On the Distribution of Chinese Number Expressions[1]

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1 Introduction

Researchers have noted that indefinite nominal expressions are generally disallowed in the subject or topic position in Mandarin Chinese (see, e.g., Li and Thompson, 1981; Tsai, 1994; Shyu, 1995; Li, 1996, 1998; Hsin, 2002). However, counter-examples to this generalization seem to exist. Some researchers have attempted to account for the distributional behavior of Chinese indefinite nominals on syntactic grounds. Li (1996, 1998) examined the distributional data of a particular kind of Chinese noun phrase, i.e., number expressions of the form [Numeral + Classifier + Noun], and argued that a number expression of such a form can be analyzed as either a quantity-denoting expression represented by a NumP without a D or an individual-denoting expression represented by a DP with a null D. She argued that a NumP can appear in the subject or topic position, but a DP with a null D cannot.

Through examining a broader range of relevant data, this paper challenges Li's analysis and argues that the distributional behavior of Chinese number expressions cannot be accounted for by the two structural representations she proposed. I will show that the distributional data Li presented can be accounted for on semantic and pragmatic grounds based on an extension of Carlson's (1977) theory of English bare plural NP's. Thus, I will argue that no motivation for two structural representations exists in the data, and a unified structural representation is both conceptually and empirically preferable.

The paper is organized as follows. Section 2 introduces the distributional behavior of Chinese number expressions. Section 3 reviews Li's (1996, 1998) structural analysis of the distributional data. Section 4 challenges Li's structural analysis with a number of counterexamples. Section 5 proposes a semantic and pragmatic account for the distributional data with an extension of Carlson's (1977) theory of English bare plurals. Section 6 summarizes the arguments of the paper and posits a unified NP structure for Chinese number expressions.

2 Distributional behavior of Chinese number expressions

As mentioned in the introduction, unlike definite nominal expressions, indefinite nominal expressions are generally not allowed in the subject or topic position in Mandarin Chinese. This is illustrated in the examples in (1) and (2).

(1) a. *Zhe san-ge haizi zai xuexiao dajia le*.
this three-CL children at school fight PAR
'These three children fought at school.'
b. **San-ge haizi zai xuexiao dajia le*.
three-CL children at school fight PAR

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(2) a. *Zhe san-ge haizi, wo tingshuo zai xuexiao dajia le.*
this three-CL children I hear-say at school fight PAR
'These three children, I heard (they) fought at school.'
b. **San-ge haizi, wo tingshuo zai xuexiao dajia le.*
three-CL children I hear-say at school fight PAR

However, counterexamples to this generalization seem to exist, i.e., there seems to be cases where an "indefinite" nominal can occur in the subject or topic position. I reproduce two of Li's (1996, 1998) examples below.

(3) a. *San-zhi gunzi gou ni da ta ma?*
three-CL sticks enough you hit him Q
'Are three sticks enough for you to hit him (with)?'
b. *Wu-ge haizi chi-bu-wan shi-wan fan.*
five-CL child eat-not-finish ten-bowl rice
'Five children cannot finish ten bowls of rice.'

Li (1998) argued that these counterexamples seem to share a common property, that is, the interpretation of the "indefinite" nominals concerns quantity rather than the existence of individuals. She further argued that the number expressions in these counterexamples contrast with those in (1b) and (2b), which indicate the existence of some individuals.

3 Li's (1996, 1998) DP vs. NumP analysis

Drawing upon the distributional data of Chinese number expressions of the form [Numeral + Classifier + Noun], Li (1996) argued that such expressions should be recognized as having either a non-quantity indefinite individual-denoting interpretation or a quantity-denoting interpretation. Only quantity-denoting number expressions can occur in the subject or topic position. Moreover, Li (1998) proposed two different structural representations of indefinite individual-denoting and quantity-denoting number expressions. The two proposed structures are given in (4).

(4) a. [$_{DP}$ D [$_{\_NumP}$ *san-ge xuesheng*]]
three-CL student
b. [$_{NumP}$ *san-ge xuesheng*]
three-CL student

Li (1998) argued that D is generally taken to be the locus for expressing (in)definiteness, and since the NumP does not have a D, the prohibition against an indefinite nominal in the subject or topic position in Chinese does not apply to quantity-denoting number expressions represented as a NumP. Longobardi (1994) argued that a null D must be properly governed, and therefore indefinite nominal expressions can occur only in lexically governed positions. Following Longobardi, Li argued that the topic position in Chinese does not allow indefinite expressions, because it does not have a lexical governor. Moreover, following Aoun *et al.* (1987), Li argued that since subjects in Chinese generally occupy [Spec, IP] and are not lexically governed, indefinite nominals cannot occur in the subject position, either.

Li (1998) presented several pieces of evidence to support the structural distinction she made. First, she argued that a DP, but not a NumP, can occur with operators ranging over individuals, such as *you* 'exist, have', which asserts the existence of individuals. I reproduce Li's (15) and (17a) in (5a) and (5b) respectively. She argued that (5a) must be interpreted in

terms of the existence of three individuals who came here, and (5b) is unacceptable because *gou* 'enough' requires a quantity interpretation.

(5) a. *You san-ge xuesheng lai zher le.*
have three-CL students come here PAR
'There are three students that came here.'
b. **You san-zhi gunzi gou ni da ta ma?*
have three-CL sticks enough you hit him Q

Second, Li argued that as a quantity-denoting expression, a NumP does not have a D projection and is not expected to have a referential index. In other words, a DP can enter into a co-referential relation with a following nominal or pronoun, but a NumP cannot. Li's (20) is reproduced in (6) below.

(6) a. *San-ge ren$_i$ tai-bu-dong zhe-jia gangqin. *Tamen$_i$ de liliang tai xiao.*
three-CL people lift-not-move this-CL piano their DE strength too small
'Three people cannot lift up this piano. Their strength is too weak.'
b. *You san-ge ren$_i$ hui lai. Tamen$_i$ hai hui dai liwu lai.*
have three-CL people will come they still will bring present come
'There are three people coming and they will bring presents.'

Furthermore, following a suggestion by Peter Cole, Li argued that co-reference with a reflexive is possible only for a DP, but not a NumP. She illustrated this with the following examples.

(7) a. *Zhangsan$_i$ zhidao san-ge ren$_j$ yiding ban-de-dong ziji$_{i/*j}$ de gangqin.*
Zhangsan know three people certainly move-able-move self's DE piano
'Zhangsan knows that three people certainly can move self's piano.'
b. *Zhangsan$_i$ zhidao Lisi$_j$ yiding ban-de-dong ziji$_{i/j}$ de gangqin.*
Zhangsan know Lisi certainly move-able-move self's DE piano
'Zhangsan knows that Lisi certainly can move self's piano.'

Finally, Li argued that quantity-denoting number expressions do not interact with other quantificational expressions with respect to scope, since they are not quantificational expressions over individuals. Thus, the sentence in (8) has only the interpretation that five children cannot finish, among them, ten bowls of rice.

(8) *Wu-ge xiaohai chi-bu-wan shi-wan fan.*
five-CL child eat-not-finish ten-bowl rice
'Five children cannot finish ten bowls of rice.'

4 Challenges to Li's (1996, 1998) analysis

In this section, I present some data that challenge the structural distinction Li proposed. Specifically, I will show that if we follow Li's line of argumentation, the same number expression in some cases has to have both a NumP and a DP structure. This is problematic for Li's analysis, as she assumed that a number expression in any given sentence should be assigned either an individual-denoting interpretation or a quantity-denoting interpretation, and consequently should be represented as either a DP with a null D or a NumP without a D, but not both.

First, recall that Li argued that a NumP cannot enter into a co-referential relation with a following nominal or pronoun, but a DP can. If we were to follow this line of

argumentation, the number expression in (9) would have to be a NumP and a DP with a null D simultaneously: it has to be a NumP to appear in the subject position, and it has to be a DP to co-refer with a following pronoun.

(9) *San-ge ren$_i$ tai-bu-dong zhe-jia gangqin, chufei tamen$_i$ liqi tebie da*
three-CL people lift-not-move this-CL piano unless their strength really big
'Three people cannot move this piano, unless they are especially strong.'

Second, the same problem exists for Li's claim that co-reference with a following reflexive is possible only for a DP, but not a NumP. Li would analyze the number expression in (10) as a NumP, as it appears in the subject position. However, it would have to be a DP, too, as it co-refers with the following reflexive *ziji* 'self'.

(10) *Yi-ge nuhair$_i$ kending da-bu-guo liang-ge bi ziji$_i$ da de nanhair.*
one-CL girl certainly fight-not-win two-CL than self older DE boy
'One girl certainly cannot beat two boys who are older than herself.'

5 A semantic and pragmatic account of the distributional data

Given that Li's assumption of two distinct structural analyses for Chinese number expressions is not viable, these distributional facts need to find a different explanation. In what follows, I present a semantic and pragmatic account for the distributional facts based on an extension of Carlson's (1977) theory of English bare plurals. I will henceforth refer to what Li called individual-denoting and quantity-denoting interpretations of number expressions as the indefinite and the generic uses.

5.1 An extension of Carlson (1977)

Carlson (1977) treated the bare plural in all cases as denoting a *kind*, where the bare plural acts as the proper name of a kind, and kinds are thought of as abstract (as opposed to normal) individuals. In Carlson's theory, generic statements for bare plurals are handled as they are for regular proper names, as illustrated in Carlson's (116), reproduced in (11). In (11b), the bare plural 'cows' denotes a kind, and the sentence is true if 'eats hay' is in the property set (Montague, 1974) of this kind.

(11) a. Bossie eats hay.
b. Cows eat hay.

For Carlson, a *stage* or *realization* of a kind is one or more instances of that kind. For example, a cow-stage of the kind 'cows' is one or more cows at a time and a place. Thus, (12) is true just in case 'are sitting on my lawn' is in the property set of a stage of the kind 'cows', i.e., one or more normal cows.

(12) Cows are sitting on my lawn.

Carlson analyzed bare plurals as unambiguous and argued that their interpretations are determined by the predicates that take them as arguments. He employed Milsark's (1974) distinction of two types of predicates, namely, *states*, which can be roughly characterized as being fairly temporary, and *properties*, which are more permanent sorts of things. Carlson argued that these predicates are being predicated of different sorts of things: states are predicated of stages of kinds and thus select the indefinite reading of bare plurals; properties are predicated of kinds and thus select the generic reading of bare plurals. For this reason, states and properties are also referred to as stage-level and kind-level predicates respectively.

For Carlson, a stage of a kind is one or more instances of that kind. However, it seems more precise to distinguish a stage of a kind from instances of a kind. I propose that we think of a stage of a kind not as one or more instances of that kind, but as a stage of one or more instances of that kind, i.e., one or more instances of that kind at a time and a place. The distinction between stages and instances of a kind accommodates a nontrivial observation: whereas a stage of a kind only demonstrates stage-level properties, an instance of a kind may demonstrate kind-level properties. This can be illustrated with the example in (13), which is a statement about a kind-level property of some instances of the kind 'dogs'. This statement is true if 'hate cats' is in the property set of one or more instances of the kind, but not a stage of the kind, i.e., one or more instances of the kind at a time and a place.

(13) There are dogs that hate cats.

Following Carlson (1977), I suggest that we treat the bare number expression in all cases as denoting a *group kind* (Carl Pollard, p.c.). The bare number expression acts as the proper name of a group kind. Whereas instances of a non-group kind, such as 'cows', are normal individuals, instances of a group kind, such as 'three cows', are *group individuals*, or normal groups of that group kind, whose *members* are normal individuals. For example, 'three cows' denotes the group kind whose instances are group individuals that consist of exactly three normal cows. The difference between the instances of non-group and group kinds seems to bear upon the difference between the stages of non-group and group kinds. A stage of a non-group kind is a stage of one or more instances of that kind; however, a stage of a group kind is typically a stage of exactly one instance, i.e., one group individual of that kind. This difference is illustrated in the examples in (14).

(14) a. Cows are sitting on my lawn.
b. Three cows are sitting on my lawn.

In (14), 'are sitting on my lawn' is a stage-level predicate. As discussed above, (14a) is true if 'are sitting on my lawn' is in the property set of a stage of the kind 'cows', i.e., one or more cows at a time and a place. Likewise, the sentence in (14b) is true if 'are sitting on my lawn' is in the property set of a stage of the group kind 'three cows', but typically only a stage of one instance of the group kind, i.e., one three-cow group at a time and a place, is involved here. If 'sitting on my lawn' is in the property set of two or more three-cow groups at a time and a place, the utterance violates Grice's (1975) maxim of quantity, and one would more likely choose to say 'six cows are sitting on my lawn' to be adequately informative.

Whereas Li analyzed bare number expressions as semantically and syntactically ambiguous, I analyze them as unambiguous, with the predicates that take them as arguments determining their interpretations. This is illustrated in the examples in (15). In (15a), the generic reading of 'two cats' is selected, because the VP indicates a permanent property, and is therefore a kind-level predicate that is predicated of the group kind 'two cats'. In (15b), however, the indefinite reading is selected, because the VP indicates a temporary state, and is therefore a stage-level predicate that is predicated of a stage of the group kind 'two cats'.

(15) a. Two cats fight until they establish territorial boundaries.
b. Two cats were fighting outside my window last night.

5.2 Co-occurrence with existential operators

Let us first examine the data in (6), repeated in (16) below, which Li used to support her first piece of evidence. These data concern the co-occurrence of number expressions with operators that range over individuals, such as *you* 'have, exists'.

(16) a. *You san-ge xuesheng lai zher le.*
have three-CL students come here PAR
'There are three students that came here.'
b. **You san-zhi gunzi gou ni da ta ma?*
have three-CL sticks enough you hit him Q

What needs to be accounted for here is the fact that the number expression in (16a) can co-occur with the existential operator *you*, but the one in (16b) cannot. This contrast follows naturally from the ontology introduced above. Existential operators introduce the existence of group individuals that instantiate a group kind, and range over those group individuals instead of the group kind. They always give an existential meaning to a number expression, and are therefore not compatible with a generic number expression. Universal quantifiers range over all the instances of a group kind. For example, in (17), the universal quantifier *renhe* 'any' universally quantifies over all the group individuals that are instances of the group kind denoted by *san-ge ren* 'three people'. The logical form of (17) is given in (18).

(17) *Renhe san-ge ren dou tai-bu-qi yi-liang qiche.*
any three-CL people all move-not-move one-CL car
'Any three people cannot move a car.'

(18) For every instance *i* (*i* a three-person group individual) of the three-person group kind, *i* has the kind-level property of being unable to move a car.

Since all the instances of the group kind have the same kind-level property, the group kind necessarily has the kind-level property. Therefore, the logical form in (18) is equivalent to the one in (19). This shows that a universal quantifier gives a generic reading to this sentence, but the subject number expression still has an existential reading.

(19) The three-person group kind has the kind-level property of being unable to move a car.

The existential operator *you* only introduces the existence of one group individual that instantiates a group kind, and therefore cannot be used to force a generic reading of either the sentence or the number expression. The VP in (16a) is a stage-level predicate, as the perfective aspect marker *le* indicates the completion of an action. Thus, it is predicated of a stage of the group kind 'three people', i.e., a three-person group individual at a time and a place. The logical form of (16a), given in (20), shows that the *you* operator operates on that one three-person group individual.

(20) There exists an instance *i* (*i* a three-person group individual) of the three-person group kind, such that there exists a stage *s* of *i* such that *s* came here.

Given that the *you* operator only operates on a group individual that instantiates a group kind, the sentence in (16a) is unacceptable if the generic reading of the number expression is intended.

5.3 Co-reference with a following pronoun

Let us now examine the grammaticality contrast between (7), which Li used to support her second piece of evidence, on the one hand, and (10) on the other. (7) and (10) are repeated in (21) and (22) respectively.

(21) *San-ge ren$_i$ tai-bu-dong zhe-jia gangqin. *Tamen$_i$ de liliang tai xiao.*
three-CL people lift-not-move this-CL piano their DE strength too small
'Three people cannot lift up this piano. Their strength is too weak.'

(22) *San-ge ren$_i$ tai-bu-dong zhe-jia gangqin, chufei tamen$_i$ liqi tebie da*
three-CL people lift-not-move this-CL piano unless their strength really big
'Three people cannot move this piano, unless they are especially strong.'

The number expression *san-ge ren* 'three people' has a generic interpretation in both (21) and (22). Thus, the fact that it can co-refer with a following pronoun in (21) but not in (22) cannot be attributed to any internal structural property of the bare number expression. The contrast in acceptability between these examples can be analyzed in terms of Roberts' (1989) theory of modal subordination.

5.3.1 Roberts' (1989) theory of modal subordination

Following Kamp (1981), Roberts utilizes variable-like discourse referents to serve as intermediate representations of syntactic noun phrases at the Discourse Representation Structure (DRS) level. Each NP in a discourse is mapped onto a discourse referent in the DRS. Relevant for my analysis here is the idea that an antecedent for a pronoun's discourse referent must be an accessible discourse referent, i.e., one which is on the same or a superordinate level of structure as the pronoun's discourse referent. If a clause is in a factual mood, it is entered on the top level of the DRS. If a clause is in a non-factual mood, it is entered into the DRS on a level subordinate to the top level, since the common ground against which it is interpreted is not realistic. Sentences in the indicative grammatical mood are generally interpreted as factual. Non-factual mood is expressed by a variety of conventional means, such as the subjunctive grammatical mood, the use of expressions like *suppose that...* and modal auxiliaries like *would* or *could*, etc.

5.3.2 An account of (21) and (22)

In (21), the first clause contains the potential form of a resultative compound verb *tai-bu-dong* 'cannot move', which is semantically modal. Consequently, this clause is in a non-factual mood and is entered into the DRS on a level subordinate to the top level. The second clause, however, is in a factual mood and is entered into the DRS on the top level. The discourse referent of the number expression in the first clause is not accessible to the discourse referent of the pronoun in the second clause, because it is on a subordinate level of structure as the pronoun's discourse referent. Therefore, it cannot serve as the antecedent of the discourse referent of the pronoun.

In (22), the first clause is in a non-factual mood, as it also contains the potential form of the resultative compound verb *tai-bu-dong* 'cannot move', which is semantically modal. The second clause is in a non-factual mood, too, because it contains the conditional operator *unless*, which expresses a hypothetical condition. Therefore, both of the two clauses are entered into the DRS on a level that is subordinate to the top level. Moreover, the exception conditional operator makes the second clause subordinate to the first clause on the DRS level, because the exception it makes is dependent on the context against which the truth condition of the first clause is evaluated. Thus, the discourse referent of the number expression in the first clause is accessible to the discourse referent of the pronoun in the second clause.

5.4 Co-reference with a following reflexive

Let us now turn to the contrast in acceptability between the sentence in (8a), which Li used as to support her third piece of evidence, and the sentences in (11), which I used to challenge it. (8a) and (11) are repeated in (23a) and (23b) respectively.

(23) a. *Zhangsan$_i$ zhidao san-ge ren$_j$ yiding ban-de-dong ziji$_{i/*j}$ de gangqin.*
Zhangsan know three people certainly move-able-move self's DE piano
'Zhangsan knows that three people certainly can move self's piano.'
b. *Yi-ge nuhair$_i$ kending da-bu-guo liang-ge bi ziji$_i$ da de nanhair.*
one-CL girl certainly fight-not-win two-CL than self older DE boy
'One girl certainly cannot beat two boys who are older than herself.'

In this pair of examples, *san-ge ren* 'three people' in (23a) and *yi-ge nuhair* 'one girl' in (23b) both have a generic reading. Thus, the unacceptability of the sentence in (23a) could not be due to any structural property of the number expression. Following the theory of *ziji* proposed by Pollard and Xue (1998), I argue that there is no syntactic reason why the reflexive *ziji* cannot co-refer with a subject number expression in Mandarin Chinese. A closer look at the sentence in (23a) reveals that it is not syntactically ill-formed but pragmatically awkward, because it suggests a relationship between whether three arbitrarily chosen people can move a piano and whether they jointly own it. This is a pragmatically odd generic statement because in the world we live in, a relationship like this does not seem to exist. By contrast, the sentence in (23b) is pragmatically well-formed, because there does exist a relationship between whether an arbitrarily chosen girl can beat two arbitrarily chosen boys and whether these two boys are older than the girl in our world.

5.5 Interaction with other quantificational expressions

The fourth piece of evidence Li used to support her structural analysis was the fact that generic number expressions do not interact with other quantificational expressions with respect to scope. For example, (8), repeated in (24), has only the interpretation that five children cannot finish, among them, ten bowls of rice.

(24) *Wu-ge xiaohai chi-bu-wan shi-wan fan.*
five-CL child eat-not-finish ten-bowl rice
'Five children cannot finish ten bowls of rice.'

Notice that Li also attempted to account for this fact on semantic grounds, arguing that quantity-denoting number expressions do not interact with other quantificational expressions with respect to scope because they are not quantificational expressions over individuals. It is not clear how this argument supports the structural distinction she proposed for the two interpretations, nor does it provide any syntactic reason that prevents subject number expressions from interacting with other quantificational expressions with respect to scope.

Given my analysis, the bare number expression in (24) has a generic reading. If we follow the rules and regulations approach to generics (see, e.g., Carlson, 1977, 1995), generics express simple predication of a property of a kind rather than quantification, and there is no semantic relation between generics and properties of the instances of that kind. From this approach, the sentence in (24) would have the logical form in (25). Since the rules and regulations approach denies that generics are quantificational on individuals, it disallows a generic number expression to interact with other quantificational expressions with respect of scope.

(25) The five-child group kind has the kind-level property of being unable to eat ten bowls of rice.

On the other hand, the inductivist approach to generics (see, e.g., Schubert and Pelletier, 1987; Cohen, 2002) argues that generics expresses quantification over (possible, normal, typical, or most, etc.) instances of the kind. However, it is crucial to realize that instances of a group kind are group individuals, not normal individuals. In the case of a group kind, generics express quantification over group individuals that are instances of the group kind, but not over normal individuals that are members of group individuals. Consequently, this approach yields the logical form in (26) for the sentence in (24), which expresses quantification over group individuals of the group kind. It does not, however, yield one that expresses quantification over normal individuals, and therefore still disallows the generic number expression from interacting with other quantificational expression with respect to scope.

(26) The five-child group kind is such that its typical instance *i* (*i* a five-child group individual) has the kind-level property of being unable to eat ten bowls of rice.

6 Summary

In this paper, I have shown that it is problematic to account for the distributional behavior of bare Chinese number expressions on structural grounds by analyzing them as both syntactically and semantically ambiguous, as proposed by Li (1996, 1998). With an extension of Carlson's (1977) theory of English bare plurals, I have provided a semantic and pragmatic account for the distributional behavior of bare Chinese number expressions. This led me to conclude that it is unmotivated to posit two distinct structural representations for bare Chinese number expressions, and a unified representation is both empirically and conceptually preferable. Due to space constraints, the discussion of the pros and cons of the many candidates for such a unified representation in the literature is left elsewhere, but I follow Gao (1994) to posit a unified NP structure for Chinese number expressions within the HPSG framework (Pollard and Sag, 1994), in which I treat the noun as the head of NP, and the ClP as the specifier of NP.

References

Aoun, J., N. Hornstein, D. Lightfoot, and A. Weinberg (1987) Two types of locality. *Linguistic Inquiry* 18:537–578.

Carlson, G. (1977) A unified analysis of the English bare plural. *Linguistics and Philosophy* 1(3):413–457.

Carlson, G. (1995) Truth conditions of generic sentences: Two contrasting views. In *The Generic Book*, ed. G. Carlson and F. J. Pelletier, 224–237. Chicago: University of Chicago Press.

Cohen, A. (2002) Genericity. *Linguistische Berichte* 10:59–89.

Gao, Q. (1994) Chinese NP structure. *Linguistics* 32:475–510.

Grice, H. P. (1975) Logic and conversation. In *Speech Acts, Volume 3 of Syntax and Semantics Series*, ed. P. Cole and J. L. Morgan, 41–58. New York: Academic Press.

Hsin, A.-L. (2002) On indefinite subject NPs in Chinese. *Hanxue Yanjiu [Chinese Studies]* 20(2):353–376.

Kamp, H. (1981) A theory of truth and semantic representation. In *Formal Methods in the Study of Language,* Volume 1, ed. J. Groenendijk, T. M. V. Janssen, and M. Stokhof, 277–322. Amsterdam, Holland: Mathematical Center.

Li, C. and S. Thompson (1981) *Mandarin Chinese: A functional reference grammar*. Berkeley: University of California Press.

Li, Y.-H. A. (1996) A number projection. Ms., University of Southern California.

Li, Y.-H. A. (1998) Argument determiner phrases and number phrases. *Syntax and Semantics* 29(4):693–702.

Longobardi, G. (1994) Reference and proper names. *Linguistic Inquiry* 25:609–665.
Milsark, G. (1974) *Existential Sentences in English*. Ph.D. thesis, MIT.
Montague, R. (1974) The proper treatment of quantification in ordinary English. In *Formal Philosophy: The Selected Papers of Richard Montague*, ed. R. H. Thomason, 247–270. New Haven: Yale University Press.
Pollard, C. J. and I. A. Sag (1994) *Head-Driven Phrase Structure Grammar*. Chicago: The University of Chicago Press.
Pollard, C. J. and P. Xue (1998) Chinese reflexive ziji: Syntactic reflexives vs. nonsyntactic reflexives. *Journal of East Asian Linguistics* 7:287–318.
Roberts, C. (1989) Modal subordination and pronominal anaphora in discourse. *Linguistics and Philosophy* 12(6):683–721.
Schubert, L. K. and F. J. Pelletier (1987) Problems in the representation of generics, plurals, and mass nouns. In *New Directions in Semantics*, ed. E. LePore, 385–451. London: Academic Press.
Shyu, S.-I. (1995) *The Syntax of Focus and Topic in Mandarin Chinese*. Ph.D. thesis, University of Southern California.
Tsai, W.-T. D. (1994) *On Economizing the Theory of A-bar Dependency*. Ph. D. thesis, MIT.