

ordinately conjoined sentences, a definite description can not serve as an anaphora.

(1) *Lǎo Zhāng jīnlái de shǐhòu, zhè ge chuān lán yīfu de rén mà-le wǒ yídùn.
When John came in, the man in the blue suit scolded me.

(2) *Máo zé-dōng tóngzhì jìn-le huicháng, zhūxi xuānbù shíshi nóngyè jìhuà.
Comrade Mao Tse-tong walked into the meeting, and the chairman announced putting the agriculture plan into practice.

(3) *Wáng tóngzhì dào-le, dǎng shūjì zuò-le jīnnián de gōngzuò bàogào.
Comrade Wang arrived, and the party secretary made a work report for this year.

Chinese does not have the indefinite pronoun 'one' for indefinite pronominalization. Instead, it deletes the second instance of the two identical noun phrases. This can be illustrated by

(4) a. wǒ mǎi-le hóng de shū, tā mǎi-le lán de shū.
I bought red books, and he bought blue books.

b. wǒ mǎi-le hóng de shū, tā mǎi-le lán de shū.
I bought red books, and he bought blue books.

(5) a. zhè běn shū bǐ nà běn shū hǎo.
This book is better than that book.

b. zhè běn shū bǐ nà běn shū hǎo.
This book is better than that one.

It should be noted that neither the modifier marker de in (4b) nor the classifier běn in (5b) can be further deleted.

Chinese does not have the pro-verb 'do' either. Instead, the re-

indefinite object can be deleted from the identical predicate. For example, (6a) can be converted into (6b).

(6) a. Lǎo Zhāng xǐhuān píngguǒ, Xiǎo Lǐ yě xǐhuān píngguǒ.
John likes apples, and Lee also likes apples.

b. Lǎo Zhāng xǐhuān píngguǒ, Xiǎo Lǐ yě xǐhuān píngguǒ.
John likes apples, and Lee does too.

c. *Lǎo Zhāng xǐhuān píngguǒ, Xiǎo Lǐ yě xǐhuān píngguǒ.
John likes apples, and Lee does too.

Grammaticality of (6c) shows that identity deletion can not further extend to (6b).⁵ However, when identity covers both auxiliary and verb phrases, not only the object but also the entire verb phrase except the auxiliary can be deleted. For example.

(7) a. Lǎo Zhāng huì shuō yīngwén, Xiǎo Lǐ yě huì shuō yīngwén.
John can speak English, and Lee can speak English too.

b. Lǎo Zhāng huì shuō yīngwén, Xiǎo Lǐ yě huì shuō yīngwén.
John can speak English, and Lee can speak English too.

c. Lǎo Zhāng huì shuō yīngwén, Xiǎo Lǐ yě huì shuō yīngwén.
John can speak English, and Lee also can speak English.

d. *Lǎo Zhāng huì shuō yīngwén, Xiǎo Lǐ yě huì shuō yīngwén.
John can speak English, and Lee does also.

It is obvious that (6) and (7) have the same constraint on identity deletion, i.e., conjunctive adverbs like yě 'also' can not occur without accompanying verbal element.⁶ Similarly,

(8) a. nǐ bú huì xiū zhè jīqì, ràng wǒ lái xiū zhè jīqì.
You don't know how to repair this machine, let me repair this machine.

b. nǐ bú huì xiū zhè jīqì, ràng wǒ lái xiū jīqì.
You don't know how to repair this machine, let me repair it.

c. nǐ bú huì xiū zhè jīqì, ràng wǒ lái ǔ ǔ.

You don't know how to repair this machine, let me do it.
Chao 1968 has treated lái in (8c) as a pro-verb.⁷ For two reasons, lái in (8c) need not be treated as a pro-verb. First, unlike 'do' in English, it has a very limited environment of appearance. Second, (8c) can be derived from (8a) by the same kind of deletion necessitated by sentences like (6) and (7).

Although English reciprocal pronouns 'each other' and 'one another' are translated as hùxiāng in all English-Chinese dictionaries, hùxiāng is an adverb meaning 'reciprocally'. First, hùxiāng has no formal appearance of being a pronoun like 'each other' or 'one another' in English. Second, while a Chinese pronoun can be placed after the verb, hùxiāng, like most qualifying adverbials, can not. For example,

(9) a. tāmen hùxiāng zhàogù. They take care of each other.
*tāmen zhàogù hùxiāng

Third, this author has elsewhere shown that while 'each other' constructions in English obey Ross' Coordinate Structure Constraint hùxiāng constructions, being adverbial constructions rather than coordinate constructions, do not obey Ross' constraint.⁸ Thus, hùxiāng is not equivalent to 'each other' in English.

1.2. Restriction on anaphoric epithets. Epithets can only be used as anaphora in coordinately conjoined sentences, but not in subordinately conjoined sentences. For example,

(10) Lǎo Zhāng lái-le, nà húndàn wǒ kàn-le jiù èxin.

John arrived, and that bastard, I was really disgusted at seeing him.

(11) Xiǎo Lǐ suīrán niánqīng, nà xiǎozǐ kě bù hǎo qīfù.

Although Lee is young, that guy is not easy to bully.

(12) *Lǎo Zhāng jìnlái de shíhòu, nà shǎguā dài-le liǎng píng jiǔ.

When John entered, that fool brought two bottles of wine.

(13) Xiǎo Lǐ jìnlái-le yíhòu, wǒ mǎ-le nà chùshēng yídùn.

After Lee entered, I scolded that animal.

and (13) are grammatical only when the underlined NP's are not referential.⁹ When epithets are used in conjoined sentences, proper order must precede epithets. With the reversed order, (10) and (11) would become ungrammatical. The most common anaphoric epithets in everyday spoken Chinese include expressions such as hún xiǎozǐ 'bastard', dàn 'bastard', wángbā dàn 'son of a bitch', shǎguā 'fool', chùshēng 'ast' and yáng guǐzi 'foreign devils'. It seems that most of them are either derogatory or contemptuous connotations. Expressions such as jiāhuo 'guy' are not. One can find a great variety of anaphoric epithets in Chinese novels. The use of epithets to achieve vivid characterizations of villains is a very popular rhetorical device in mainland China.

Constraints on identity deletion and pronominalization. Generalizations of occurrence patterns of zero anaphora, pronouns, and repetitions of noun phrases can be stated in terms of constraints on identity deletion and pronominalization within the framework of transformational grammar. We can order the rule of identity deletion before the rule of pronominalization and state general constraints on their obligatory and optional application.¹⁰ Thus, where an NP has been deleted, we have no anaphora.¹¹ If it has not been deleted, it can be pronominalized. In that case, we have pronominal anaphora. If it has neither been deleted nor pronominalized, it constitutes a repetition. This framework

can be extended from sentence to discourse level. What we need to do is to further specify the discourse constraints on the application of these two rules.

1.3.1. Backward anaphora. An interesting generalization can be advanced that Chinese does not have backward anaphoric processes. We have seen that proper names in Chinese must precede their anaphoric epithets. In this section, we will show that Chinese identity deletion and pronominalization of coreferential NP's apply only forward, and not backward.¹² This generalization is to be further supported by anaphoric phenomena on the discourse level. Consider,

(14) a. Lǎo Zhāng lái kàn-le wǒ, tā dài-le yí ge xiǎo háizi yìqǐ lái.
John came to visit me, and he brought a child with him.

b. *tā lái kàn-le wǒ, Lǎo Zhāng dài-le yí ge xiǎo háizi yìqǐ lái.
He came to visit me, and John brought a child with him.

(15) a. Lǎo Zhāng lái kàn-le zhèr yǐhòu, tā jù méiyǒu zài huílái-guó.¹³
After John left here, he never came back again.

b. *tā lái kàn-le zhèr yǐhòu, Lǎo Zhāng jù méiyǒu zài huílái-guó.
After he left here, John never came back again.

(16) a. Lǎo Zhāng zǒujìn wūzi-li de shíhòu, wǒ má-le tā.
When John walked into the room, I scolded him.

b. *tā zǒujìn wūzi-li de shíhòu, wǒ má-le Lǎo Zhāng.
When he walked into the room, I hit John.

(17) a. wǒ zhǎodào Lǎo Zhāng de shíhòu, tā yǐjīng sǐ-le.
When I found John, he was already dead.

b. *wǒ zhǎodào tā de shíhòu, Lǎo Zhāng yǐjīng sǐ-le.
When I found him, John was already dead.¹⁴

(18) *zài tā de qǐnshì-li, Lǎo Zhāng bèi duìzhǎng pīpíng-le.¹⁴
In his sleeping room, John was criticized by the team leader.

data of (14) - (18) illustrate that while both Chinese and English permit forward pronominalization, Chinese does not permit backward pronominalization in the contexts where English allows it.¹⁵ Counterexamples can only be found in relative clauses, where the relative clause precedes the head noun. For example, in (19) and (20), relative nouns precede their coreferential head nouns.

(19) zuótiān nǐ gěi tā yàběn shū de nèi ge nánháizi shì wǒ dìdì.
The boy to whom you gave (him) a book yesterday is my younger brother.

(20) zuótiān nǐ gēn tā shuōhuà de nèi wèi tóngzhì jù shì Lǎo Zhāng.
The comrade with whom you talked (to him) yesterday is John.

As author has elsewhere (1973a) shown that there are independent syntactic grounds which support the assumption that a Chinese relative clause is ordered after the head noun in underlying structure. Thus, the proposal that Chinese does not allow backward pronominalization can be held, if we apply the rule of pronominalization before the relative clause is proposed to the front of the head noun. Similarly, relative clauses present apparent counterexamples to the claim that identity deletion of coreferential NP's doesn't apply backward.¹⁶

(21) zuótiān \emptyset lái kàn wǒ de nèi ge nánháizi shì wǒ dìdì.

The boy who (he) came to see me yesterday is my younger brother.

In (21), the coreferential noun phrase nèi ge nánháizi 'the boy' has been deleted from the relative clause zuótiān nèi ge nánháizi lái kàn 'the boy came to see me yesterday.' Again, if we apply the rule of identity deletion before the rule of relative clause preposing, counterexamples due to relative clauses can be removed. Another type of counterexample to the claim can be found in sentences like (22) and (23), where the subject of the preceding adverbial clause has undergone identity deletion.

(22) \emptyset yí jìn-le ménr, Lǎo Zhāng jiù bǎ yīfú tuō-le.

\emptyset Entering the door, John immediately took off his clothes.

(23) \emptyset dào-le měiguó yǐhòu, Xiǎo Lǐ jiù méiyǒu huf-guo Zhōngguó.

After \emptyset coming to the United States, Lee never went back to China.

This type of backward deletion is, however, very limited. It can not occur in the cases where the subject of the subordinate clause is coreferential with the object of the main clause. For instance,

(24) \emptyset yí jìn-le ménr, wǒ jiù mà-le Lǎo Zhāng.

*The moment \emptyset entered the door, I scolded John.

(25) \emptyset qù-le měiguó yǐhòu, wǒ jiù méi jiàn-guo Lǎo Zhāng.

*After \emptyset went to the United States, I never saw John again.

(24) and (25) are grammatical only when the deleted noun phrase is coreferential with 'I'. Furthermore, the subject-to-subject identity deletion as illustrated in (22) and (23) is not permissible in other types of adverbial clauses. For example,

(26) \emptyset yàoshì lái-le, Lǎo Zhāng yíding huì lái kàn wǒ.¹⁷

If \emptyset comes, John certainly will come to visit me.

Since backward identity deletion has a very limited scope, it seems probable to account for counterexamples such as (22) and (23) by assuming that identity deletion as well as pronominalization applies before adverbial preposing the adverbial preposing rule, a rule independently motivated in Chinese grammar.¹⁸ Thus, (22) and (23) can be read from (27b) and (28b) respectively, in which identity deletion obligatorily applied forward to delete the subject of the adverbial clause.

(27) a. *Lǎo Zhāng [Lǎo Zhāng yí jìn-le ménr] jiù bǎ yīfú tuō-le.

b. Lǎo Zhāng [\emptyset yí jìn-le ménr] jiù bǎ yīfú tuō-le.

John, entering the door, immediately took off his clothes.

(28) a. *Xiǎo Lǐ [Xiǎo Lǐ dào-le měiguó yǐhòu] jiù méiyǒu huf-guo Zhōngguó.

b. Xiǎo Lǐ [\emptyset dào-le měiguó yǐhòu] jiù méiyǒu huf-guo Zhōngguó.

Lee, after coming to the United States, never went back to China.

The underlying order of the adverbial clause in (27a) and (28a) is in line with the fact that the basic unmarked position for all kinds of verbal adverbials is that between the subject and the predicate. The derivation of (22) and (23) from (27b) and (28b) by the adverbial preposing rule is further supported by the fact that most native speakers prefer (27b) and (28b) to (22) and (23). It is therefore reasonable to maintain that identity deletion of coreferential NP's, like pronominalization, can only apply forward in Chinese.

1.3.2. Constraints on forward application. Notwithstanding the complexity of the subject matter, it is sufficient here to identify three parameters controlling identity deletion and pronominalization in forward application. They are grammatical functions of coreferential NP's, semantic linking between two clauses, and avoidance of ambiguity. The following sectioning is for the convenience of presentation and does not imply that grammatical functions are more important than other parameters.

1.3.2.1. Subject-subject coreference. When both coreferential NP's are subjects, repetition is not acceptable in either coordinately or subordinately conjoined sentences. While deletion is invariable preferred to pronominalization in subordinately conjoined sentences, there exist two possibilities in coordinately conjoined sentences. If there is a clear semantic denominator between two conjuncts, deletion is preferred to pronominalization. If the semantic denominator is not clear, pronominalization is preferred to deletion. (29) illustrates the situation in subordinately conjoined sentences. (30) and (31) illustrate the two possibilities in coordinately conjoined sentences:

- (29) a. *Lǎo Zhāng dào-le Měiguó yǐhòu, Lǎo Zhāng jiāo-le hěn duō péngyou.
 ?Since John came to the U.S.A., John has made many friends.
 b. ?Lǎo Zhāng dào-le Měiguó yǐhòu, tā jiāo-le hěn duō péngyou.
 Since John came to the U.S.A., he has made many friends.
 c. Lǎo Zhāng dào-le Měiguó yǐhòu, ∅ jiāo-le hěn duō péngyou.
 *Since John came to the U.S.A., ∅ has made many friends.

- (30) a. *Xiǎo Mèi jié-le hūn, Xiǎo Mèi shēng-le liǎng ge hái'zi.
 ?Mary got married, and Mary bore two children.
 b. ?Xiǎo Mèi jié-le hūn, tā shēng-le liǎng ge hái'zi.
 Mary got married, and she bore two children.
 c. Xiǎo Mèi jié-le hūn, ∅ shēng-le liǎng ge hái'zi.
 Mary got married, and ∅ bore two children.

- (31) a. *Lǎo Zhāng zuótiān lái kàn wǒ, Lǎo Zhāng dài-le yì běn zázhi.
 ?John came to visit me yesterday, and John brought me a magazine.
 b. Lǎo Zhāng zuótiān lái kàn wǒ, tā dài-le yì běn zázhi.
 John came to visit me yesterday, and he brought me a magazine.
 c. ?Lǎo Zhāng zuótiān lái kàn wǒ, ∅ dài-le yì běn zázhi.
 John came to visit me yesterday, and ∅ brought me a magazine.

though it always takes a semantic denominator to conjoin two sentences, the semantic denominator in (30) is obviously much clearer than that in (31). In other words, two conjuncts are semantically more closely linked with each other in (30) than in (31). Since two clauses always closely linked in subordinately conjoined sentences, it is natural that subordinately conjoined sentences exhibit the same preference as coordinately conjoined sentences with close semantic links. 1.3.2.2. Subject-object coreference. In both coordinately and subordinately conjoined sentences, when the antecedent is a subject and its

