Byeong-uk Yi

Numeral Classifiers and the White Horse Paradox

Abstract This paper presents an interpretation of Gongsun Long’s white horse paradox. The Chinese sentence he uses to state his main thesis (Bai ma fei ma) has two potential readings:

(a) The white horses are not horses.
(b) The white horses are not the horses.

Although (a) gives the usual and correct reading of the sentence, according to the interpretation, Gongsun Long takes it to state (b). He gives good arguments for (b) while taking them to establish (a) as well, for he fails to distinguish between the two different theses. In presenting this interpretation, the paper gives an account of the function of numeral classifiers and discusses the semantics of count nouns in languages with no grammatical number system, including classical Chinese and classifier languages (e.g., contemporary Chinese).

Keywords Gongsun Long, White Horse Dialogue, white horse paradox, numeral classifier, classifier language, mass noun thesis, bare noun

Gongsun Long (公孙龙) (ca. 325–250 BC), a Warring States period philosopher in the school of names (名家), is famous for advancing the thesis that white horses are not horses. In a treatise titled the White Horse Dialogue (白马论), he presents dialectical arguments for a thesis he states using a sentence usually taken to mean that white horses are not horses (or the white horses are not horses):

\[(G)\text{ Bai ma fei ma (白马非马 white horse not horse).}\]

The dialogue, according to Christoph Harbsmeier, “is among the most widely..."
discussed documents in Chinese intellectual history” (Harbsmeier 1998, 311). Part of the reason for this is that there are serious difficulties in interpreting the argument. The main difficulty concerns what Gongsun Long means by sentence (G). Most interpretations of his arguments differ from one another on this issue. Yu-Lan Fung, who presents the standard interpretation, takes the main thesis of the dialogue to be about universals, not about individual (or particular) horses (Fung 1948; 1952). On Fung’s interpretation, Gongsun Long argues that “the universal…‘horseness’ is distinct from [the universal] ‘white-horseness’” (1948, 88). Chad Hansen gives a radically different interpretation, which he calls “the Mass-Stuff Interpretation” (Hansen 1983, 148).¹ On this interpretation, Gongsun Long’s main thesis concerns mass or stuff: (a) the “horse-stuff” (Hansen 1983, 141), the stuff of which all horses are parts; and (b) the white-horse-stuff, the stuff of which all white horses are parts. The thesis, on the interpretation, is that the white-horse-stuff is not identical with the horse-stuff.

I think both interpretations are implausible. There is no good reason to take Gongsun Long to use (G) to state a thesis about stuff or universals. The Chinese noun figuring in (G), ma (马 “horse”), is normally used to talk about individual horses, as the usual English translations of the sentence suggest.² Moreover, we can give an interpretation that takes his thesis to be about individual horses.

On this interpretation, the main thesis of the dialogue can be formulated as follows:

(1) The white horses are not the horses.

Compare this with the thesis that (G) is usually taken to state:

(2) The white horses are not horses.

These are two very different theses. Although (2) is patently false, (1) is true. It means that the white horses (taken together) are not the same things as the horses (taken together). This is true because the latter include some horses (e.g., the black ones) that the former do not. But it is not implausible to take some Chinese thinkers to fail to clearly distinguish between (1) and (2). For Chinese (like many other languages) does not have a definite article or other devices one can easily use to distinguish (1) from (2). So I think that Gongsun Long takes (G) to state (1) in the dialogue while most readers take the sentence to state (2) or the like (e.g., “A white horse is not a horse”). This explains why his arguments strike the

1 See also Hansen (1976), Graham (1986), and Krifka (1995).
2 See, e.g., Chan (1963, 235–37) for a usual translation of the White Horse Dialogue.
readers as mere sophistry, while making room for the possibility that a coherent logic underlies the arguments. And we can see that the dialogue presents cogent arguments for (1).

1 Chinese Nouns and the Mass Noun Thesis

The sentence Gongsun Long uses to state his thesis, (G), involves three Chinese characters: the noun  
 马  (ma “horse”), the adjective  
 白  (bai “white”) and the particle  
 非  (fei “not”) for negation. A major issue in interpreting the White Horse Dialogue concerns what the noun means (or what he takes it to mean). The noun amounts to the English “horse,” as is assumed in the usual translations of (G): “A white horse is not a horse” and “White horses are not horses.” But Chad Hansen (1983; 1992) argues that the translations are misleading because there is a significant semantic difference between the two nouns: the Chinese  
 马  is a mass noun while the English “horse” is a count noun. Mass nouns, in his view, are names referring to stuff (e.g., the horse-stuff), whereas count nouns denote every one of the individuals that share a certain characteristic (e.g., the horses).  

(3) The white-horse-stuff is not the horse-stuff.

Is there a good reason to take the Chinese noun  
 马  to be a mass noun?

It is usual to divide common nouns in English and other related languages (e.g., most Indo-European languages) into two sorts: mass nouns and count nouns. Count nouns include “cat, pebble, photograph, lamp, pea, and lake,” and mass nouns include “water, paper, furniture, and grass” (Hansen 1983, 32). This distinction was drawn by Otto Jespersen,  

(C1) Count nouns have singular and plural forms while mass nouns do not.
(C2) Count nouns can directly combine with numerals while mass nouns cannot.
(C3) Count nouns can directly combine with “many” and “few”; mass nouns can directly combine with “much,” “little,” “less.”

3 I use “denote” essentially as Mill (1884) does. He distinguishes two semantic functions of the so-called general names: denoting and connoting (or signifying). For example, “horse,” in his view, denotes every horse while connoting an attribute, horsehood (or horiness) (Quine [1960] uses “is true of” for Mill’s denoting). While Mill takes, e.g., “horse” to denote any one horse, however, I take it to denote any one or more horses (see §4). I use “signify” for Mill’s connoting and “refer to” only for referential terms: proper names, singular terms, etc.

4 Note, however, that Edkins distinguishes between “material” (mass) and “appellative” (count) nouns in his books of Chinese grammar (Edkins 1853; 1857/1864).
Hansen applies the usual criteria for the mass/count distinction to Chinese nouns to propose a thesis he calls the “Mass Noun Hypothesis” (Hansen 1983, 30):

**Mass Noun Thesis (for Chinese):** All Chinese common nouns are mass nouns.

To do so, he presents the usual criteria for the distinction formulated for English nouns:

…[Some nouns are] called count nouns, since one can “count” them: seven cats, twelve peas, one lake. Count nouns take pluralization. They can be directly preceded by the articles [sic article] a or an. They stand alone as a noun phrase only when plural or preceded by articles, demonstratives, numbers and so forth: “horse is brown” is not grammatical in English though “furniture is brown” is.

Mass nouns, by contrast, do not take pluralization, and cannot be directly preceded by numbers or indefinite articles; *seven grass and *a furniture are improperly formed…. Mass nouns can stand alone as noun phrases in sentences. (Hansen 1983, 32)

In this passage, he lists two of the three criteria mentioned above (i.e., (C1) and (C2)) and adds two other criteria:

(C4) Count nouns can combine directly with the article a/an while mass nouns cannot.

(C5) A count noun cannot “stand alone as a noun phrase” (without taking the plural form) while a mass noun can.7

And he elaborates on the second criterion, (C2):

… mass nouns are associated with certain other expressions (let us call them measures or sortals) …: a cup of water, a blade of grass, three pieces of furniture. (Hansen 1983, 32)

That is, although mass nouns cannot directly combine with numerals, they can combine with numerals via mediation of measure words (or “sortals”), such as

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5 The asterisk, “*”, is used to indicate that “seven grass” and “a furniture” are ill-formed.
6 He mentions (C3) in another passage: “Mass nouns go with much (e.g., much wood, much money); count nouns go with many (e.g., many trees, many dimes)” (Hansen 1983, 33).
7 (C4) is related to (C2), for the indefinite article derives from the Old English word for one, an. The so-called bare noun criterion, (C5), dates back to Bloomfield (1933, 204f). See also Chierchia (1998a; 1998b; 2010).
“liter” or “cup,” which figures in “two liters of milk” or “three cups of coffee.”

Now, Hansen argues that “in most modern Chinese dialects the syntactical parallel with English mass nouns is almost exact for all nouns,” including counterparts of English count nouns (Hansen 1983, 32):

Chinese nouns have no ordinary plural. They cannot be directly preceded by numbers or indefinite articles…. Each noun is associated with appropriate sortals (called classifiers or measures…). Thus in (Mandarin) Chinese, one says …one pen book …three koperson…. The nouns by themselves are complete term expressions. (Hansen 1983, 32f)8

So common nouns in contemporary Chinese (or its various dialects), it seems, satisfy the usual criteria for mass nouns. Does this mean that they are all mass nouns? Does it support the stuff interpretation of Gongsun Long’s thesis, (3)?

I think the answers to both questions are no. First, the mass noun thesis falls short of supporting the stuff interpretation because not all mass nouns can be considered names for stuff. Second, there is a significant syntactic difference between contemporary Chinese and the language Gongsun Long uses, classical Chinese. Last but most important, one cannot directly apply the usual criteria for mass nouns to Chinese (classical or contemporary) because the criteria presuppose features of English that Chinese does not share.

In proposing the stuff interpretation, Hansen assumes Quine’s view of the semantics of mass nouns. Quine (1960, 90–100; 1969, 35ff) holds that mass nouns often figure as proper names or “singular terms” referring to some “scattered stuff” (Quine 1960, 90–100; 1969, 35ff).9 In “Water is a liquid,” for example, “water” refers to “a single though scattered object,” “the world’s water as a total scattered object, sundry parts of which are lakes, pools, drops, and molecules” (Quine 1960, 98), or “the unindividuated totality” of all the water in the world (Quine 1969, 37).10 So Hansen, who argues that all Chinese common nouns are mass nouns, holds that “Chinese ontology…is mereological” and includes only “[the] mereological stuffs which names name” and “spatio-temporally different parts” thereof (Hansen 1983, 31f). But Quine’s view of mass nouns faces serious difficulties because mass nouns are not semantically

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8 He adds that both the Chinese counterpart for “many” and “much” (多 duo) and that for “few” and “little” (少 shao) combine directly with all common nouns (Hansen 1983, 33).
9 He thinks a mass noun can also be used predicatively, as “a general term which is true of each portion of the stuff in question, excluding only the parts too small to count” (Quine 1960, 98).
10 He says that “cattle,” for example, is “a mass term covering the unindividuated totality of beef on the hoof” (Quine 1969, 37). (Note however that “cattle” is not a mass noun. See note 21.)
homogeneous. There is indeed a large group of mass nouns one might consider names for stuff (or substances in the chemical sense): “water,” “milk,” “beef,” “gold,” etc. Barner and Snedeker call them “substance-mass nouns” to distinguish them from mass nouns of another kind, those they call “object-mass nouns”: “furniture,” “jewelry,” “clothing,” “silverware,” etc.” (Quine 2005, 41).

One cannot take these mass nouns to refer to a so-called unindividuated totality. For example, “furniture” is for (or denotes) “[individual] objects that can be moved, such as tables, chairs and beds, that are put into a house or office to make it suitable for living or working in” (Hornby 2010, 633). Moreover, English mass nouns include a variety of abstract nouns, such as “leisure, music, traffic, success, tact, commonsense…satisfaction, admiration, refinement…restlessness, justice, safety, constancy” (Jespersen 1924, 198). These mass nouns, called abstract mass nouns, cannot be taken to refer to stuff. 11 So one cannot conclude that all Chinese common nouns are names for stuff simply on the grounds that they satisfy the usual criteria for mass nouns.

Moreover, Gongsun Long’s language, classical Chinese, differs from contemporary Chinese in having a wide range of nouns that can combine directly with numerals. For example, ma (马 “horse”) can combine with san (三 “three”) to yield san ma (三马 “three horses”) in classical Chinese. Such nouns, I think, are count nouns. So I think Harbsmeier (1991) is right to object to Hansen by dividing classical Chinese nouns into mass and count nouns.12 Hansen concedes that classical Chinese has nouns that can combine directly with numerals. Still, he argues that all of its common nouns are “masslike nouns” because they have “otherwise… all the grammatical trappings of mass nouns” (Hansen 1983, 33). He responds to Harbsmeier by distinguishing syntactic mass nouns (i.e., nouns satisfying syntactic criteria for mass nouns) from semantic mass nouns (i.e., nouns that he considers names for stuff). He agrees with Harbsmeier in denying that “[all] classical Chinese nouns were grammatical mass-nouns,” but still upholds the hypothesis that “the semantics of Chinese nouns may be like those of mass-nouns” (Hansen 1992, 48; original italics). And he suggests that this semantic character of the nouns might be responsible for the historical change in their syntax, that they became “grammatical” (or syntactic) mass nouns because they were already names for stuff in classical Chinese:

11 But Levinson (1980) argues that abstract mass nouns refer to “abstract stuff.” See my (unpublished 2) for problems with this view and an alternative account of abstract mass nouns.

12 He points out that classical Chinese count nouns (unlike mass nouns) can combine directly with shu (数 “a number of”), ge (各 “each”), jian (兼 “each of the…” ) and mei (每 “every”) (Harbsmeier 1991, 313) and be suffixed by the plural morpheme bei (辈) (Harbsmeier 1991, 319). Incidentally, he distinguishes what he calls generic nouns (e.g., min (民 “common people”) from mass and count nouns (Harbsmeier 1991, 316). See also Graham (1989, 401f).
Arguably, Classical Chinese ontological assumptions may have affected Chinese language development. Gradually nouns came to have a more uniform mass-noun syntax. (Hansen 1992, 49)  

But his hypothesis that all classical Chinese common nouns are names for stuff conflicts with his explanation of the reason that some of them can combine directly with numerals.

Hansen holds that count nouns can combine directly with numerals because their semantics “contains a principle for identifying the individual of a common-type” (Hansen 1992, 47). By contrast, mass nouns cannot combine with numerals without mediation of measure words, in his view, because they lack “an inherent principle of individuation” (Hansen 1992, 47). If so, how can some classical Chinese nouns (e.g., ma) combine directly with numerals? He explains this by assuming that they have an individuating principle: “there must have been a rudimentary individuating principle in such nouns to allow number modification...perhaps with a default principle built in” (Hansen 1983, 176). This means that they cannot be taken to have no “inherent principle of individuation.”

Now, some might attempt to defend Hansen’s hypothesis about classical Chinese nouns by assuming that the mass noun thesis holds for contemporary Chinese: because all contemporary Chinese common nouns are names for stuff (for they are mass nouns), it must be the same with classical Chinese common nouns, for the change in the syntax of common nouns between contemporary and classical Chinese cannot be taken to give rise to a significant change in their

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13 He suggests that classical Chinese rapidly turned into a language with a mandatory classifier system, one that, like contemporary Chinese, does not allow nouns to combine directly with numerals (see §2 [esp., note 19] about classifier languages); he says, “The number-sortal forms became standardized during the Han dynasty...shortly after the classical period” (Hansen 1983, 49) and “sortals did not become grammatically necessary until sometime in the Han dynasty” (Hansen 1983, 33). But the development of the classifier system was not as rapid and clear-cut as he suggests and classifiers did not become mandatory until much later. Schafer (1948) shows that classifiers were not mandatory as late as the 9th century by analyzing a book by Duan Chengshi (段成式) (died 863), *Miscellaneous Morsels from Youyang* (*Youyang Zazu* 酉阳杂俎). Wang holds that they did not become mandatory until the 11th century (Wang 1994, 3). For the development of the Chinese classifier system, see, e.g., Peyraube (1998) and Wang (1994).

14 He argues that “We may [still] consider them mass nouns in that they could be associated with a range of individuating or counting conventions though perhaps with a default principle built in” (Hansen 1983, 176). But even English count nouns, which are equipped with default principles of individuation, can take measure words (or their syntactic peers), as in “three pounds of apples,” “three pairs of horses,” “three groups of horses” and “three truckloads of horses.”
semantics. This argument rests on two controversial assumptions:
(a) All mass nouns are names for stuff.
(b) The mass noun thesis for contemporary Chinese: all common nouns in
contemporary Chinese are mass nouns.\(^{15}\)

I reject (a) for the reason given above: some mass nouns (e.g., “furniture,”
“justice”) cannot be considered names for stuff. But I think there is a more
important reason for rejecting the argument: (b) is false. Hansen argues for this
thesis by applying the usual criteria for the mass/count distinction to
contemporary Chinese. But those criteria are not directly applicable to the
language, which does not share features of English that are presupposed by the
criteria. By formulating refined criteria that are also applicable to contemporary
Chinese, we can see that the language, like English, has count nouns as well as
mass nouns. This is explained in the next section.

2 Classifiers and Count Nouns\(^ {16}\)

Contemporary Chinese belongs to a large group of languages called classifier
languages. These languages have a system of special expressions called numeral
classifiers (in short, classifiers) that regularly intervene in combinations of nouns
and numerals.\(^ {17}\) For example, Mandarin (a dialect of contemporary Chinese) has
tou (头) and pi (匹) as classifiers matching niu “cow” and ma “horse,”
respectively,\(^ {18}\) and employs the classifiers in counterparts of, e.g., “two cows”
and “three horses”: liang tou niu (两头牛 two CL cow, “two cows”) and san pi
ma (三匹马 three CL horse, “three horses”). And contemporary Chinese common
nouns, it seems, cannot directly combine with numerals and require mediation of
classifiers or their syntactic peers (e.g., measure words). For example, *liang niu
(两头 two cow) and *san ma (三匹 three horse) are ill-formed in Mandarin

\(^{15}\) The argument rests on another controversial assumption: the change in the syntax of
Chinese nouns (e.g., niu [牛 “cow”]) that results from the introduction and consolidation of
classifiers matching them (e.g., tou [头 CL]) does not lead to significant change in their
semantics. Most proponents of (b) would reject this assumption. But I think it is basically
correct. See §2.

\(^{16}\) This section gives a sketch of my views of classifiers and classifier languages nouns. See
my (2008; 2009; 2011a; 2011b; 2012; unpublished 1) for more details of the views.

\(^{17}\) Classifier languages include many East Asian languages (e.g., contemporary Chinese,
Japanese, Korean, Thai, Malay), American Indian languages (e.g., Yucatec Maya, Ojibwe) and
even some Indo-European languages (e.g., Bengali). See, e.g., Aikhenvald (2000), Craig
system, see, e.g., Chao (1968).

\(^{18}\) While tou matches most nouns for animals, pi (as a classifier) matches only ma “horse.”
(although they are well-formed in classical Chinese).  

Now, many linguists and philosophers, including Hansen, hold the mass noun thesis for classifier languages:

**Mass Noun Thesis for Classifier Languages:** All common nouns in classifier languages are mass nouns.

They argue for this thesis by applying the usual criteria for the mass/count distinction to classifier languages by regarding classifiers as measure words of a special kind.

In his discussion of Japanese classifiers, Quine suggests that classifiers have the same semantic function as measure words (Quine 1969, 36f). Regarding mass nouns as names for stuff, he takes measure words to combine with mass nouns to yield compound terms that denote suitable portions of the stuff to which the nouns refer. In “three sticks of wood,” for example, he takes the measure word “stick” to apply to “wood” to yield a compound (“stick of wood”) that denotes any piece made of wood that has a certain shape, and holds that this compound can combine directly with the numeral “three” because it is an “individuative term,” a term that, like count nouns, denotes any one of the things of a certain kind (Quine 1969, 37). The measure word “stick,” in his view, provides the principle of individuation (a specification of what portions of wood count as individuals of the relevant kind) that the mass noun “wood” lacks.  

He suggests that classifiers are necessary in classifier language counterparts of, e.g., “three cows” because classifier language counterparts of “cow” (e.g., the Mandarin *niu*) are mass nouns, which require supplementation of suitable principles of individuation in order to combine with numerals.  

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19 Contemporary Chinese might be considered a mandatory classifier language, where nouns cannot combine directly with numerals. But some classifier languages (e.g., Korean, Malay) allow count nouns to combine directly with numerals. Note also that Chinese went through extended stages in which it had a non-mandatory classifier system. See, e.g., my (2011b, 271f; unpublished 1, §2.1).


21 He gives the same account for “head” in “three head of cattle” while considering “cattle” a mass noun. But “cattle” is not a mass noun. It is a plural noun that has an individuative principle, as Quine concedes in his comments on Iida (1998), quoted in Iida (1998, 8).

22 While Quine suggests the account of classifiers together with the mass noun thesis for Japanese, he argues that the account is as good as (but not better than) an alternative account of classifiers that rejects the mass noun thesis, and concludes that the semantics of some Japanese nouns (e.g., *wushi* “ox”) is indeterminate. See Iida (1998) for discussions and criticisms of Quine’s views.
Similarly, Hansen takes classifiers to play the same role as measure words. 23 Assuming that classifiers are measure words, he thinks that common nouns in contemporary Chinese cannot directly combine with numerals for the same reason that mass nouns cannot. This leads to the conclusion that contemporary Chinese nouns are names for stuff lacking any principle of individuation. He gives further support for this conclusion by applying to these nouns the usual criteria for the mass/count distinction. For he (like Quine) regards all mass nouns as names for stuff.

But the view that all common nouns in contemporary Chinese are names of stuff has serious problems. Although they cannot combine directly with numerals, some of them can combine directly with Chinese counterparts of “countless,” “a majority of” and “a few”: wushude (无数的 “countless, innumerable”), daduoshude (大多数的 “a majority of”) and shaoshude (少数的 “a small number of”). For example, ma “horse” can directly combine with these determiners to yield wushude ma “countless horses,” daduoshude ma “a majority of horses” and shaoshude ma “a small number of horses,” and it is the same with niu “cow.” Like their English counterparts, however, the determiners (which contain shu [数 “number”], the Chinese word for number) relate to number and can directly combine only with individuative nouns. They cannot directly combine with Chinese counterparts of the so-called substance-mass nouns of English: shui (水 “water”), rou (肉 “meat”), etc. So Chinese nouns that can combine directly with those determiners (like English nouns that can combine directly with their English counterparts) cannot be considered names of stuff. They must be individuative nouns, which include principles of individuation and denote the individuals belonging to a certain kind.

Moreover, the Chinese counterparts of “countless,” “a majority of” and “a small number of” yield a good syntactic criterion for dividing Chinese common nouns into mass and count nouns:

(A) Count nouns in contemporary Chinese can combine directly with wushude “countless,” daduoshude “a majority of” and shaoshude “a small number of,” while mass nouns cannot. 24

This is the straightforward counterpart of a criterion for the mass/count distinction for English:

23 He says that measure words (which he calls “sortals”) combine with mass nouns to “allow one to divide up the substances into countable units” and that contemporary Chinese nouns are “associated with appropriate sortals (called classifiers or measures in most language texts)” (Hansen 1976, 32).

24 Although this criterion is formulated for contemporary Chinese, the same criterion applies to classical Chinese as well.
(A*) Count nouns in English can combine directly with “countless,” “a majority of” and “a small number of,” while mass nouns cannot.

Applying the criterion, we can see that contemporary Chinese (like English) has count nouns: unlike *shui* “water” and *rou* “meat,” *ma* “horse” and *niu* “cow” are count nouns. So I reject the mass noun thesis and propose a thesis opposite to it:

**Count Noun Thesis (for Classifier Languages):** Classifier languages have count nouns as well as mass nouns.

While the above discussion suffices for rejecting the mass noun thesis, it falls short of establishing the count noun thesis, which concerns all classifier languages. But it suffices for the restriction of the thesis to contemporary Chinese:

**Count Noun Thesis for Contemporary Chinese:** Contemporary Chinese has count nouns as well as mass nouns.

This is all we need for the present purpose.

If contemporary Chinese has count nouns, why can they not combine directly with numerals? The reason is related to the development of the classifier system. English, for example, has two kinds of *numeral noun phrases*: (a) those in which common nouns combine directly with numerals: “two cows,” “three horses,” etc.; and (b) those in which common nouns combine with numerals via mediation of measure words (or their syntactic peers): “two *pounds* of meat,” “three *slices* of bread,” “four *boxes* of oranges,” “five *pairs* of parrots,” etc. The two kinds of numeral noun phrases have syntactic disparity. It is the same in classical Chinese, where count nouns (unlike mass nouns) can combine directly with numerals, as in *san ma* (三马 three horse, “three horses”). In classifier languages, however, classifiers are regularly added in counterparts of numeral noun phrases of the first kind, (a), to make them syntactically parallel to numeral noun phrases of the second kind, (b). The contemporary Chinese counterpart of “three horses” (*san pi ma* 三匹马 three CL horse), for example, is parallel to those of, e.g., “three *pounds* of meat” and “three *pairs* of parrots”: *san bang rou* (三磅肉 three pound meat) and *san dui yingwu* (三对鹦鹉 three pair parrot). By introducing classifiers matching count nouns and requiring them to mediate combinations of those nouns with numerals, contemporary Chinese unifies the syntax of numeral noun phrases. The requirement that common nouns (including count nouns) cannot directly combine with numerals results from, or rather is an integral part of, the syntactic unification.

On this explanation, the introduction and enforcement of classifiers neither
gives rise to nor is accompanied by semantic change in the nouns matching them. The Chinese _ma_ “horse,” for example, has not ceased to be a count or individuative noun because matching classifiers (e.g., _pi_) came to be required for its combination with numerals. Proponents of the mass noun thesis would disagree. They argue that languages implementing the above-mentioned syntactic unification can have no count nouns because nouns that cannot directly combine with numerals must differ from English count nouns in lacking some semantic components that enable these nouns to combine directly with numerals (e.g., principles of individuation). Accordingly, they take measure words and all their syntactic peers (e.g., “pound,” “box,” “slice,” “pair”) to have a common semantic function: they provide the semantic components that nouns need to combine with numerals. And they conclude that it is the same with classifiers. As we have seen, however, one cannot hold the mass noun thesis for contemporary Chinese, for the language has nouns that can combine directly with some determiners relating to number (e.g., _wushude_ “countless”). Moreover, the view that measure words and all their syntactic peers have the same semantic function has an obvious problem: “five _pairs_ of parrots” is syntactically parallel to “two _pounds_ of meat,” but one cannot take “pair” to have the same function as “pound” (note that “parrot” is a count noun).

I think measure words belong to a broad syntactic class whose members are not semantically homogenous. The class includes not only “pound” and “slice” but also “pair,” “couple,” “brace,” “dozen” and “score.” While the former usually coordinate with mass nouns, the latter coordinate only with count nouns. For they are cousins of numerals: “pair,” “couple” and “brace” are cousins of numerals for two (“a _pair_ of parrots,” for example, relates to _two_ parrots); and “dozen” and “score” are cousins of numerals for twelve and twenty, respectively. The same holds for their classifier language counterparts, such as the Chinese _dui_ (对) “pair, couple”), _shuang_ (双 “pair, couple”) and _da_ (打 “dozen”). It is the same, I think, with classifiers. They belong to the same syntactic class as measure words (in the relevant languages) but are semantically different from them. Moreover, I think, they are also cousins of numerals. They are like the English “pair” and “dozen” and their Chinese counterparts in this respect, but differ from them in relating to the number _one_. This explains why _san pi ma_ (three CL horse), for example, means _three horses_: the classifier relates to the number _one_, and three times _one_ is two.

We can call measure words and their syntactic peers _numeratives_, and cousins of numerals figuring as numeratives (e.g., “pair,” “dozen”) _paranumeral numeratives_. In my view, then, classifiers are paranumeral numeratives of a

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25 Edkins (1857, 119f; 1864, 127) introduces this term for Chinese measure words and their syntactic peers, including classifiers. See my (2011a, 201).
special kind, cousins of numerals for one. We can call this account of classifiers the *paranumeral account*. On this account, nouns with matching classifiers (like those taking other paranumerals) must be count nouns. Thus the account matches well with the count noun thesis.

Count nouns in contemporary Chinese, we have seen, satisfy the straightforward counterpart of a criterion for count nouns for English, (A). This conflicts with the results of applying the usual criteria for mass nouns (or their counterparts for Chinese). While proponents of the mass noun thesis invoke these results to argue for the thesis, I think the results of applying (A) override them. The usual criteria (e.g., (C1)–(C5)) are not directly applicable to contemporary Chinese because they presuppose features of English not shared by contemporary Chinese.

(C4) has no counterpart whatsoever for Chinese, because Chinese does not have an indefinite article, let alone one that stems from a numeral for one as the English *a*/*an* does. And (C5), the so-called bare noun criterion, does not apply to Chinese because Chinese has no articles. This criterion presupposes a strong determiner system, which is lacking in languages without articles. Bloomfield, who formulates the criterion for English, introduces the notion of determiner: “determiners are defined by the fact that certain types of noun expressions (such as *house* or *big house*) are always accompanied by a determiner (as, *this house, a big house*)” (Bloomfield 1933, 203). But he immediately adds: “This habit of using certain noun expressions always with a determiner, is peculiar to some languages, such as the modern Germanic and Romance. Many languages have not this habit; in Latin, for instance, *domus* ‘house’ requires no attribute and is used indifferently where [sic whether] we say *the house or a house*” (Bloomfield 1933, 203). In Latin, which has no articles, *domus* can figure as a bare (i.e., determiner-free) noun phrase, but this does not mean that it is a mass noun. Likewise with the Chinese *ma* “horse.”

In applying (C3) to Chinese, Hansen notes that *duo* (or *henduo* in contemporary Chinese) “many, much” and *shao* “few, little” combine with all Chinese common nouns. Although this is correct, it does not mean that all those nouns satisfy the condition for mass nouns given in (C3), namely, the condition that mass nouns can combine directly with “much,” “little,” etc. For *henduo* and *shao* are not counterparts of “much” and “little,” respectively. They can combine directly with all Chinese common nouns for the same reason that “a lot (of),” the exact counterpart of *henduo*, can combine directly with all English common nouns. The proper counterpart of (C3) for Chinese requires exact Chinese

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26 Most languages have no articles, as Lyons (1999, xv) says. Languages without articles include Old English, Latin, classical Chinese and most classifier languages (e.g., contemporary Chinese). See my (2012a).
counterparts of “many,” “much,” etc. Now, although contemporary Chinese has no exact counterpart of “many,” the language has an exact counterpart of “few”: shaoshude “few, a small number of.” And it has other determiners that, like “many” and “few,” relate to number and select individuative nouns: wushude “countless” and daduoshude “a majority of.” Using these determiners, we can formulate a proper generalization of (C3) for Chinese, namely, (A). Applying this criterion, as we have noted, we can see that Chinese has count nouns.

The numeral criterion, (C2), is not applicable to languages with a strong classifier system. Contemporary Chinese, unlike English, has a system of classifiers that are pretty much mandatory for count nouns as a result of the drive for syntactic unification of numeral noun phrases. So its common nouns cannot directly combine with numerals. But the reason for this, we have seen, is different for different kinds of nouns, and classifiers do not have the same semantic function as measure words. While hiding a prominent syntactic reflex of count nouns in favor of syntactic unification, however, the language retains a telltale marker for those nouns. A cousin of numerals, wushude “countless,” does not need classifiers to combine with count nouns. This, we have seen, yields a syntactic criterion for Chinese count nouns.

Finally, let us consider the morphological criterion, (C1). The singular/plural morphology of count nouns in English is part of its grammatical number system. But not all languages have a grammatical number system and nouns in a language with no such system have no singular or plural forms. Such languages include most classifier languages (e.g., contemporary Chinese), classical Chinese and Tagalog (an Austronesian language spoken in the Philippines). Classical Chinese and Tagalog (which are not classifier languages) have count nouns without singular or plural forms; they combine directly with numerals without taking singular or plural forms, as in the classical Chinese san ma “three horses.” Similarly, contemporary Chinese has count nouns without singular or plural forms. Although they do not combine directly with numerals, they can combine directly with some determiners relating to number (e.g., wushude “countless”).

3 The Individualist Interpretation

Chinese, as we have seen, has count nouns as well as mass nouns. In particular, ma “horse” is a count noun in both classical and contemporary Chinese. It is an

27 Note however that Japanese and Korean have exact counterparts of “(very) many”: kazuooku(-no) (Japanese) and swuman(h)(-un) (Korean). They also combine directly with count nouns.
28 About Tagalog, see, e.g., Schachter and Otanes (1972).
29 See §4 for more about the semantics of count nouns without singular or plural forms.
individuative noun denoting individual horses, not a mass noun referring to the unindividuated totality thereof. Moreover, we can give an interpretation of Gongsun Long’s *White Horse Dialogue* that takes him to argue for a thesis about individual horses. We can call it the *individualist interpretation*.

On this interpretation, the main thesis of the dialogue can be stated as follows:

(1) The white horses are not *the* horses.

This denies that the white horses are the same things as the horses. The thesis is true, for there are horses that are not white horses (e.g., black ones). And the dialogue presents cogent arguments for the thesis:

If one seeks horses, yellow or black horses can be sent. If one seeks white horses, yellow or black horses cannot. Suppose that the white horses are *the* horses. This means that the same things are sought [in the two cases]. The same things are sought, for the white ones are not different from the horses. If the same things are sought, how can the yellow or black horses be both acceptable and unacceptable? Acceptability and unacceptability are clearly incompatible. So the yellow or black horses are the same and yet they suffice for having horses but not for having white horses. It clear then that the white horses are not *the* horses.30

This passage has two related arguments for the thesis. The argument in its first part can be formulated as follows:

Suppose that someone, *A*, seeks horses while another, *B*, seeks white horses. Then what *A* seeks are the same things as what *B* seeks if the white horses are the same things as the horses; in this case, the former (the horses) do not differ from the latter (the white horses). But the black horses are acceptable to *A* while unacceptable to *B*. So what *A* seeks differ from what *B* seeks, and the white horses are not the same things as the horses.

The second part gives a succinct formulation of essentially the same argument:

If the white horses are the same things as the horses, having black horses must suffice for having white horses (for it suffices for having horses). But having

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30 All translations of passages of the *White Horse Dialogue* are mine. The above translation reflects my interpretation that Gongsun Long takes (G) to state (1), but one can get the usual reading of the passage by removing the two occurrences of the italicized *the*. See the discussion below.
black horses does not suffice for having white horses. So the white horses are not the same things as the horses.

And we can formulate the gist of the two arguments as follows:

There are black horses. And the white horses do not include the black horses, but the horses do. So the white horses are not the same things as the horses.

This is a good argument for (1). The thesis follows from “The horses include some things that the white horses do not,” for replacing “the white horses” in this sentence with “the horses” yields a contradiction: “The horses include some things that the horses do not.”

Gongsun Long, we have seen, presents cogent arguments for his main thesis. If so, why do most readers fail to appreciate them? The main reason is that his formulation of the thesis is misleading. He takes (G) to state the thesis, but the sentence is normally used to state a different thesis:

(2) The white horses are not horses.

So most readers of the White Horse Dialogue (and the dialectical opponent in the dialogue) take him to argue for (2). But this thesis does not follow from (1). Although (1) is true, (2) is false. It implies that no white horse is a horse, but this is clearly false. Accordingly, his arguments have obvious errors on the usual reading. We can obtain the arguments on this reading by removing the two italicized occurrences of the in the above translation of the passage presenting them. So most readers would formulate the second argument, for example, as follows:

If the white horses are horses, having black horses must suffice for having white horses (for it suffices for having horses). But having black horses does not suffice for having white horses. So the white horses are not horses.

Clearly, the italicized thesis does not follow from the correct thesis in parenthesis: having black horses suffices for having horses. Similarly, one can easily find fault with what most readers would consider the gist of the two arguments in the passage:

There are black horses. And the white horses do not include the black horses, but the horses do. So the white horses are not horses.

This is clearly a non-sequitur. The premises are irrelevant to the conclusion, for
all the white horses are horses whether or not there are other horses (e.g., black ones).

Now, I think the readers are right to take (G) to state (2), not (1). But I do not think it is implausible to take some Chinese thinkers to fail to distinguish between (1) and (2). It is not straightforward to give clearly distinct formulations of these theses in Chinese, for Chinese has no direct counterpart of the definite article the, which is used to distinguish (1) from (2) in English. So I think Gongsun Long fails to distinguish (1) from (2) while taking (G) to state (1). By doing so, he in effect takes his arguments for (1) to yield arguments for (2). This is a mistake. Although he gives fairly good arguments for (1), as we have seen, they amount to poor arguments for (2).

Do we have any evidence that Gongsun Long takes (G) to state (1)? I think the answer is yes. In the passage quoted above, he uses a sentence of which (G) is the negation:

(H) Bai ma nai ma (白马乃马 white horse be horse).  

While this is usually taken to state that the white horses are horses, he uses it to imply a thesis opposite to (1):

(3) The white ones (viz., horses) are not different from the horses.

The reason, I think, is that he takes (H) to state the thesis of which (1) is the negation:

(4) The white horses are (the same things as) the horses.

If so, he must take (G) to state (1).

Why would he, unlike most Chinese speakers, take (G) and (H) to state (1) and (5), respectively? To see the reason, it is useful to consider the sentence he uses to state (4):

(I) Bai zhe bu yi ma (白者不异马 white one not different horse).

Although the two noun phrases in this sentence (ma and bai zhe [白者 white one]) have no apparent marker for definiteness, they must be considered definite as their English translations in (4) indicate. Some might explain this by assuming that all Chinese bare noun phrases are definite, and it is straightforward to derive

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31 In quoting this sentence, I ignore the sentence final particle ye (也). I do the same in quoting (I) below.
this assumption from the view that common nouns (and noun phrases) are names for some things. On this view, ma “horse” and bai ma “white horse” are names for the horses and the white horses, respectively. Taking them to figure as such names in (G) and (H), one might conclude that the sentences state (1) and (5). So I think it is plausible to attribute the definiteness assumption to Gongsun Long, although it leads to counterintuitive and incorrect readings of (G), (H) and the like.

4 Talking of the Many in Chinese

The interpretation of the White Horse Dialogue presented above, the individualist interpretation, differs from Fung’s interpretation in taking the main thesis of the dialogue to concern concrete objects: the horses. And it differs from Hansen’s stuff interpretation, which he also calls “a concrete interpretation” (Hansen 1983, 148), in taking the thesis to concern individuals (viz., individual horses). I think the individualist interpretation is superior to the others. All the three interpretations take Gongsun Long to assume an unusual reading of (G), one according to which the sentence states a true thesis. They diverge in specifying the thesis. While I take him to use the sentence to state (1), Hansen takes him to use it to state (3), “The white-horse-stuff is not the horse-stuff,” and Fung takes him to use it to state a thesis about universals:

(6) White-horseness is not horseness.

There is a good reason to attribute (1) to Gongsun Long, as we have seen. The Chinese ma relates to individual horses, and it can form a definite noun phrase for the individual horses, as in (I). (It is the same with bai ma “white horse.”) By taking both bai ma and ma to be definite in (G) while taking them to have the usual meanings, one might take (G) to state (1).32 To take it to state (3) or (6), by contrast, one must give quite an unusual reading of the noun ma, one on which it relates to stuff or a universal in (G). There is no good reason to take Gongsun Long to do so.

The main reason Fung takes him to argue for (6) is that this explains away the paradoxicality of his arguments because (6), unlike (2), is true. But this falls far short of supporting the interpretation. There are other interpretations equally good at explaining away the paradoxicality. In particular, the individualist interpretation does so while attributing a more plausible reading of (G) to

32 It is notable that the other interpretations also take Gongsun Long to regard both noun phrases as definite, taking ma to refer to the horse-stuff (Hansen) or horseness (Fung).
Gongsun Long.

Fung attempts to support his interpretation by invoking a phrase in the dialogue one might translate as “the horse as such”:

(J) *ma ru yi* (马如己) “horse as such, ‘(the) horse as such, (the) horses as such’

He suggests that Gongsun Long uses this for horseness: “The word, ‘horse,’ [in his view] only designates the characteristic common to all horses, that is, as the text says, ‘only the horse as such’” (Fung 1952, 205). But it is clear from the context that this is not what Gongsun Long means by (J). In response to the objection that he incorrectly assumes that horses have no color, he says:

Surely, the horses have color, which is why there are the white horses. If the horses have no color, there are only the *horses as such*. Then how can there be the white horses? 34

Here he uses (J) for the horses with no color, not for a universal (horseness). Note that he does not commit himself to the view that the horses to which (J) refers exist. While asserting the conditional “If the horses have no color, there are only the *horses as such*,” he holds that its antecedent is false (for there are the white horses). So I think he would hold that the “horses as such” do not exist (for all horses have color).

Hansen supports his interpretation by proposing the mass noun thesis: Gongsun Long takes (G) to state a thesis about stuff, (3), because the Chinese *ma* is a mass noun. As we have seen, however, the mass noun thesis holds for neither classical nor contemporary Chinese. In particular, *ma* is neither a mass noun nor a name for stuff. In classical Chinese, it combines directly with numerals; in both classical and contemporary Chinese, it combines directly with determiners calling for individuative terms (e.g., *wushude* “countless”). So, as argued above (§2), it is a count noun denoting individual horses.

Note that the usual translations of the *White Horse Dialogue* assume this in rendering (G) as follows:

(2’) A white horse is not a horse.

It is usual to use singular constructions to translate (G), as in (2’). But this does not mean that the Chinese *ma* amounts to the singular form of “horse.” Some

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33 See also Fung (1948, 88).
34 My italics. I translate (J) as “the horses as such” while Fung translates it as “the horse as such” (Fung 1952, 204; 1948, 88).
plural constructions equivalent to (2') (e.g., (2) and “White horses are not horses”) are equally good translations of (G). The singular (2’) does not capture (G) better than these, for *ma* amounts to the English noun “horse,” not to its singular or plural form. Chinese has no grammatical number system and count nouns in such languages have no singular or plural forms, as noted above (§2). So neither the singular nor the plural form of the English “horse” amounts to the Chinese *ma*.

In semantic terms, however, the plural form is closer to the Chinese noun than is the singular form. Unlike the singular form, the plural form inherits the full semantic profile of the noun “horse,” which has the same semantic profile as the Chinese noun. Let me explain.

The singular form of “horse” denotes *any one horse*. It denotes, e.g., Zev. This helps to explain the truth of “Zev is a horse,” for the sentence is true if the singular form figuring in the sentence denotes Zev. The plural form “horses,” by contrast, denotes *any horses*. It denotes, e.g., Zev and Seabiscuit (taken together), which are horses. This helps to explain the truth of “Zev and Seabiscuit are horses” and “Zev and Seabiscuit are two horses.” These sentences cannot be true unless “horses” denotes Zev and Seabiscuit (taken together). How about the noun “horse”? The semantic profiles of its two forms can be taken to result from that of the noun; they are, so to speak, *projections* of its semantic profile to singular or plural contexts. If so, the noun denotes any one or more horses. It denotes any one horse as the singular form does, and any two or more horses as the plural form does. It is the same with the Chinese *ma*. It figures in Chinese counterparts of “Zev is a horse” and “Zev and Seabiscuit are a small number of

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35 It is usual to take (2) to be equivalent to (2') and its plural cousin (i.e., “White horses are not horses”). I do not think this is correct; (2) implies the existence of horses while (2’) and its plural cousin do not. ((2) is equivalent to “There are horses and white horses are not horses.”) But we may ignore this difference for the present purpose. It is not clear whether (G) implies the existence of horses, and it can be considered ambiguous between (2) and (2’) (or its plural cousin).

36 Although the noun and its singular form are not phonologically or alphabetically distinguishable, this does not mean that they can be identified. They have a substantial semantic difference (see below), and the plural form derives from the noun but not from the singular form.

37 The discussion below of the semantics of English count nouns and their singular and plural forms is based on my treatments of plural constructions as devices for talking about the many. For the treatments, see, e.g., my (2005; 2006).

38 “Zev and Seabiscuit are two horses” is true if and only if “two horses” denotes Zev and Seabiscuit (taken together), and this holds if and only if both “two” and “horses” denote them (taken together). (Note that “two” denotes them [taken together], although it denotes neither of them; “Zev and Seabiscuit are two” is true although “Zev is two” and “Seabiscuit is two” are not.)
horses” without taking a singular or plural form (and without aid of classifiers). This means that *ma* denotes not only Zev (by itself) but also Zev and Seabiscuit (taken together). In general, then, the Chinese noun (like its English counterpart) denotes any one or more horses.

Now, some might think that the plural “horses” differs semantically from the Chinese *ma* in denoting no one horse although it denotes any two or more horses. But this is not correct. “Zev and Seabiscuit are horses” follows from “Zev is a horse and Seabiscuit is a horse” and is logically compatible with “Zev is Seabiscuit”; but this cannot hold unless “horses” can denote one horse (e.g., Zev) as well as many horses. In this connection, it might be useful to consider, e.g., “Cicero and Tully are Romans.” This sentence is true even though Cicero is Tully, which means that the plural ‘Romans’ denotes Cicero and Tully, who are not two Romans but one. So the plural “Romans” denotes any one Roman as well as any two or more Romans. It is the same with “horses.” This means that it has the same semantic profile as the Chinese *ma*. By contrast, the singular “horse” does not. There is no reason to take it to inherit the full semantic profile of the noun “horse” to denote not just Zev but also Zev and Seabiscuit (taken together). Its use is limited to singular contexts: “Zev is a horse,” “Seabiscuit is a horse,” etc., and its semantic profile results from curtailing that of the noun for singular contexts. Although it is homonymous with the noun itself, we can take the singular form to result from adding a silent morpheme (“-φ”) to the noun. Silent as it is, the morpheme is semantically efficacious: it turns a noun denoting any one or more of the things of a certain kind (e.g., the horses) to a form that does not denote two or more of them (taken together).

So (2) and “White horses are not horses,” I think, capture the semantics of (G) better than (2’) does. Now, the thesis I attribute to Gongsun Long results from taking both noun phrases in (G) to be definite. So we can use (1), which is close to (2), to state the thesis. On this reading, *ma* and *bai ma* are used in (G) as definite noun phrases referring to the horses and the white horses, respectively: *ma*, for example, refers to all the horses (i.e., Zev, Seabiscuit, etc.), taken together. And (H), of which (G) is the negation, on the reading, is a special kind of identity sentence; its predicate, *nai* (*乃* “be”), signifies what I call the plural identity relation, the relation signified by the English “are” and “are the same (things) as” that figure in “Russell and Whitehead are the authors of *Principia Mathematica*” and “Russell and Whitehead are the same (things) as the authors of *Principia Mathematica*,” respectively. If so, (H) states that the white horses are the same things as the horses, and this holds if and only if every one of the white horses is one of the horses and *vice versa*.

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39 Similarly, it combines with both *yi* (“one”) and *san* (“three”) without taking a singular or plural form (and with no classifier in classical Chinese).
This condition, as Gongsun Long argues, does not hold: there are some horses (e.g., the black ones) that the white horses do not include. So his main thesis, (1), is correct. Does this mean that he is right to hold (G)? I think not. Although his main thesis is correct, I do not think one can take (G) to state the thesis. As his readers correctly assume, the sentence states a false thesis: (2), (2') or the like.

He takes (G) to state (1) by assuming that both noun phrases in the sentence are definite. He probably assumes this because he subscribes to a simple view of the semantics of common nouns: \( ma \), for example, is a name that refers to \( ma \) (i.e., the horses taken together), as “Zev” is a name that refers to Zev. But this is not a correct view. In the view, the Chinese counterpart of “Zev is a horse” would have to make a false statement, that Zev is the horses, but the sentence is true. While “Zev” and its Chinese counterpart are names for Zev, \( ma \) is not a name for the horses. Like the English “horse,” it is a common noun that denotes any one or more horses. One can use this to explain the truth of the Chinese sentence in question: the sentence is true because \( ma \) (like “horse”) denotes Zev.

Some might attempt to support the assumption that both noun phrases in (G) are definite without invoking the view that Chinese count nouns are names. But I do not think one can give a good reason to accept the assumption. Although bare noun phrases can figure as definite noun phrases in Chinese, as in (1), this does not mean that all occurrences of bare noun phrases can be considered definite. The \( ma \) in the Chinese counterpart of “Zev is a horse” cannot. Otherwise one could use the sentence to state a false thesis, that Zev is the horses, but Chinese speakers do not accept this reading. Similarly, the \( ma \) in (G) and (H) cannot be considered definite. This is why Gongsun Long’s reading of (G) is alien to most Chinese speakers.

One might now ask why we have the disparity of possible interpretations of the two noun phrases in (G). In contemporary linguistics, it is usual to distinguish argumental and predicative positions. The former are taken to include the subject position, the latter the position for complements of copulas (e.g., the English be, the Chinese nai). Now, Chinese bare nouns figuring in argumental positions can be definite, but those figuring in predicative positions cannot. This explains the disparity between the noun phrases in (G): \( bai ma \) (in the subject position) can be definite, but \( ma \) (in the predicative position) cannot. So Gongsun Long, I think, errs in making the definiteness assumption by failing to attend to various uses of noun phrases. Underlying the error, however, is a coherent logic he employs to argue for a correct thesis.

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40 The Chinese counterpart has no article and has the structure \( \phi nai ma \) (\( \phi \) be horse, “\( \phi \) is a horse”).
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