a large degree, failed to satisfactorily explain what happens in Chinese. The present study aims at a better explanation for pronoun anaphor and cataphor both in Chinese and English by focusing on the phenomenon listed above. Since the co-indexing possibilities in Chinese anaphora and cataphora are, for most cases judged by following the linguistic tuition, the co-indexing possibility judgment is first conducted to ground the later theoretical analyses on a more solid foundation.

3. The co-indexing possibility judgment

In order to make the judgment survey authentic and convincing, 700 first and second-year undergraduates majoring in Chinese language from Chinese department of a key
university in Jiangsu Province, east China, were deliberately chosen to be assigned the judgment tasks. All these students have a good Chinese proficiency and thus can make sure the judgments can reflect the real situation. We divided the 700 students into 14 groups and only one judgment task is assigned to each group to avoid the possible interference.

It has been argued that for pronoun anaphora, Chinese is different from English only when an antecedent DP is at a pre-nominal possessive position. Therefore, (25) was adopted as the language material to testify the co-indexing relation.

(25) Xiǎomíng de bàba xǐhuān tā.  
Xiaoming POSS father like him/her
‘Xiaoming’s father likes him/her.’

After reading the sentence, the subjects were asked to judge whether the pronoun tā in (25) can refer back to Xiǎomíng. Among 50 subjects, 43 chose no and only 7 chose yes.

The former studies indicate that the focus shift may insert positive or negative influence upon the co-indexing relation in Chinese (Birch, Albrecht & Myers, 2000) and the accent is one of the most commonly adopted ways for Chinese to shift focus. In order to see whether the co-indexing relation will be altered by focus shift as a result of accent shift, other two groups of 50 students were asked to do the same co-indexing judgment for (25). However, Xiǎomíng and bàba at this time were accented separately to clearly convey the information of focus alteration. As a result, when Xiǎomíng was accented, 45 chose no and 5 chose yes. Things are different when bàba was accented and under this circumstance, 9 chose no but 41 chose yes.

For cataphora, it has been argued that Chinese and English vary in more aspects. By consulting the cataphora pattern proposed by Bruening (2014), we also tested the co-indexing possibility in the following patterns of possessive pronoun in DP, prepositional phrases containing possessive pronouns in VP and TP as well as pronouns in CP as illustrated by the following Chinese sample sentences.

(26) Tā de bàba xǐhuan Xiǎomíng.  
he/she POSS father like Xiaoming
‘His father likes Xiaoming.’

(27) Zài tā de jūxiāng, rénmen jìniàn Zhōu zǒnglǐ.  
in he/she POSS hometown people memorize Zhou premier
‘In his hometown, people memorize Premier Zhou.’

(28) Wǒ zài tā de bāngōngshì jiàndào le Xiǎomíng.  
I at he/she POSS office see PERF Xiaoming
‘I have seen Xiaoming at his office.’

(29) Tā hěn cōngmíng bǐngqiě Xiǎomíng ná dìyī.  
he/she very intelligent and Xiaoming get the first prize
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‘He is very intelligent and Xiaoming gets the first prize.’

(30) Lì lǎoshī shuō tā hěn cóngmíng bìngqiě Xiǎomíng ná le diyī.

Li teacher said he/she very intelligent and Xiaoming get PERF the first prize

‘Teacher Li said that he was very intelligent and Xiaoming had got the first prize.’

(31) Yǐnwèi tā hěn cóngmíng, suǒyǐ Xiǎomíng ná le diyī.

because he/she very intelligent, so Xiaoming get PERF the first prize

‘Because he was very intelligent , Xiaoming has got the first prize.’

(32) Tā hěn cóngmíng, suǒyǐ Xiǎomíng ná le diyī.

he/she very intelligent, so Xiaoming get PERF the first prize

‘He was very intelligent, so Xiaoming has got the first prize.’

(26) is representative of the cataphor located at the possessive position. Of the 50 students who participated in the co-indexing judgment, 48 students say no and only 2 say yes. In order to examine the possible influence of focus shift upon co-indexing judgment, tā ‘he/she’ and bàba in (26) were accented in turn and under these circumstances, separately 49 and 45 say no but 1 and 5 say yes.

In both (27) and (28), pronoun cataphors are at the possessive positions in prepositional phrases indicating location. Different from English (17) and (18), Chinese allows prepositional phrase indicating location before but not after the verb phrases. For (27) and (28), we did examine the co-indexing possibilities by taking or not taking focus shift into consideration. If there is no accent variation, for (27), of 50 students, 44 say no and 6 say yes and what happens to (28) is 42 say no and 8 say yes. If the accent is on the pronoun cataphor at possessive position, 46/44 say no and 4/6 say yes and if the accent is on the head DP, jiāxiāng ‘hometown’ for (27) and bàn’gōngshì ‘office’ for (28), 41/42 say no and 9/8 say yes. (29), (30), (31) and (32) all represent the cataphora across clause boundary in which the pronoun cataphor is in the first clause and the DP is in the second clause. The differences lie in that (29) is a compound sentence and the two clauses are linked by connective bìngqiě ‘and’, (30) is to embed this compound sentence into a main clause, (31) is a complex sentence in which the two clauses are linked by connectives of yǐnwèi ‘because’ and suǒyǐ ‘so’, and (32) is a complex sentence in which the connective suǒyǐ ‘so’ is put before the second clause while the connective yǐnwèi ‘because’ is missing for the first clause. The co-indexing judgment test indicates that for (29), 50 say no and 0 say yes and this result also applies to (30) with 50 saying no and 0 saying yes. As a sharp contrast, the result for (31) is 11 say no and 39 say yes. For (32), the situation changes again with 43 saying no while 7 say yes.

As a summary, the pronoun anaphora and the cataphora for Chinese can be very complicated and the co-indexing possibility can vary greatly from sentence to sentence. In the following section, the tentative analysis from the generative perspective will be
4. Generative analysis of Chinese pronoun anaphora and cataphora

4.1 Generative analysis of Chinese pronoun anaphora

As has been discussed in 2.1, Chinese anaphora concerns the co-indexing relation between either a reflexive or a pronoun with an antecedent DP. For reflexives, Chinese has a floopy compliance with the binding condition A with the exception of allowing long-distance binding, which has been discussed in former literature in details (Li Yafei, 1993; Xu Liejiong, 1993:123-141). For pronouns, Chinese strictly follow binding condition B as can be observed in all the following sentences which represent different locations of anaphor pronoun.

(33) Xiǎomíng rènwéi Xiǎolǐ hén tā.
    Xiaoming think Xiaoli hate him/her
    ‘Xiaoming thinks that Xiaoli hates him/her.’

(34) Xiǎomíng rènwéi tā hén cōngmíng.
    Xiaoming think he/she very intelligent
    ‘Xiaoming thinks that he is very intelligent.

(35) Zài Xiǎomíng de jiāxiāng, dājiā dōu hén zǔnhòng tā.
    in Xiaoming POSS hometown, people all very respect him/her
    ‘People all respected him in Xiaoming’s hometown.’

(36) Zài Xiǎolǐ de bàn’gōngshì, wǒ jiàndào le tā.
    at Xiaoli POSS office, I see PERF him/her
    ‘I have seen him at Xiaoili’s office.’

(37) Xiǎomíng hén cōngmíng bìngqiě tā hén qínfèn.
    Xiaoming very smart and he/she very industrious
    ‘Xiaoming was very smart and he was very industrious.’

(38) Tā shuō Xiǎomíng hén cōngmíng bìngqiě tā hén qínfèn.
    he/she say Xiaoming very smart and he very industrious
    ‘He said that Xiaoming was very smart and he was very industrious.’

(39) Yīnwèi Xiǎomíng hén cōngmíng suǒyì tā ná le diyī.
    because Xiaoming very smart so he get PERF first prize
    ‘Because Xiaoming was very smart, he got the first prize.’

In all these sentences, the pronoun anaphor can have DP as an antecedent (thus the co-indexing is possible) since the antecedent is not local or does not c-command the pronoun.

So, the only difference between Chinese pronoun anaphor and English pronoun anaphor

provided in order to clarify the co-indexing mechanism for pronoun anaphora and cataphora in Chinese.
lies in the case that the DP is located at the possessive position as exhibited in (1) and (2). The indexing possibility judgment indicates that the pronoun anaphor in (2) cannot co-index with the antecedent DP. Since the former studies assume that Chinese does have D level above NP for both semantic and syntactic considerations and DP parameter differences cannot satisfactorily explain syntactic truth, it is deemed by the present study that Chinese does have D level and the co-indexing differences mainly attribute to the structural differences of the DP containing the possessive.

The structural differences between Chinese and English possessive DPs can possibly be revealed by the contrast of (40) and (41).

(40) a. This John’s friend likes him.
   b.*John’s this friend likes.

(41) a.*Zhègè Xiǎomíng de péngyou xǐhuān tā.
   ‘This Xiaoming’s friend likes him.’
   b. Xiǎomíng de zhègè péngyou xǐhuān tā.
   ‘This friend of Xiaoming likes him.’

It has long been argued that in English there exists complementarity distribution between the definite or indefinite article and the possessive and thus neither the nor a/an is allowed in a possessive DP. However, the demonstrative this or that can be put before the possessive DP exemplified by this John’s friend (Eskenazi, 2002). On the contrary, this is not the case for Chinese because Chinese though lacking determiner elements like articles, allows demonstrative zhègè ‘this’ between the possessive and head noun exemplified by lǎowáng de zhègè péngyou ‘this old Wang’s friend’. As a result, the derivations for English possessive DP and for that of Chinese can be in the forms illustrated by Figure 3.

Figure 3. The traditional derivational differences between John’s friend and Xiǎomíng de péngyou

The structural differences illustrated by Figure 3 can better explain the co-indexing possibility difference between English and Chinese. For English, the possessive John’s is two levels lower than that of DP and thus fails to c-command the pronoun anaphor him. This is why the co-indexing is possible between the possessive and anaphor pronoun by following binding condition B. Chinese is different from English in the sense that the possessive is located at the specifier position of D’ and thus c-commands the pronoun anaphor. This causes the co-indexing between the possessive and the pronoun ta impossible.

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also in accordance with binding condition B.

Now it is time to explain what has happened when the accent was put either on the possessive or on the head noun. As has been discussed, the accent change will normally lead to the focus shift (Zimmermann & Onea, 2011). Cartographical analysis indicates that focus is normally put at a higher position in a structure. Thus, the present study assumes that there will be an implicit raise of an accented syntactic element within the local domain. The local domain constraint herein is designated mainly for phase impenetrability condition. In this specific case, if the head is accented, there will be implicit raise of this accented head. As a consequence, there will be a new level inserted above the possessive but below DP, that is, D’’ to locate the implicitly raised head péngyou ‘friend’ and in turn the structure will be altered and Xiăomíng de ‘Xiaoming’s’ fails to c-command the pronoun anaphor (as illustrated by Figure 4). The co-indexing possibility therefore greatly increases. On the contrary, this is not the case when the possessive is accented since the possessive has already been at the top position in the DP and consequently the accentuation of this possessive cannot change the c-commanding relation. The co-indexing is still impossible as indicated by judgment test.

![Figure 4. the derivation of Xiăomíng de péngyou if péngyou is focused](image)

**4.2 Generative analysis of Chinese pronoun cataphora**

Compared with anaphora, the cataphora can be more complicated and poses challenges to the generative binding condition in a certain sense. In order to better understand the Chinese pronoun cataphora and find more satisfactory interpretations, it is worthwhile to say more about the generative approach to English pronoun cataphora. See the following two sentences.

(42) She likes Bernice’s friends.

(43) Her mother likes Bernice’s friends.

The c-commanding relation can explain why co-indexing between she and Bernice is impossible while that between her and Bernice is possible since in (43) her fails to c-command Bernice. However, in (16), the pronoun him fails to c-command Ben and the co-indexing is impossible. This explanatory inadequacy makes c-commanding weak in explaining English pronoun cataphora and as a result the phase commanding theory was put forward (Bruening, 2014) in an effort to explain the English pronoun cataphora and to a large extent, it succeeded in doing so. Then how about Chinese?
The phase commanding proposal encounters its first challenge in (26) as the Chinese phrase tā de bàba ‘his/her father’ is a DP and according to phase commanding proposal, the co-indexing is possible but this is not the case even if the focus is shifted through the means of accenting.

Before the very analyses of Chinese cataphora, it is necessary to reflect upon the phase commanding in general. The present study assumes that phase condition is very basic to the cataphora nevertheless the specific mechanism of phase condition has to be further clarified. The phase condition is basic in the sense that it can make sure the co-indexing is not too local and under which circumstance the reflexive is used instead. As will be demonstrated in (44), (45) and (46), co-indexing is too local (within the same vP, DP and CP) to use the pronoun (Safir, 2004). Therefore, the phase condition is the prerequisite for cataphora.

(44) John believes himself.
(45) John’s picture of himself
(46) John himself will tell you the truth.

Besides, the visibility condition matters (Platzack, 1998). It is assumed by the present study that essentially speaking, the pronoun is used as anaphor but not cataphor and consequently, when a pronoun appears in the sentence, people would always expect this pronoun to refer back to an antecedent either in the previous part of the sentence or in the previous context unless this expectation is blocked. Based on this hypothesis, for cataphora, we consider it should be the case that the DP to which the pronoun cataphor refers to witnesses the implicit move to block this expectation. The only place where the DP can locate in deep syntactic structure is the specifier position of a phase since this is the only visible position for an element inside the phase domain. Since the moved DP is visible, the co-indexing between the DP and pronoun cataphor can be established.

Thus, the phase condition and the visibility condition are considered to be the two prerequisites for cataphora by the present study.

Now let us return to the Chinese pronoun cataphora. The co-indexing is impossible in (26) also due to the structural differences between English and Chinese. The Structural differences between (15) and (26) can be seen in Figure 5.

Figure 5. The derivations of his father in (15) and tā de bàba in (26)

For English, the possessive pronoun cataphor is located at the DP head position, different from what happens in John’s father, as a result of the complementary distribution of possessive pronoun and other determiners like the, a or demonstratives like this, that. Since
we do have DP in the structure like *his father*, phase condition is satisfied. On the other hand, the specifier position of DP is empty, which can ascertain there will be a specifier position at the phase level. Thus, the implicit move of DP *John* is possible and in turn the visibility condition is satisfied.

Chinese is different because in Chinese possessive DP *tā de bàba* ‘his/her father’, the demonstratives like *zhègè* ‘this’ or *nàgè* ‘that’ can be inserted between *tā de* ‘his/her’ and *bàba* ‘father’, which indicates the structure of *tā de bàba* is the same as that of *Xiàomíng de bàba* ‘Xiaoming’s father’. In a structure like *tā de bàba*, the possessive pronoun is also located at the specifier position. As has been mentioned, this specifier position is the only visible position for the outside DP to realize the co-indexing relation with the inside cataphor. As has been defined by syntactic terminology, specifier is a YP that is the sister of X’, and the daughter of XP. The rule is XP → (YP) X’, where YP is the specifier. The X-bar schema of this phrase structure can be seen in Figure 6 (where XP corresponds to X”).

![Figure 6. the derivation of a typical X-bar schema](image)

In recent transformational grammar, the term specifier is not normally used to denote a type of word or phrase, but rather to a structural position provided by X-bar theory or some derivative thereof. In this usage, a phrase (usually a full XP, though in bare phrase structure it could in theory be an intermediate category) is said to occupy the specifier (SpecXP for short) of a head X (Chomsky, 2001). This brief review of specifier shows us that the binary structure strictly allows only one specifier position in a phase domain. As for Chinese, the specifier position has already been occupied by the possessive pronoun cataphor and thus there will be no specifier position left that can locate the implicitly raised DP. The co-indexing between the possessive pronoun cataphor and DP as a result becomes impossible for Chinese (26).

Then why the focus shift as a result of accenting cannot improve the co-indexing possibility in Chinese as has been testified by the co-indexing possibility judgment? The answer also lies in the syntactic structure. Suppose *bàba* ‘father’ is accented, as has been mentioned, there will be an implicit raise for *bàba* and another D” will be inserted and its specifier position can help to locate the raised NP *bàba*. This has not changed the situation that specifier position of the DP head D” has already been occupied by the possessive pronoun. So the co-indexing between the possessive pronoun *tā de* ‘his/her’ and the DP *Xiàomíng* is impossible (see Figure 7). The accenting of *tā de* ‘his/her’ will not change the structure since it has already been located at the top position of DP, the co-indexing is still impossible.
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(27) and (28) concern the situation where the possessive pronoun is first located in a DP and then the DP is located in a PP, finally the PP is used as the adjuncts either to TP (that is the case for 27) or to vP (that is the case for 28). Before the generative analysis of the indexing possibility in (27) and (28), the word order differences between English and Chinese will be reemphasized here. As for English, the order of the locational adjunct can be free, which means it can be put either before or after the vP or TP. Thus, there will be at least four varieties.

(16) I vP[met him in Ben’s office].
(17) People IP[worship him in Kissinger’s native country].
(47) vP [In his office I met Ben].
(48) IP[In his native country People worship Kissinger].

Similar to Bruening’s (2014:342-388) conclusion, the phase condition and visible condition also make sure that him in (16) is a cataphor but him in (17) is not. Him in (16) fails to satisfy phase condition but him in (17) succeeds. (47) and (48) can be different. Former studies confirmed that in both (47) and (48), the co-indexing between the possessive pronoun and DP is possible. This further testifies the phase condition and the visibility condition. For one thing, the possessive NP is embedded in a DP in both (47) and (48) and DP is a phase, while Ben and Kissinger are embedded in vP. The phase condition is satisfied. For another, the structure of the possessive pronoun contained in DP, as has been analyzed, has the specifier position empty to locate the implicitly raised Ben and Kissinger and in turn to check the co-indexing relation. Consequently, the visibility condition is satisfied.

Chinese (27) and (28) are different since the co-indexing possibility judgment shows the co-indexing between the possessive pronoun and either Zhōu zǒnglǐ ‘Premier Zhou’ in (27) or Xiǎoming in (28) is impossible. This is because though in both (27) and (28), the phase condition is satisfied just like what happened in (47) and (48) due to the fact that DPs where both possessive pronouns are embedded in constitute the phase boundary, the visibility condition cannot be satisfied since the previous analysis of the DP structure in Chinese has shown that the specifier position of D head has been occupied by the possessive pronoun and there will be no place to locate the implicitly raised DP to check the co-indexing relation. The co-indexing possibility did not increase when focus shifts.
occurred and this is also due to the syntactic structure as can be seen in (27) and (28), the implicit raise of ～ ‘hometown’ and ～ ‘office’ for the purpose of focusing will not change the syntactic fact that the specifier position of D head has already been occupied by the possessive pronoun and the implicit raise of the possessive pronoun itself will not change the structure either.

It is time for us to shift our focus to the discussion of pronoun cataphora for Chinese CP structures and before this, the pronoun cataphora in English CP structures will be reexamined.

For English CP structures, the pronoun cataphora is prohibited in (18) but allowed in (19). These two very cases indicate that the simple phase condition, or phase commanding cannot satisfy the requirements of cataphora. In both (18) and (19),  is actually two different CP structures in that in (18), there is implicit C head for both CP1 and CP2 but in (19), there is explicit head for CP1 and implicit head for CP2. The implicit or explicit status of C head cannot change the fact that they are both CP structures. Thus, the cataphora differences between (18) and (19) cannot be simply explained by phase condition or phase-commanding.

The present study assumes the visibility condition also plays an important role in explaining the pronoun cataphora differences between (18) and (19). As has been mentioned earlier, there must be a specifier position before phase head to ensure the temporal location of the implicitly moved DP for the purpose of checking the semantic reference and blocking the antecedent expectation. In this sense, if the head is implicit, it will be impossible to have a specifier position and in turn the temporal location of the implicitly moved DP will be impossible.

The analogy between this very case and the case of wh-move can help us better understand the point here. Take (49) for example.

(49) What did you do yesterday?

In this very case, the tense element did is first moved to occupy the C head position and then the move of wh-word is possible since the explicit C head here can ensure the specifier position to locate the explicitly moved wh-word.

In a word, the phase status is one prerequisite to satisfy phase condition and the existence of an explicit C head is another prerequisite for satisfying visibility condition. Both the phase status and the existence of C head can make pronoun cataphora across clause boundaries possible.

In (18), though the two sentences  and  are both CP structures and thus the phase condition can be satisfied, the visibility condition cannot because there is no explicit C head and therefore no specifier to locate the implicitly moved
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DP. In (19), there is a C head and then the temporal location of the implicitly moved DP is possible and in turn, the co-reference between the pronoun cataphor and the DP is possible.

The phase condition and the visibility condition can also be applied to explain the pronoun cataphora in Chinese CP structures as exemplified by (29), (30), (31) and (32). For (29), there is no explicit C head and thus the implicit move of DP Xiǎomíng is impossible. For (30), different from English, when the compound sentence is embedded into the main clause, there will be no C head and consequently, there is no specifier position to temporarily locate the implicitly moved DP. (31) is different in the sense that for CP1, there is a C head yīnwèi ‘because’ and the visibility condition can be satisfied. For (32), though its meaning can be quite close to that of (31) since it is quite often the case that in Chinese only one connective is used (either yīnwèi or suǒyǐ) to indicate the cause and effect relation, the cataphora is impossible since the connective for CP1 is missing. This matches the results of co-indexing possibility judgement.

As a summary, the phase condition and visibility condition can adequately explain the cataphora across phase boundaries in DP, vP and CP.

5. Conclusion

The present study aims at a systematic study of pronoun anaphora and cataphora in Chinese. There are many differences between Chinese and English concerning these two phenomena. The former study deems that a possessive antecedent in Chinese fails to establish the co-indexing relation with the pronoun anaphor as a result of parameterized DP hypothesis while the present study argues that DP structure is universal and the parameterized DP hypothesis fails to explain syntactic truth. There are also some differences between Chinese and English pronoun cataphora. In order to show the real situation of co-indexing relation in Chinese, judgment tests were conducted. The result shows for anaphora, the possessive DP cannot co-index with the pronoun but the focus shift can alter the co-indexing possibility in the sense that if the focus is on the head DP of the possessive, the co-indexing possibility can greatly improve. The present study makes attempts to give a generative analysis to this in the framework of c-commanding. Structurally speaking, Chinese possessive DP is different from that of English with the possessive DP c-commanding pronoun anaphor and this difference makes co-indexing impossible. Meanwhile the focus shift can implicitly alter the structure. Specifically, when the head DP is focused, it will be implicitly raised and then the possessive DP will be lowered, and as a result of this operation, there will be no c-commanding relation. The co-indexing possibility is thus improved. The focus on the possessive DP will not essentially change the structure and will not improve the co-indexing possibility. The co-indexing judgment tests indicated for Chinese DP, vP and CP structures (when C head is
missing), pronoun cataphora was impossible. It was argued by the present study that in order to make cataphora stands, the two prerequisites of phase condition and visibility condition have to be satisfied at the same time. For a Chinese possessive DP, the possessive pronoun can never co-index with another DP in the sentence since though the phase condition is satisfied, different from English, the possessive pronoun occupies the specifier position thus visibility condition cannot be satisfied. The focus shift cannot change the fact that the specifier position has already been occupied and thus the co-indexing is still impossible. Different from English, in a PP, no matter the PP adjuncts to a vP or IP, since the possessive DP is embedded in a PP, the specifier position of that possessive DP is inaccessible to another DP, the co-indexing between the possessive pronoun and DP is impossible. For CP, suppose there is a C head in a CP containing pronoun cataphor, then the co-indexing is possible between that pronoun cataphor and a DP in another CP.

Theoretically, the present study confirms that c-commanding relation can successfully explain the Chinese anaphora and debuts that the phase-commanding proposed by Bruening (2014) fails in explaining the Chinese cataphora since a simple phase condition is not enough to make co-indexing possible. Both phase condition and visibility condition are necessary if the co-indexing relation is possible in cataphora.

Abbreviations

C complementizer
CP complementizer phrase
DP determiner phrase
IP inflexion phrase
VP verb phrase
vP little verb phrase
XP a phrase headed by X

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