1. Introduction

The paper offers an empirical description and theoretical analysis of a peculiar use of the possessive verb yǒu ‘have’ in Mandarin Chinese. Specifically, the verb can appear productively in the construction “X + yǒu + Y + G,” where G, normally speaking, is a gradable predicate. This is illustrated by the sentences in (1-2).

I will argue that the construction expresses comparison between X and Y with respect to their degrees on the dimension specified by G. The semantics can be derived by synthesizing two familiar ideas that are independently available in the literature. The first idea is that the complement of possessive verbs is a (overt or covert) small clauses, an idea explicitly postulated for possessive/existential uses of Mandarin Chinese yǒu as early as in Huang (1987) and for English have in Iatridou (1996), Ritter and Rosen (1997), and Sæbø (2009). The second idea is the now “standard” ontological representation of degree as intervals on a dimension (Kennedy 2001; Schwarzschild and Wilkinson 2002).

(1) Zhāngsān yǒu tā gēgē gāo
Zhangsan have his brother tall
‘Zhangsan is (at least) as tall as his brother.’

(2) Zhāngsān yǒu liù yīngchǐ gāo
Zhangsan have six foot tall
‘Zhangsan is (at least) six feet tall.’

By studying the “X + yǒu + Y + G” construction in Mandarin Chinese, I intend this paper to make contributions in three aspects. First, to the best of my knowledge, there has been little discussion, let alone consensus, regarding the precise meaning of the construction. Traditional descriptive grammarians of Mandarin Chinese usually discussed this rather unique use of yǒu in a side note (Lü 1980; Li and Thompson 1981; Zhu 1982; Liu, et al 2001). The only consensus that the descriptive literature has agreed upon appears to be no more than the intuition that the construction expresses some sort of comparison between X and Y, or the speaker’s uncertainty about such comparison. I will cite empirical evidence to dismiss several proposals regarding what the construction exactly means, and argue that the construction expresses comparison between X and Y in terms of their degrees on the dimension specified by G. Second, most descriptive linguists took yǒu in the “X + yǒu + Y + G” construction to be a separate usage from its other uses (possession, existence, part-whole, event, etc.). Some others considered all uses of yǒu semantically or cognitively related, yet they did not specify how and why they are related. I will explicate the syntactic and semantic functions of yǒu in the “X + yǒu + Y + G” construction. The discussion will show that this use of yǒu has the same syntactic representation and semantic contribution as other uses of the verb. Its peculiarity exists no deeper than the surface. Third, the structure and meaning of possessive verbs in general have received several competing analyses in the literature. To tease apart these analyses is no easy job. In this paper I will discuss, albeit briefly, some theoretical implications that the “X + yǒu + Y + G” construction has for the syntactic and semantic analysis of possessive verbs in general. If on the right track, the analysis developed in this paper would lend support to the small clause-based analysis of possessive verbs.

The paper is organized as follows. In the next section I will discuss some empirical properties of the “X + yǒu + Y + G” construction. Understanding these properties paves the way for elucidating the precise meaning.
of the construction and for furnishing a formal analysis of the construction. In Section 3, I argue that the “X + yǒu + Y + G” construction is essentially an equative construction comparable to the English as...as construction. The “X + yǒu + Y + G” construction expresses that X equals or exceeds Y with respect to their degrees on the dimension specified by G. In Section 4, I offer a formal analysis of the “X + yǒu + Y + G” construction which corroborates the more intuition-based exposition in Section 3. I show that rather than contributing any content import, yǒu in the “X + yǒu + Y + G” construction only provides a formal mechanism to set up a relation between X and Y with respect to their degrees on the dimension specified by G. The exact relation can take but one form which manifests itself by considering the “standard” ontological schematization of degree as intervals on a scale. As such, yǒu in the “X + yǒu + Y + G” construction has the same syntactic representation and semantic interpretation as non-degree uses of the verb, contrary to what most descriptive grammarians have traditionally assumed. In Section 5, I provide a brief discussion on three alternative analyses of possessive verbs. I argue that they all face empirical and/or theoretical challenges when being extended to the “X + yǒu + Y + G” construction. Hence, discussing the construction provides support for the small clause-based analysis of possessive verbs, viz., that possessive verbs such as English have and Mandarin Chinese yǒu necessarily embed small clause and make no content contribution. Lastly, in Section 6, I discuss some open issues that remain in my analysis and conclude the paper.

2. Empirical properties of the degree use of yǒu

There has been little discussion about the properties of the “X + yǒu + Y + G” construction. This section presents some empirical observations about the construction. Many of the observations will prove essential for the formal analysis of the construction to be proposed in this paper. To remain as descriptive as possible, in this section I will just refer to the construction by using its surface form.

2.1 G must be gradable

The first empirical observation is that the G element must express some gradable notion. An element that does not allow gradience acting as G would yield an unacceptable sentence. The minimal pair in (3) illustrates this point: guì ‘expensive’ in (3a) expresses agradable notion, but jìnkǒu ‘imported’ is categorical.

(3) a. zhè zhǒng kāfēi méi yǒu nà zhǒng guì
   this kind coffee not have that kind expensive
   ‘This kind of coffee is not as expensive as that kind.’
   b. *zhè zhǒng kāfēi méi yǒu nà zhǒng jìnkǒu.
   this kind coffee not have that kind imported

As far as the gradability requirement is satisfied, G can be an adjective, adverb, or verb phrase. We already have seen several sentences where G is an adjective.

3, 4 The sentences in (4-5), respectively, illustrate cases where an adverb and a verb phrase serve as G.

(4) Zhāngsān pǎo de yǒu Lǐsì kuài
    Zhangsan run EXT have Lisi fast
    ‘Zhangsan runs (at least) as fast as Lisi does.’
(5) háizi men méi yǒu yǐqián ài kàn diànyǐng le
    kid PL not have before like watch movie ASP
    ‘The kids do not like watching movies as much as before.’

Though the G element necessarily expresses a gradable notion, it cannot be modified by degree modifiers, even when it can be thus modified in other contexts. For example, adding hěn ‘very’ before gāo in (1) or yǒudiǎn ‘a bit’ before kuài in (4) would lead to ungrammaticality.

(6) Zhāngsān yǒu tā gēgē (*hěn) gāo.
    Zhangsan have his brother very tall
(7) Zhāngsān pǎo de yǒu Lisi (*yǒudiǎn) kuài
    Zhangsan run EXT have Lisi a bit fast

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3 In addition, G can be a dimension noun. I single out sentences in which G is a dimension noun and discuss them in a separate subsection (Subsection 2.2), simply because these cases have more bearing upon my discussion in Sections 3 and 4.

4 I use the conventional “*” to indicate ungrammaticality, “?” variable grammaticality, and “%” pragmatic infelicity.
2.2 G can be a dimension noun
In addition to being gradable predicates, the G element in the “X + yǒu + Y + G” construction can be dimension nouns, which specify an “axis” (so to speak) for gradience. In particular, many Mandarin Chinese dimension nouns are formed out of a pair of antonymous gradable adjectives.  

The sentence in (8), for example, has the same interpretation as the counterpart in which G is dà ‘big.’ Likewise, replacing cūxī ‘thick-thin’ in (9) with cū ‘thick’ does not affect, in any noticeable way, the grammaticality or meaning of the sentence.

(8) nà gè mógū yǒu zúqiú dàxiǎo
that CL mushroom have soccer ball size (= big-small)
‘The mushroom is (at least) as big as a soccer ball.’

(9) měi kē shù dōu yǒu wǎnkǒu cūxī
every CL tree all have bowl-mouth thickness(=thick-thin)
‘Every tree is (at least) as thick as (the mouth of) a bowl.’

2.3 Y being a measure phrase
The Y element in the “X + yǒu + Y + G” construction, most typically, is a phrase that denotes an individual, an event, and so on. It can also be a measure phrase, as already indicated by the sentence in (2). In such cases the construction means something like “X is (at least) Y G.” For example, the sentence in (10) specifies the thickness of the book to be 20 cm or more. (11) gives another illustrating sentence.

(10) nà běn shū yǒu èrshí límǐ hòu
that CL book have twenty centimeter thick
‘The book is (at least) as thick as 20 centimeters.’

(11) zhè bǐng duǎnjiàn yǒu jǐ shí gōngjīn (zhòng)
this CL dagger have several ten kilogram heavy
‘The dagger weighs (at least) tens of kilograms.’

When the Y element is a measure phrase, the G element can be omitted if the (extra-)linguistic context precludes ambiguity with regard to what dimension X is measured against. Take the sentence in (11). Because kilogram can only associate with the dimension of weight, the dimensional adjective zhòng ‘heavy’ is optional. Likewise, the first clause in (12) makes the depth of the river prominently relevant in the utterance context. So the dimensional adjective shēn ‘deep’ does not have to appear in the complement of yǒu in the second clause. By contrast, because limí ‘centimeter’ can be associated with many dimensions such as length, width, and height,

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5 The claim that such combinations of antonyms (e.g. kuàimàn ‘fast-slow’) are (dimension) nouns rather than adjectives is evident from the fact that they can be used as the head of a relative clause.

(i) yī gé rén chīfàn de kuàimàn shì yóu xìnggé juédìng de.
one CL man eat MOD fast-slow is by personality decide DE
‘The speed (=fast-slow) in which one eats is determined by his/her personality.’

6 In the meantime, it should be noted here that not all nouns formed out of a pair of gradable adjective antonyms are dimension nouns. When one such noun is not a dimension noun, it cannot serve as the G element in place of the corresponding positive size adjective. For example, hēibái ‘black-white’ is not a dimension noun. It does not determine a scale which measures (say) the degree of lightness or darkness of the color of an entity. Hence it cannot be used as G in the the “X + yǒu + Y + G” construction (i). Another such noun is měichǒu ‘beautiful-ugly,’ which cannot denote the dimension against which to measure an individual’s degree of being beautiful or ugly. As for the question of why some combinations of antonyms are gradable and some others are not, I will leave it for future research.

(i) *tā de húzi yǒu zhǐ nàme hēibái
he MOD beard have paper that black-white
Intended: ‘His beard is as white as the paper.’

7 This paper primarily deals with “X + yǒu + Y + G” sentences in which X and Y are individual-denoting phrases. The discussion easily carries over to “X + yǒu + Y + G” sentences in which X and Y denote events or times. However, when Y is a measure phrase, the construction deserves special attention, as will be discussed toward the end of Section 4.
and the extra-linguistic context in (10) does not make a dimension more prominent than the others, omitting hòu ‘thick’ would yield an unacceptable sentence.

(12) xiǎo hú de shuǐ hěn qiǎn, zhì yǒu yī mǐ (shēn).
    small lake MOD water very shallow only have one meter deep
    ‘The small lake is shallow and only one meter deep.’

2.4 The presence of demonstrative pronouns

Some demonstrative pronouns like zhème/zhébān ‘this (manner)’ and nàme/nàbān ‘that (manner)’ can intervene between Y and G in an “X + yǒu + Y + G” sentence, and its presence does not affect the meaning of the sentence in any significant way. The sentence in (13), for example, minimally differs from the sentence in (1) just in containing the demonstrative pronoun nàme ‘that,’ and the two sentences have the same meaning. (14) gives another illustrating example.

(13) Zhāngsān yǒu tā gēgē nàme gāo
    Zhangsan have his brother that tall
    ‘Zhangsan is (at least) as tall as his brother.’

(14) Zhāngsān méi yǒu tā gēgē nàbān xǐhuān yǔyánxué
    Zhangsan not have his brother that like linguistics
    ‘Zhangsan does not like linguistics as much as his brother does.’

In addition, when the (extra-)linguistic context has already made some degree or measurement prominent (via background information encoding, gesturing, etc.), the Y element can be omitted. In such cases, G cannot be omitted, and a demonstrative pronoun is mandatory to appear. The sentence in (15) can be used felicitously when the speaker makes a fist and intends for the hearer to know that she is comparing the size of pears to the fist. For (16), nàme dà in the second clause refers to 18 years, which is specified in the first clause.

(15) hòuyuàn de lízi yǐjīng zhǎng de yǒu zhème dà le
    backyard MOD pear already grow DE have this big ASP
    ‘The pears in the backyard have grown as much as this big.’

(16) tā sāhuǎng shuō zìjǐ shíbā suì, zhāogōngde zhīdào tā méi yǒu nàme dà
    he lie say self eighteen year recruiter know he not have that big
    ‘He lied that he was 18 years old; the recruiter knew that he was not that old.’

As in many other languages, certain demonstrative pronouns in Mandarin Chinese (e.g. zhème ‘this’ and nàme ‘that’) can be used as degree modifiers roughly meaning “so” and “very.” The discussion thus far is sufficient to conclude that this degree modification use is not the meaning at stake for the demonstratives in (13-14). For, if the demonstratives in the sentences were degree modifiers, then changing them to similar degree modifiers should yield equally grammatical sentences. However, this prediction is not borne out, as already confirmed by the discussion surrounding the sentences in (6-7), repeated in (17-18) below:

(17) Zhāngsān yǒu tā gēgē (*hěn) gāo.
    Zhangsan have his brother very tall

(18) Zhāngsān pǎo de yǒu Lìsì (*yǒudiǎn) kuài
    Zhangsan run EXT have Lisi a bit fast

3. An equative construction

In the previous section I described some empirical observations about the “X + yǒu + Y + G” construction. In this section, I argue that the construction is an equative construction semantically comparable to the English as...as equative degree construction.

3.1 Previous proposals

There has been disagreement in the literature regarding what the “X + yǒu + Y + G” construction exactly means. Though the construction has been unanimously taken by many researchers to express some sort of comparison relation between X and Y with respect to G, or epistemic uncertainty on the part of the speaker about such comparison, those researchers are rather split when it comes to the exact nature of comparison. Zhu (1982: pp.169-170), for example, classified the construction into two sub-constructions based on the category of the Y element. The first case is where the Y element is a measure phrase or an expression denoting some typical
Chinese culture-specific customary measurement (e.g. “a pencil (long),” “a soccer ball (big),” “a story of building (high)”). In the other case, Y is a phrase that denotes a “regular” individual, event, and so on. According to Zhu, for the former case, the construction measures X against Y on the dimension specified by G. For the latter case, the construction uses the measurement of Y on the dimension specified by G as the standard for measuring X on the same dimension, and it means that X meets the standard. The dichotomization has problems, as Zhu took it as if the two types had distinguished interpretations. The division loses the intuition that the two “types” roughly have the same meaning. Let us illustrate this point through analogy, by considering similar degree constructions in English in which one of the comparative items can be either a measure phrase or a phrase of some other type. Both the more ... than comparative construction and the as...as equative construction in English can involve a measure phrase or an individual/event-denoting phrase (19-20). It is far-fetched to claim that either construction should be further classified into two types of different meanings that depend on what the phrase after than or the second as is. I believe that classifying the “X + yǒu + Y + G” construction in a similar fashion is misleading as well.

(19)  
a. John is taller than his sister. 
b. John is taller than five feet.

(20)  
a. John is as tall as his sister.  
b. John is as tall as five feet.

In the same spirit as Zhu’s (1982) work, Yuehua Liu et al (2001) and Yan Liu (2004) also divided the construction into two types. However, the interpretations they attributed to the two types are very different from Zhu’s. According to them, when Y is a measure phrase, the construction expresses epistemic approximation whereby the speaker believes that X approximately has reached the degree denoted by the measure phrase on the dimension specified by G. For the other type, the “Y + G” chunk denotes a standard for comparison, and the construction says that X has reached that standard. Lü (1980) made the same bifurcation but flip-flopped the interpretations attributed to the construction.

There is strong evidence to suggest that epistemic approximation is not part of the semantics of the “X + yǒu + Y + G” construction, whether Y is a measure phrase or a regular individual- or event-denoting phrase. First, when the speaker is absolutely certain about X’s degree on the dimension specified by G, she can still felicitously use the “X + yǒu + Y + G” construction. Consider the following scenario. During a physical check-up, a nurse measured the heights of two individuals, Zhangsan and his brother. The nurse read the stadiometer and knew the brothers’ heights. The nurse also was certain that the stadiometer worked accurately. Clearly, no epistemic uncertainty was involved in this case, but the nurse can felicitously use the sentence in (21), which involves a measure phrase as the Y element, to report Zhangsan’s height compared to a contextual reference height (i.e. six feet). She also can use the sentence in (1) (repeated in (22)), where the Y element is individual-denoting phrase tā gēgē ‘his brother,’ to compare the heights of the two brothers.

(21)  
Zhāngsān yǒu liù yīngchǐ  gāo  
Zhangsan have six feet tall
‘Zhangsan is (at least) six feet tall.’

(22)  
Zhāngsān yǒu tā gēgē  gāo  
Zhangsan have his brother tall
‘Zhangsan is (at least) as tall as his brother.’

Second, scopal relation between epistemic and root modals also suggests the absence of epistemic approximation in the semantic interpretation of the “X + yǒu + Y + G” construction. It is widely accepted that epistemic modals necessarily scope over root modals (Cinque 1999) and that the reverse scopal relation is not attested. If the interpretation of the “X + yǒu + Y + G” construction has an epistemic component, it is reasonable to claim that the most likely and only candidate contributing the modality is the verb yǒu. Then, yǒu would not be able to appear under a deontic modal. However, the prediction does not hold, as evidenced by the grammaticality of (23). Therefore, yǒu cannot be a modal in the construction. There is nothing else in the construction that could potentially contribute a modal component to the interpretation. Then it follows that the construction carries no epistemic modality.

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8I am only claiming that the semantics of the construction contributes no epistemic approximation. Gricean implicatures may complicate the matters here. Addressing this possibility would take the discussion here far afield.
If want apply job Zhangsan must have Lisi tall

(23) (yào xiǎng shēnqǐ gōngzuò) Zhāngsān bìxū/děi yǒu Lǐsì gāo

‘To apply for the job, Zhangsan must be (at least) as tall as Li.’

3.2 The nature of comparison

In this subsection I argue that the “X + yǒu + Y + G” construction is uniformly an equative construction whose meaning is comparable to the as...as construction in English. That is, the “X + yǒu + Y + G” construction asserts that X equals or exceeds Y with respect to their degrees on the dimension determined by G. The starting point is the naïve intuition that the “X + yǒu + Y + G” construction compares X and Y on some property related to G. After this comparative relation is taken a priori, there are just three possibilities regarding the exact nature of the comparison relation that the construction can express: an exactly equative construction that expresses exact identity (“=”) between X and Y in terms of the property specified by G, a comparative one (in the narrow sense of the word “comparative”) which expresses that one of the two comparison items exceeds (“˃”) the other, or the combination (“≥”) of the two relations.

The first option (“=” can be easily ruled out. If the construction indeed expressed exact identity between X and Y in terms of the property specified by G, then the sentence in (24) would mean that all the boys are of the same height as the teacher. This would entail that all the boys are of the same height among themselves. But for the sentence to be true, the boys only need to be no shorter than the teacher, and they can have varied heights among themselves.

(24) měi gè nánhái dōu yǒu nà wèi láoshī gāo.

‘Every boy is (at least) as tall as the teacher.’

The second option (“˃”) is not viable, either. This option treats the “X + yǒu + Y + G” construction as a Mandarin Chinese counterpart of the more ... than comparative construction in English. However, empirical data suggests that the two constructions have different semantic properties. For instance, the “X + yǒu + Y + G” construction is compatible with X and Y having exactly the same degree on the dimension specified by G, but this compatibility is not observed for the more ... than comparative construction ((25) vs. (26)):

(25) Zhāngsān yǒu Lǐsì gāo, shìshíshàng tā gēn Lǐsì yīyàng gāo

Zhangsan have Lisi tall in fact he with Lisi same tall

‘Zhangsan is (at least) as tall as Lisi; in fact they are of the same height.’

(26) %John is taller than Mary; in fact, they are of the same height.

With the first two options being ruled out, it is a mere trivia to conclude that the “X + yǒu + Y + G” construction expresses the “≥” comparative relation (cf. Yan Liu 2004; Xu 2007). In this sense, it patterns with the English as...as equative construction. To confirm this claim, it is worthwhile to elaborate on some empirical similarities between them. First, according to Bierwisch (1989), there are two types of gradable adjectives: dimensional adjectives and evaluative adjectives. The former type includes those gradable adjectives that measure some physical property of an individual, event, etc. (e.g. “tall” and “narrow”). On the other hand, evaluative adjectives measure the subjective evaluation of an individual, event, etc. and carry the speaker’s judgment (e.g. “wonderful” and “ugly”). Within each type, there are polar distinctions. Adjectives like “tall” and “deep” are positive dimensional adjectives; “short” and “shallow” negative dimensional adjectives. “Wonderful” and “pretty” are positive evaluative adjectives; “lazy” and “ugly” negative evaluative adjectives.

As far as the “X + yǒu + Y + G” construction is concerned, if the gradable predicate G is a positive dimensional adjective or an evaluative adjective (whether positive or negative), it can be modified by a factor phrase such as liǎng bèi ‘twice’ and shíèr bèi ‘12 times.’ A factor phrase in the construction expresses how many times X’s degree on the dimension specified by G is of Y’s degree on the same dimension (27-28). But if G is a negative dimensional adjective, it cannot be modified in this way (29).

9 My discussion regarding the possible comparison relations trivially carries over to “<” and “≤,” the respective reverse relation of “≥” and “>.” For the sake of clarity, I will not include them in the discussion.

10 Mandarin Chinese native speakers’ judgment on “X + yǒu + Y + G” sentences when G is a negative dimension adjective or negative evaluative adjective shows variations. I leave the cross-speaker variation as an open question for future research.
(27) nǚxing chéngdān de yālì yǒu nánxìng chéngdān de sān bèi duō
female undertake MOD pressure have male undertake MOD three time much
‘The female undertakes pressure three times as much as the male does.’

(28) (?)Mǎlì hěn chóng, kěshì tā méimèi yǒu tā sān bèi chóng
Mary very ugly but her sister have she three time ugly
‘Mary is pretty ugly, but her sister is three times as ugly as her.’

(29) *wǒ xiě de wénzhāng yǒu nǐ xiě de wǔ bèi duǎn
I write MOD article have you write MOD five time short
Intended: ‘*The article that I wrote was five times as short as yours.’

As Bierwisch pointed out, if the relevant adjective in an English as...as equative sentence is a positive dimensional adjective or an evaluative adjective, the sentence can be modified by a factor phrase (30). But if the adjective is a negative dimensional adjective, the sentence does not allow modification by any factor phrase (31). Hence, the acceptability distribution of adjectives in the “X + yǒu + Y + G” construction exactly patterns with the English as...as equative construction.

(30) a. The movie was three times as long as the video game.
    b. The manager was five times as bad as the front desk receptionist.

(31) *The board is three times as short as the table.

In addition, when the G element in the “X + yǒu + Y + G” construction is a positive dimensional adjective, the construction does not entail the proposition “Y is G” (32). By contrast, when G is a negative dimensional adjective, the equative yǒu-sentence, to the extent that it is still grammatical, consistently entails “Y is G” (33). The construction again patterns with the English as...as equative construction (34-35).

(32) Zhāngsān yǒu tā gēgē gāo
Zhangsan have his brother tall
‘Zhangsan is (at least) as tall as his brother.’

(33) (?) Zhāngsān yǒu tā gēgē ěr
Zhangsan have his brother short
‘Zhangsan is (at least) as short as his brother.’

(34) John is as tall as his brother.
    !→ John’s brother is tall.

(35) John is as short as his brother.
    → John’s brother is short.

When G is a negative evaluative adjective, the “X + yǒu + Y + G” construction is consistently evaluative (36) (in the sense of Bierwisch 1989; Rett 2008a, 2008b). When it is a positive evaluative adjective, whether the construction is evaluative or not depends on the lexico-semantic properties of the individual lexical items. For example, both hǎo ‘good’ and piàoliàng ‘pretty, beautiful’ are positive evaluative adjectives, but possessive equative sentences containing them have opposite evaluativity judgments (37-38). The entailment pattern is identical to what is observed with the English as...as equative construction (Bierwisch 1989).

(36) Zhāngsān yǒu Lǐsì lǎn.
Zhangsan have Lisi lazy
‘Zhangsan is (at least) as lazy as Lisi.’
a. Zhangsan is lazy.
b. Lisi is lazy.

(37) Mǎlì de chéngjì yǒu tā mèimèi de hǎo.
Mary MOD grade have her sister MOD good
‘Mary’s grades are (at least) as good as her sister’s.’
a. Mary’s grades are good.
b. Mary’s sister’s grades are good.

(38) Mǎlì de wánjù yǒu tā mèimeimei de piàoliàng.
Mary MOD toy have her younger sister MOD beautiful
‘Mary’s toys are (at least) as beautiful as her younger sister’s.’
a. Mary’s toys are beautiful.

b. Mary’s sister’s toys are beautiful.

From the above discussion, I conclude that the “X + yǒu + Y + G” construction is an equative construction comparable to the English as...as equative construction. For simplicity of reference, in the rest of the paper I will call the “X + yǒu + Y + G” construction the possessive equative construction.

4. Analyzing the possessive equative construction

Now that I have discussed some empirical properties of the possessive equative construction, I will turn to offer a formal analysis of the equative use of yǒu by extending the idea that possessive verbs like have provides a formal mechanism to link its subject to its object.

4.1. A small clause-based analysis of possessive verbs

It has been long observed that the possessive verb have has a rather unconstrained range of uses (Cowper 1989; Belvin 1993; Ritter and Rosen 1997; Partee 1999; Landman 2004). The “meanings” (for lack of better terms) of have appear to be obscure and elusive for some of its uses. For example, while have in (39a) can be easily paraphrased as “to possess,” the same verb in (39e-g), to varied extents, defies a clear intuitive specification of meaning.

(39)  a. John has a new car. (possession)
      b. John has a headache today. (experience)
      c. John just had a talk with his son. (event)
      d. The room has four windows. (part-whole)
      e. The couple’s income had a big increase last year. (existential?, event?, …)
      d. John had many visitors today. (experience?, receiving?, …)
      e. John had a guy shouting at him in the café. (event?, experiencing?, …)
      f. The baby often has a story at bedtime. (?)
      g. The shirt had a button pop off of it. (?)

More importantly, have appears to make no concrete semantic contribution to certain sentences in which it appears. Removing have from such sentences, mutatis mutandis, often has no significant effect on their meaning. The sentence in (39g), for example, has the same meaning as the trivially transformed sentence in (40). It is likely that have is a lexical item making only formal but no content contribution. This line of analyses has been proposed by several authors including Iatridou (1996), Ritter and Rosen (1997), Partee (1999), Landman (2004), and Sæbø (2009).

(40)  A button popped off of the shirt.

Among all those analyses, particularly appealing is the idea that the argument of have always is a small clause, either overt or covert. Iatridou (1996), Ritter and Rosen (1997), and Sæbø (2009) all espoused this idea one way or another. According to Iatridou’s idea, for example, have behaves as if it needs a variable in its complement, which comes either from an indefinite DP or from the predicate of a DP. When have takes an indefinite DP alone, the DP usually can provide a variable for the subject of have to bind. But when the object DP is definite, it generally cannot provide such a variable. In this case, the verb “makes use of its ability to take a small clause complement” (Iatridou 1996: p198), so that the object DP is predicated of by an element that can provide such a variable. The predicate can be either overt or covert. The sentence in (41) is an example that involves the phrase “in his garage” predicating of “my car.” The pronoun “his” provides a variable for the subject “John” to bind. On the other hand, when the predicate is overt, Iatridou (1996) called it TEMP/LOC to “indicate that it has temporal or locative properties” (p198). For the sentence in (42), the TEMP/LOC predicate can be something like “under his custody” and “for his temporary use,” the precise choice depending on the contexts in which the sentence is used.

(41)  John had my car in his garage.
(42)  John had my car (TEMP/LOC).

11 In this subsection I base my discussion on the possessive verb have in English. The discussion applies to possessive verbs in many other languages. The interested reader can refer to, for example, Iatridou (1996) for discussion on the Greek possessive verb equivalent to have and Gutiérrez-Rexach (2006) for discussion of Spanish data.
Insightful as Iatridou’s analysis is, just as she herself admitted, it did not address “the more important question of why HAVE needs a variable in its complement” (Iatridou 1996: p. 199). Sæbø (2009) picked up this question by way of providing a formal analysis of the syntactic representation and semantic interpretation of have. Sæbø’s analysis is inspired by two important analytical intuitions. One is that have is a lexical item with no thematic role to assign (a la Ritter and Rosen 1997). Take the sentence in (43) for example. The verb have in it does not stand in any definable thematic relation to its object. The other is that the subject of a have-sentence must bind a variable in the complement of have. Oftentimes, such a variable explicitly exists in the surface object; but in many other cases the binding is implicit. For the sentence in (44), the speaker must be either the operative overseeing the spy or the captain of the ship. In either case, the subject binds an implicit variable in the complement of have and is pertinent to some entity (the spy or the ship).

(43) Joan has all her grandparents alive. (Sæbø 2009: ex. 11)
(44) I have a spy aboard. (Sæbø 2009: ex. 13)

In light of the two observations, Sæbø (2009) proposed that have always takes a small clause as its underlying object. The verb merely contributes abstraction over an individual variable and transforms the small clause into a predicate. The variable is necessarily co-indexed with the subject, so that the subject can bind something in the small clause object of have. Otherwise, both the subject and the verb would be vacuous and have no semantic import at all -- in terms of content and in terms of formal specification. Schematically:

\[
Q_9 \lambda x_9 \ldots x_\ldots
\]

The poor boy has his fingers chopped off.

In his actual formal implementation, Sæbø (2009) held that the subject of have undergoes Quantifier Raising (a la Reinhart 1983; Büring 2004), which leaves a trace and introduces a trace variable binder. The trace is absorbed by applying the semantic function of have to the corresponding variable. The object of have is necessarily a (overt or covert) small clause containing a variable. The variable needs to be bound. But after absorbing the trace of the QR-ed subject, have melts away and no longer can bind a variable. This imposes “pressure” on the trace variable binder introduced by the QR to assume the function. Schematically:

\[
Q \lambda x_9 x_9 \lambda x \ldots x_\ldots
\]

The poor boy has his fingers chopped off.

When the complement of have contains a DP alone, the DP is supplemented by a covert predicate, even if the predication merely contributes trivial information. This guarantees the underlying object of have to be always a small clause. The small clause provides a variable that bears the same index as on the trace of the QR-ed subject. Otherwise, the abstraction discussed above would be vacuous, and both have and its subject would be redundant. The variable can be present either in the surface DP object or in the predicate augmenting the DP. When the predicate is covertly supplied, it is generally sensitive to the properties of the DP object in relation to the subject and is restricted by conventional restraints (Iatridou 1996; Gutiérrez-Rexach 2006). Such conventional considerations restrict the range of possible interpretations of have-sentences to “under one’s custody,” “at one’s disposal,” “in one’s possession,” “as part of one,” and so on. Because of co-indexing of the variable with the subject, the semantic value of the small clause with respect to the individual(s), event(s), etc. that is/are predicated of depends on the semantic value of the subject.

The LF in (47) outlines the general representation of QR and variable binding in have-sentences. The underlying object of have is a small clause, which contains an indexed variable \(a_i\). The verb have itself does not bear any indexing. The subject undergoes QR, leaving a trace \(t_i\) and introducing a trace variable binder \(\mu_i\). To capture the requirement that the variable in the small clause necessarily co-indexes with the subject of have, \(\mu_i\) must bear the same index as does the variable in the small clause.

\[
[\text{XP}_D\text{P} \text{Subj.} [\text{XP} \mu_i [\text{XP} \ldots t_i \ldots [\text{VP} \text{have} [\text{SC} \ldots a_i\ldots]]]]]
\]

Sæbø (2009) proposed that have denotes a function that transforms its (underlying) small clause object into a predicate. The predicate involves the same proposition expressed by the small clause. The semantic definition is constant regardless of variable assignment.

\[
\llbracket \text{have} \rrbracket = \lambda f \lambda x. \phi
\]

In the small clause-based analysis of have-sentence, the most essential semantic function of have is to provide a lambda over an individual variable in the small clause object of have. In order for the variable to be
co-indexed with the subject, the most direct way, of course, is to co-index have with its subject. However, in the semantics given in (48), no such co-indexing exists. There is even no variable that is bound by “\(\lambda x\)” The vacuous binding, however, is merely needed for technical setup. It does not persist through the whole derivation and thus should cause no serious technical problem. Specifically, the lambda introduced by the semantics of have serves to “throw away” (so to speak) the trace left by the QR-ed subject. By doing so, have paves the way for the real abstraction to take place through the trace variable binder \(\mu_i\) introduced by the QR (49). By way of variable assignment, the definition introduces an un-indexed lambda for the variable in the small clause object of have. Finally, the real abstraction introduces an argument slot for the subject of have.

\[
(49) \quad \langle f\mu_i\rangle^{\mu} = \text{\(\lambda\phi\)} f\mu_i\mu \circ f^{\phi}
\]

According to Sæbø (2009), when the surface object of have is a bare DP, the DP is augmented by a covert predicate. However, Sæbø did not address the question of how to determine the covert supplementing predicate. Needless to say, solving the issue is important for an explanatory adequate analysis of have. If an overt DP object can be supplemented by any random predicate, we would expect a have-sentence to be always multiple-way ambiguous. Obviously, this is not the case. The sentence “John has a sister,” normally speaking, cannot mean something like that “John has under his custody a girl who happens to be his sister,” a reading which would be theoretical possible if the covert predicate supplementing the object of have is unrestricted.

In this paper, I choose to follow Gutiérrez-Rexach (2006) to propose that the covert predicate supplementing a bare DP is subject to linguistic and contextual constraints. When a covert predicate is called for to form a small clause with an overt DP object of have, the predicate establishes a relation that links the subject and the object. The relation either characterizes some essential property for the object in relation to the subject or some property conventionally supplied by the relevant extra-linguistic contexts. According to Gutiérrez-Rexach, the former type of relation includes existence, kinship, part-whole, etc., and the latter type includes location, custody, disposal, etc. The (in)animateness of the subject and the (in)definiteness of the object are two crucial factors in determining the range of possible relations (see Jensen and Vikner 1996 for details). Moreover, I hypothesize that a contextual, accidental relation kicks in only when the relation involved cannot be essential, such as when an essential relation leads to a tautology or contradiction. For instance, when have takes just a definite DP (like my car or the red apple) as its overt object, the covert supplementing predicate cannot express existence, because, being definite, the DP itself already presupposes existence (Heim and Kratzer 1998). Supplementing the DP with a predicate specifying existence would yield a tautological statement. In such cases, the covert predicate should be contextually determined, most likely specifying some temporal and locative information (Ritter and Rosen 1997; Iatridou 1996). The same phrase “have my car,” for example, is supplemented with different predicates in (50a-b). Subject to contextual restriction, the predicate is most likely “for temporary use” for the former, but “in his repair garage” for the latter.

(50)  
\begin{enumerate}
\item To avoid being late for work today, you can have my car.
\item My mechanic sometimes has my car for several weeks.
\end{enumerate}

4.2. Deriving the meaning of the possessive equative construction

4.2.1 Non-degree uses of yǒu and small clauses

With the background in the previous subsection, let us come back to the possessive verb yǒu in Mandarin Chinese. Huang (1987) postulated that yǒu can be analyzed as an auxiliary whose complement is “a structure of predication” (p. 237). According to his idea, it appears plausible to analyze some, and possibly all, yǒu-sentences as involving small clauses, but “more evidence is needed to determine whether it is indeed the only correct analysis” (ibid). Huang did not attempt to hammer out a formal syntactic or semantic analysis along his insightful suggestion. Nor is it clear whether he intended his remarks to cover the prima facie rather peculiar possessive equative construction. In this subsection, I argue that the possessive equative construction can receive a natural small clause-based analysis, as much as the non-degree uses of yǒu can.

As I aim at a unified analysis for all uses of yǒu, let us first put aside the possessive equative construction and consider whether Sæbø’s analysis can explain non-degree uses of yǒu. The answer is positive. First, many non-degree uses of yǒu can take an explicit small clause as the object. In such cases, the small clause necessarily contains a variable which the subject of yǒu can bind. This variable is usually the internal argument of a relational noun in the small clause. For example, in (51) the overt object of yǒu, yīxiē língjiàn huái le ‘some parts broken,’ expresses a proposition on its own and can be analyzed as a small clause. The noun língjiàn ‘a (mechanical) part’ expresses a relational notion, for a part is always a part to some hosting entity (a computer, a car, etc.). The internal argument of the relational noun língjiàn behaves like a variable which needs to be bound...
by the matrix subject. The sentence in (51) can be paraphrased as in (52), which does not contain the verb yǒu and has the internal argument of língjiàn overtly filled by jīqì 'a machine.' 12 The equivalence of meaning suggests that in the original sentence in (51) yǒu contributes no semantic content, but provides a mechanism such that the matrix subject can fill the internal argument of the relational noun. Under the small clause-based analysis developed by Sæbø (2009), the saturation is achieved through the matrix subject indirectly binding a variable in the small clause object.

(51) jīqì yǒu yǐxiē língjiàn huái le.
    machine     have    some part     broken      ASP
    'The machine has some parts broken.'

(52) yǐxiē jīqì (de) língjiàn huái le.
    some    machine    MOD part     broken      ASP

Second, when non-degree uses of yǒu take a definite DP in its object, the phrase is most naturally followed by an overt predicate. 13 The predicate needs to include a covert variable for the matrix subject to bind. For example, xià chǎng bǐsài ‘the next competition’ in (53) refers to one particular competition and is used as a definite DP. Its presence in the sentence is ungrammatical unless it is supplemented by a predicate such as yào cānjiā ‘has to attend.’ Crucially, this predicate itself contains a variable which corresponds to the agent role for cānjiā ‘attend.’ The matrix subject binds the covert variable. 14 Yǒu makes the binding not only possible but necessary. The sentence can be paraphrased as (54) without yǒu but with the subject filling the subject position of the resulting sentence. Again, the meaning equivalence of the two sentences, most plausibly, suggests that yǒu makes no semantic contribution to the meaning of the sentence, except for providing some type of formal mechanism whereby the subject of yǒu comes to bind a variable in the small clause object.

(53) tā hái yǒu xià chǎng bǐsài *(yào cānjiā).
    he         still    have next CL competition    must    attend
    ‘He still has the next competition *(to attend).’

(54) tā hái yào cānjiā xià chǎng bǐsài.
    He         still    have    attend next CL competition

12 Including an optional modification marker de between jīqì and língjiàn would make the sentence in (52) more natural. This does not undermine the point that I am making here. In addition, the modifier yǐxiē in (52) is intended to modify língjiàn, not jīqì.

13 This statement is only intended to apply to Mandarin Chinese. There is no Mandarin Chinese counterparts for such English sentences as in (50) (repeated below) in which have only takes a definite DP. At this stage, it is not clear to me why there is such a crosslinguistic variation between Mandarin Chinese and English.

14 It was pointed out to me that the sentence in (53) without yào cānjiā may still be acceptable under certain scenarios whereby the predicate is pragmatically implicated. Suppose everyone has to take five competitions. Zhangsan did not know how many competitions Lisi has already taken. Zhangsan may ask Lisi the question in (i-a), to which Lisi answers with (i-b). In (i-b), have takes a definite DP, yet without a supplementing predicate.

(i) a. nǐ hái yǒu jǐ chǎng bìsài?
    you still have how many CL competition
    ‘How many competition do you still have?’
  b. wǒ hái yǒu xià yī chǎng.
     I still have next one CL
     ‘I still have the next (competition).

I do not think the above example consists a serious counterargument to my claim. First, an appropriate pragmatic context is needed in order for the sentence in (i-a) to be not unacceptable. Even when such a contextual support exists, the several native speakers of Mandarin Chinese I consulted reported that the sentence is still less natural than the sentence in (53) with yào cānjiā. Second, it is reasonable to posit that a predicate can be construed from the pragmatic context and that the predicate includes a variable, which eventually coindexes with the subject. If this is the case, I can easily loosen my claim to accommodate this.
The two cases above both involve an overt small clause as the object of yǒu. There also exist many cases in which yǒu embeds a surface DP object without an overt supplementing predicate. For such cases, the surface DP is understood to be supplemented by an implicit predicate. For instance, for the canonical possessive use of yǒu, its surface object is a DP (55). Under the small clause-based analysis, the possessive interpretation does not directly come from the verb yǒu itself. Rather, it is contributed by a covert predicate which requires the referent of the subject to be in possession of the referent of the object. Crucially, the predicate cannot be a random one, but is restricted by an essential attribute of the object with respect to the subject. A person and a book, for example, are essentially related by the possessive relation (Gutiérrez-Rexach 2006). Moreover, the covert predicate has to contain a variable for the matrix subject to bind; otherwise the subject would be redundant. Given all the considerations, the covert predicate for the canonical possessive interpretation of possessive verbs is something like “belonging to e,” with the variable e eventually being bound by the matrix subject. 15

(55) Mǎlì yǒu yī běn shū [shǔyú e].
Mary have one CL book belong to
‘Mary has a book.’

I hope the discussion in this subsection is already sufficient to establish that the small clause-based analysis provides a successful account of non-degree uses of Mandarin Chinese yǒu. With this, let us now turn to address the question of whether the small clause-based analysis can be extended to the possessive equative construction “X + yǒu + Y + G.” Given how Sæbø’s (2009) small clause-based analysis of possessive verbs is set up, the question further boils down to whether and how “Y + G” can serve as, or can be augmented to become, a small clause, as well as whether there can be an appropriate variable that can be bound by the subject of yǒu in the possessive equative construction. If so, the variable needs to be co-indexed with the subject, and present either in the “Y + G” chunk or in a covert predicate that augments the “Y + G” chunk. If “Y + G” contains such a variable, or a variable can be naturally construed in a covert supplementing predicate, then the small clause-based analysis can be maintained for the possessive equative construction. The discussion in the next section will show that this is indeed the right route to pursue.

4.2.2 “Y + G” is not a small clause

It is worthwhile to point out first that “Y + G,” in and by itself (i.e. without any argumentation), cannot be a small clause. There is a lot of empirical evidence in support of this claim. 16 First, a small clause differs from a full-fledged clause in that the former lacks an inflectional category. Because the missing inflectional category has no semantic import, a small clause also denotes a proposition. 17 Therefore, if the “Y + G” chunk in the

15 In Mandarin Chinese, two clauses can be coordinated by the conjunction marker èrqiě ‘and (also),’ as shown in (i):

(i) Zhāngsān mǎi le shū, èrqiě Lǐsì mǎi le bǐ
Zhangsan buy ASP book and Lisi buy ASP pen
‘Zhangsan bought a book, and Lisi bought a pen.’

If yǒu takes a a small clause, one may predict, èrqiě-coordination should be possible in the complement of yǒu (ii). But the prediction is not borne out, as the sentence corresponding to (ii) is ungrammatical (iii). Based on this observation, one may challenge my claim that the actual object of yǒu is a small clause.

(ii) Zhāngsān yǒu yī běn shū [shǔyú e] èrqiě liǎng zhī bǐ [shǔyú e]
Zhangsan have one CL book belong to and two CL pen belong to

(iii) *Zhāngsān yǒu yī běn shū èrqiě liǎng zhī bǐ
This suggestion takes that the coordination of small clauses is necessarily subject to the same mechanism of conjoining full-fledged clauses, including making use of the same co-ordinator like èrqiě. However, there is no evidence for this position. In fact, Li and S.Z. Huang (2009) suggested that èrqiě coordinates full CPs.

16 In addition to the empirical evidence to be discussed, treating “Y + G” as a small clause also causes a theory-internal problem, if one wants to maintain Sæbø’s (2009) small clause-based analysis for the possessive equative construction. There would be no room for a bound variable in the small clause. Thus, it would be impossible for have to assume the formal function of abstraction.

17 I am simplifying matters here. The inflectional category missing from a small clause can have temporal contributions, but this is irrelevant to the current discussion.
possessive equative construction was a small clause whose interpretation is comparable to unembedded “Y + G,” G would have to be taken to be a positive or comparative form, depending on the morph-syntactic properties of the G element. 18 That is, “Y + G” in the possessive equative construction would have the same semantic interpretation as “Y is G” or “Y is G-er.” It is reasonable to assume that the verb yǒu does not affect entailment. It would then be expected that the possessive equative construction entails “Y is G” or “Y is G-er.” However, the construction does not yield such an entailment. 19 Take the sentence in (56). Rhode Island is the smallest state in terms of area among all US states. Thus, “Rhode Island is big” and “Rhode Island is bigger” are both false in a context of comparing US states. If luódédǎo dà in (56) was a small clause, the whole sentence would entail luódédǎo dà ‘Rhode Island is big(ger).’ Because the entailed proposition is false, the entailing sentence should also express a false proposition. As this is not the case, luódédǎo dà in (56) cannot be a small clause.

(56) xīnzéxī de miànjī yǒu luódédǎo dà.

‘The state of New Jersey has an area (at least) as big as the state of Rhode Island.’

Second, when Y is a measure phrase, it is even more obvious that “Y + G” cannot mean “Y is G” or “Y is G-er.” No matter how big or small the degree denoted by the measure phrase Y is, G can appear after Y in the possessive equative construction. If the “Y + G” chunk embedded under yǒu were a small clause, this would be equivalent to saying that any degree associated with G exceeds the standard for G. This is a wrong prediction.

Third, a demonstrative pronoun such as nàme ‘that’ and zhème ‘this’ can intervene between Y and G in the possessive equative construction (57-58). What such demonstrative pronouns refer to hinges on the immediate context in which they are used. For the possessive equative construction, what “Y + G” denotes is the only possible thing that these demonstrative pronouns refer to. But in Mandarin Chinese nàme and zhème cannot refer to a proposition. 20 This potential incompatibility is another piece of evidence in favor of the claim that the “Y + G” chunk does not denote a proposition and thus cannot be a small clause.

(57) zhè běn shū méi yǒu nà běn nàme yǒuqù.

‘This book is not as interesting as that one.’

(58) yuànzi lǐ de shù yǐjǐng yǒu mén zhème gāo le

‘The tree in the yard is already (at least) as tall as the door.’

The fourth piece of evidence has to do with modifying G with a factor phrase like half and three times. Take the sentence in (59) for example. As an independent clause, tā mèimei yībàn yònggōng is ungrammatical.

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18 It is a well-known fact that certain Mandarin Chinese adjectives receive a comparative rather than a positive meaning when they occur in a simple degree sentence without overt degree morphology. The interested reader can refer to Grano (2012) for the most recent analysis of the phenomenon.

19 When the relevant adjective is inherently evaluative, the entailment pattern does exist (i). However, in this case the entailment does not come from the specification of the possessive equative construction per se, but from the inherent evaluativity of the adjective (Bierwisch, 1989).

(i) Zhāngsān yǒu tā gēgē nàme běn

‘Zhangsan is (at least) as stupid as his brother.’

20 It should be noted here that I am only focusing on demonstrative pronouns (such as zhème and nàme) that can appear in the possessive equative construction. There are some deomonstrative pronouns in Mandarin Chinese, e.g. zhè ‘this’ and nà ‘that,’ that can be anaphoric with a proposition. For example, nà in (i-b) refers back to the proposition expressed by (i-a). But these demonstrative pronouns cannot appear in the possessive equative construction.

(i) a. wǒ xiàwǔ kāi chē qù mǎi cài .

‘I will drive to buy grocery this afternoon.’

b. nà bú xíng wǒ děi yòng chē.

‘That will not work. I have to use car.’
The grammaticality of the sentence in (59) suggests that yònggōng, modified by yībàn, is not a predicate. As such, tā mèimei yībàn yònggōng in (59) cannot be a small clause.

(59) zài xuéxiào, Zhāngsān zhǐ yǒu tā mèimei yībàn yònggōng.
    at school Zhāngsān only have his sister half diligent
‘Zhangsan is only half as diligent as his younger sister at school.’

Still another piece of evidence is that G in the possessive equative construction cannot be modified by a degree modifier such as hěn ‘very’ and fēicháng ‘extraordinarily’ (60), as already observed in Section 2. This is different from an unembedded simple degree sentence, in which the gradable predicate can be modified by such degree modifiers (61).

(60) wǒ zǒulù yǒu wǒ bàba qí chē (*hěn) kuài.
    I walk have my dad ride bicycle very fast
‘I walk (at least) as fast as my dad rides a bicycle.’

Lastly, recall the observation from Section 2 that as a special case, dimension nouns can serve as the G element in the possessive equative construction, as illustrated by the sentence in (62) (repeated from (8)). But dimension nouns cannot serve as predicates in unembedded “Y + G” sentences. 21

(62) nà gè mógu yǒu zúqiú dàxiǎo
    that CL mushroom have soccer ball size (= big-small)
‘The mushroom is (at least) as big as a soccer ball.’

From the above evidence, the “Y + G” chunk in the possessive equative construction, on its own, cannot be a small clause semantically comparable to its unembedded counterpart. What does it denote then? The last piece of evidence discussed above is particularly revealing. When G is a dimension noun, “Y + G” denotes Y’s degree on the dimension specified by G. I argue that when G is a gradable predicate like dà ‘big’, kuài ‘fast’, and xǐhuān yǔyánxué ‘to like linguistics,’ “Y + G” has the same denotation. That is, when G is a gradable predicate on the surface, it does not contribute full-fledged predication, but provides dimension information.

Anticipating formal details later in this section, “Y + G” in the possessive equative construction will be augmented by covert equative degree morphology to form a small clause whose semantics is not comparable to unembedded “Y + G.” This analysis would allow the degree use of yǒu to maintain the same formal contribution as other uses of the verb do.

4.2.3 Two restrictions on the dimension
From the discussion in the previous subsection, in the possessive equative construction of the form “X + yǒu + Y + G,” the “Y + G” chunk does not denote a proposition. Rather, it denotes Y’s degree on the dimension

21 (Name to be provided) pointed out to me that a dimension noun can serve as a predicate, by citing examples such as the sentence in (i) as evidence. However, it is the whole phrase in (i-b) that predicates of the size of mushroom. The dimension noun dàxiǎo alone does not undertake the predication.

(i) a. nà gè mògū yǒu duō dà?
    that CL mushroom have how big
‘How big is the mushroom?’
b. zúqiú bān dàxiǎo.
    soccer-ball like big-small
‘Like a soccer.’

As further evidence for my claim that dimension nouns cannot be predicates, adjectives like dà can appear in a shì-emphatic sentence which serves to confirm the predicate (ii). By contrast, dimension nouns like dàxiǎo cannot (iii):

(ii) nà gè lìzi shì dà.
    that CL pear is big
‘That pear IS big.’

(iii) *nà gè lìzi shì dàxiǎo.
    that CL pear is big
specified by G. Moreover, the chunk does not involve an anaphor, a pronoun, a relational noun, etc. that can contribute a variable to eventually co-index with the subject. But for the small clause analysis of possessive verbs to extend to the possessive equative construction, there needs to be a variable in the complement of yǒu. This variable must be supplied by a covert predicate that augments the “Y + G” chunk. Hence, the remaining task is to explore whether an appropriate predicate with a variable can be proposed from independent grounds. If the answer is positive, then the possessive equative construction would be subject to the small clause-based analysis discussed in Subsection 4.1. If the answer is negative, an alternative analysis should be sought for.

Earlier discussion has established that the possessive degree construction expresses some comparative relation, and this comparative relation is contributed by the covert predicate supplementing “Y + G.” It is clear by now that one of the items that enter into the comparative relation is the denotation of “Y + G,” viz., Y’s degree on the dimension specified by G. The other comparison item must involve X. Otherwise, X would have no role whatsoever to play in the semantic interpretation of the construction. At the same time, it is common knowledge that for a comparison to make sense, the two comparison items have to be comparable to begin with (“compare apples to apples”). Thus, the other comparison item must be some degree associated with X. That being said, the question becomes whether this degree is X’s degree on the dimension specified by G or X’s degree on some other dimension? On the intuitive level, it should be the former. But is there any empirical evidence beyond mere naïve intuition to motivate the claim that X and Y are compared with respect to one common dimension (or dimension perspective) rather than two separate dimension (or dimension perspectives)?

There are at least two cumulative pieces of evidence, one crosslinguistically applicable and one Mandarin Chinese-specific. The first one has to do with “degree incommensurability” (Kennedy 1999, 2001). Adjectives with different dimensional properties are anomalous in mono-clausal comparative (including equative) constructions, as illustrated in (63-64).  

Thus, for the possessive equative construction, the dimension against which Y is measured has to be the same dimension against which X is measured. More concretely, for (65) (repeated from (1)), the dimension used to measure Zhangsan is necessarily the same dimension for measuring his brother, and this common dimension is the physical extent of entities. The sentence cannot mean, say, that Zhangsan’s weight exceeds Zhangsan’s brother’s height, because weight and height encode incommensurable dimensions.

(63)  
a. *The book is more expensive than the computer is heavy.
   b. *John is as happy as Mary is clever.

(64)  
a. *zhè běn shū guì bǐ nà tái diànmào zhòng
    this CL book expensive BI that CL computer heavy
   b. *zhāngsān gāoxīng gēn Mǎlì cōngmíng yīyàng
    Zhangsan happy with Mary clever the same

(65)  
zhāngsān yǒu tā gēgē gāo
    Zhangsan have his brother tall
   ‘Zhangsan is (at least) as tall as his brother.’

There is in fact an even firmer restriction in Mandarin Chinese. In this language, even when two adjectives express the same dimension (e.g. physical extent) but different dimension perspectives (e.g. height vs. width), they are prohibited from appearing in a mono-clausal comparative sentence. The particular restriction shows itself in the so-called comparative subdeletion construction, a comparative structure in which the embedded clause involves a predicate of the same dimension but of a different dimension perspective than does the main clause, and the embedded clause can stand alone as an independent clause (Kennedy 1999, 2001). Comparative subdeletion is allowed in English, as suggested by the grammaticality of the sentences in (66).

(66)  
a. The space telescope is longer than it is wide.
   b. The Mars rock called “Barnacle Bill” is as wide as it is tall.

22 The sentence in (64a) illustrates the oft-discussed bǐ-comparative in Mandarin Chinese, which has been taken as the Mandarin Chinese counterpart of the English more...than comparative construction. The interested reader can refer to Xiang (2006) and Lin (2009) for discussion on this construction. For the sentence in (64b), the gēn ...yīyàng equative construction expresses identity between two degrees and can be translated into the English as...as and the same as construction. I assume that conclusions drawn on the basis of the the bǐ- and gēn ...yīyàng constructions in regard to incommensurability are applicable to Mandarin Chinese degree constructions in general.
Mandarin Chinese, by contrast, disallows the subdeletion construction (67). Thus, in Mandarin Chinese not only cross-dimensional comparison is disallowed from being expressed through comparative constructions, but comparative subdeletion within the same dimension yet across different dimension perspectives is prohibited. For the possessive equative construction, since one comparison item is Y’s degree on the dimension specified by G, the other comparison item must be X’s degree on the same dimension. For the possessive equative construction, since one comparison item is Y’s degree on the dimension specified by G, the other comparison item must be X’s degree on the same dimension.

(67)  
a. *tiānwénwàngyuǎnjìng cháng bǐ tā /zìjǐ kuān  
   space-telescope long BI it/self wide  
   Intended: ‘The space telescope is longer than it is wide.’

b. *tiānwénwàngyuǎnjìng gē tā/zìjǐ kuān yīyàng cháng  
   space-telescope with it/self wide same long  
   Intended: ‘The space telescope is (at least) as wide as it is long.’

4.2.4 The exact nature of the relation in the small clause

The two restrictions discussed above require the dimension (perspective) against which X is measured to be exactly identical to the dimension (perspective) against which Y is measured. Taking this as given, our task of analyzing the possessive equative construction “X + yǒu + Y + G” further narrows down to specifying the exact nature of the comparison relation that holds between X’s and Y’s degrees on the dimension specified by G.

Toward this end, it is helpful to consider the ontological representation of degrees. Traditional analyses take degrees as points on a scale. Kennedy (1999, 2001) and Schwarzschild and Wilkinson (2002) showed that such a model fails to capture several important patterns regarding comparative constructions. One of them is the so-called Cross-polar Anomaly (CPA): comparative sentences formed out of a pair of antonymous adjectives (e.g. expensive vs. cheap) are semantically anomalous. The anomaly is exemplified by such sentences as in (68). According to Kennedy, treating degrees as points cannot explain CPA. Rather, degrees should be formalized as intervals on a scale that ranges from the minimum/zero point on that dimension to where the degree ends. In addition, degrees are classified into two types: positive degrees (for fast, expensive, etc.) vs. negative degrees (for slow, cheap, etc.). CPA is anomalous precisely because it compares degrees of opposite polarities.

(68)  
a. *The computer is more expensive than the book is cheap.

b. *The downtown area is dirtier than the suburb area is clean.

It has been established above that the possessive equative construction compares X’s and Y’s degrees on the dimension specified by G. Because degrees are intervals, the construction, in essence, compares two degree intervals on the same scale. In addition, the two degree intervals have a common starting point (Bierwisch 1989; Kennedy 2001). Recall the assumption that possessive verbs such as English have and Mandarin Chinese yǒu generally characterize essential relations (e.g. possession, kinship, part-whole, etc.) between the subject and the object. Only when an essential relation is (contextually) impossible will an “accidental” relation (e.g. location, custody) come to rescue (Gutiérrez-Rexach 2006; Iatridou 1996; Ritter and Rosen 1997). The most essential relation that can exist between two (degree) intervals of the same direction and with the same starting point is one interval being the sub-interval of the other. Therefore, the possessive equative construction specifies that X’s and Y’s degrees on the dimension specified by G enter into a sub-interval relation.

The idea that comparison of degrees on the same scale is a sub-interval relation finds echo in the literature. Bierwisch (1989) gave the following schematic representation for the comparison of two degrees $d_1$ and $d_2$, which are the projections of two entities $V_1$ and $V_2$ onto a common scale (69). The scale has “a zero point and a direction determined by this point,” which is “a necessary condition for the comparison operation”

---

23 I include zìjǐ ‘self’in the two sentences in (67), to show that the ungrammaticality is not due to, and thus cannot be salvaged by, different choices of pronouns or any similar strategy.

24 My discussion regarding comparison across different dimensions and across different dimension perspectives is limited to mon-clausal comparative constructions. By no means should this be understood to entail that such comparison cannot be expressed in Mandarin Chinese by other means. In Mandarin Chinese, the gěng bi-clausal comparative construction can express comparison across dimensions and across dimension perspectives (i). The interested reader can refer to C. Liu (2010) for an analysis of the gěng construction.

(i) zhè duǒ huā, huā hěn hóng, yězi gěng lǜ  
   this CL flower flower very red leaf GENG green  
   ‘As for this flower, the flower is red, but the leaf is even greener (than the flower is red).’
between degrees (p. 113-114). Under this representation, the two degrees under comparison, \( d_1 \) and \( d_2 \), start from the same zero point and extend in the same direction. Furthermore, Bierwisch noted that the difference \( c \) between \( d_1 \) and \( d_2 \) \((c = d_1 - d_2)\) begins right at the end of \( d_1 \) and has the same direction as the directed scale \((70a): d_1 > d_2\) or the opposite direction \((70b): d_1 < d_2\). It is obvious from (70a-b) that comparison of two degrees on the same scale involves a sub-interval relation between them.

\[
\begin{align*}
(69) & \quad V_1 \\
& \quad V_2 \\
& \quad 0 \\
& \quad d_2 \\
& \quad d_1 \\
\end{align*}
\]

\[
\begin{align*}
(70) & \quad (a) V_1 \\
& \quad V_2 \\
& \quad 0 \\
& \quad d_2 \\
& \quad d_1 \\
& \quad c \\
\end{align*}
\]

At the same time, as Kennedy (2001) argued, degree intervals on a scale can be defined from a set-theoretic perspective as a convex, nonempty subset of the scale. Thus, the sub-interval relation between two compared degrees can be modeled to a subset relation. In light of the transformability, in the rest of the paper I will use “subset” and “sub-interval” for degree comparative relations interchangeably.

One may ask why the subset relation, rather than other set relations such as superset, proper subset and set identity, is most essential for degree comparison. First, the superset relation is just the reverse of the subset relation \((A \subseteq B \iff B \supseteq A)\) for two sets \(A\) and \(B\). Given the triviality of this transformation, between subset and superset it is harmless and convenient to use the subset relation as the “basic” relation. Anticipating details to follow, for the possessive equative construction “X + yǒu + Y + G,” I will argue that Y’s degree on the dimension specified by G is a subset of X’s degree on the same dimension. Of course, one can choose to make the equivalent claim that X’s degree is a superset of Y’s degree, but doing so brings us no extra insight whatsoever. Second, the discussion surrounding (70) has shown that degree comparison is essentially a sub-interval relation, which can be modeled as a subset relation. In addition, from a more conceptual perspective, proper subset and set identity are both special cases of the subset relation. Any arbitrary degrees on the same scale can enter into comparison with one other. Given this randomness, it is implausible to claim that two degrees on a scale necessarily form a proper subset relation or set identity relation. The former misses cases where two degrees are identical, and the latter captures only such cases.

I hope that the above discussion suffices to establish that the possessive equative construction expresses comparison between X’s and Y’s degrees on the dimension specified by G. Now, the question comes to which one of the two intervals is the sub-interval, and which one is the super-interval. There is evidence to suggest that Y’s degree should be the subset of X’s degree, but not the reverse. First, consider a scenario where Zhangsan is 5’8" tall and Lisi is 5’6" tall. The sentence in (71a), where Zhāngsān corresponds to X and Lǐsì to Y, can felicitously describe the two individuals’ heights with relation to each other. Reversing X and Y would yield a false sentence in the scenario (71b). Second, to achieve certain rhetorical effect (e.g. refutation), in certain contexts a speaker can utter a possessive equative sentence where both X and Y are measure phrases and yǒu receives focus intonation. The sentence in (72), for example, can be felicitously uttered to dispute the (mistaken) claim that a mile (≈ 1.6 kilometers) is not as long as a kilometer. Obviously, from a set-theoretic perspective, the set corresponding to a mile (X) is a superset to the set corresponding to a kilometer (Y). Reversing X and Y in (72) would yield a false proposition.

25 When \(d_1\) and \(d_2\) are identical and there is no difference between the two, the statement is trivially true.

26 Truth conditionally speaking, the focus intonation on yǒu is irrelevant to the present discussion about the set-theoretic relation between X’s and Y’s degrees. In the rest of the paper I will no longer discuss possessive equative sentences where X and Y are both measure phrases, for they are actually simpler to deal with, if without considering the focus intonation.
It has been argued that under the small clause-based analysis of possessive verbs, the verb *yǒu* cannot directly set up the sub-interval/subset relation between the two degrees. Rather, the relation is contributed by the predicate of the covert small clause embedded under *yǒu*. At the same time, the predicate should contain a variable co-indexed with the subject X. Given all the considerations, the covert predicate can take but one form: “being a sub-interval/subset of $e_i$ on the dimension specified by G.” The covert predicate for the sentence in (71a) would be something along the lines of “being a sub-interval/subset of $e_i$ on the height dimension.”

### 4.2.5 Zooming in on the small clause

The discussion in this section so far leads to an important claim, viz. that the small clause in the possessive equative construction takes the form of “Y being a sub-interval/subset of $e_i$ on the dimension specified by G.” Let us now turn to consider the syntactic structure of the small clause. Before we answer the question, two related issues need to be addressed. The first one is whether the possessive equative construction involves degree comparison or individual comparison. The other has to do with the constituency structure of *yǒu* in the possessive equative construction.

Kennedy (2007b) proposed that languages show parametric variation between individual comparison and degree comparison. Simply put, individual comparison expresses ordering between two individuals along a common dimension, and degree comparison expresses ordering between an individual and a degree. Individual comparison lacks degree abstraction, and as such, cannot compare degrees directly. Kennedy correlated the absence of comparative subdeletion with individual comparison. Comparative subdeletion involves two degrees on different dimensions and is not possible with individual comparison. Comparative subdeletion is not allowed with the possessive equative construction (73). Hence, with Kennedy’s dichotomization of comparison strategies, the possessive equative construction is an instance of individual comparison.

Regarding the syntactic structure of the possessive equative construction, it is helpful to compare the construction to the more familiar *bǐ*-comparative construction in Mandarin Chinese (74). After all, on the surface the two constructions look similar. Do they have an identical syntactic structure? The question can be further narrowed down to whether the syntactic position of *yǒu* in the possessive equative construction is identical to that of *bǐ* in the *bǐ*-comparative construction. The answer is negative. In a *bǐ*-comparative sentence of the form “X + *bǐ* + Y + G,” *bǐ* and Y form a single constituent (Lin 2009). However, for the possessive equative construction, *yǒu* and Y do not form a syntactic constituent. The difference is illustrated by the contrast between (75) and (76).

(73) *nà zhāng zhuōzi yǒu shūjià gāo kuān.*
    that CL table have shelf tall wide
    Intended: ‘The table is as tall as the shelf is wide.’

(74) Zhāngsān bǐ tā gēgē gāo
    Zhangsan compare his brother tall
    ‘Zhangsan is taller than his brother.’

(75) Zhāngsān jīntiān bǐ wǒ máng, bǐ Lǐsì jiù gèng bú yòng shuō le.
    Zhangsan today BI me busy BI Lisi then even more not need say ASP
    ‘Zhangsan is busier than I am today; compared to Lisi, there is no need to say.’

(76) *Zhāngsān jīntiān yǒu wǒ máng, yǒu Lǐsì jiù gèng bú yòng shuō le.*
    Zhangsan today have me busy have Lisi then even more not need say ASP
    Intended: ‘Zhangsan is (at least) as busy as I am today; compared to Lisi, there is no need to say.’
Lin (2009) proposed that the *bǐ*-comparative sentence in (74) has the syntactic structure in (77). The representation reflects the postulation that *bǐ* forms a constituent with *tā gēgē* ‘his brother.’ The semantics of *bǐ* expresses individual comparison. It takes two individuals and a gradable predicate as its arguments, which is reflected in the semantic definition for *bǐ* in (78).

\[
(77) \quad S \\
\hspace{1cm} \text{zhāngsān} \hspace{1cm} \text{AP} \\
\hspace{2cm} \text{DegP} \hspace{2cm} \text{AP} \\
\hspace{3cm} \text{Deg} \hspace{3cm} \text{DP} \\
\hspace{4cm} \text{gāo} \hspace{4cm} \text{bǐ} \hspace{4cm} \text{tā gēgē}
\]

\[
(78) \quad \square [bǐ] = \lambda x \lambda P \lambda y. P(x) < P(y)
\]

The difference between *bǐ* and *yǒu* with regard to constituency suggests that *yǒu* cannot occupy the same position as *bǐ* does in its syntactic structure. Rather, I will argue that the degree use of *yǒu* shares a similar syntactic representation to other uses of the verb, which occupies the same syntactic position as *have* does under Sæbø’s (2009) analysis of possessive verbs.

It has been argued that *yǒu* does not directly account for the equative reading of the possessive equative construction. Instead, the equative reading is contributed by some covert element which occupies a syntactic position comparable to *bǐ* and has a similar (but not identical) semantic contribution to *bǐ*. In particular, this covert element introduces individual comparison, not degree comparison. The previous discussion has suggested that the possessive equative construction involves a small clause which, in turn, involves a covert predicate “being a sub-interval/subset of.” This predicate is a good candidate to occupy the same position in the syntactic structure of the possessive equative construction as *bǐ* does in the *bǐ*-comparative construction.

In addition, the small clause object of *yǒu* contains a covert variable which is eventually saturated by the matrix subject of *yǒu*. The variable occurs within the complement of the covert predicate “being a sub-interval/subset of.” Given all these considerations, the syntactic structure for the covert small clause in the sentence (1) (repeated in (79)) would be something like (80). The semantics of the degree head “being a sub-interval/subset of” to that of *bǐ* suggests that the relation specified by the covert predicate is not something arbitrarily defined merely for convenience. It has “precedent” elsewhere in Mandarin Chinese.

\[
(79) \quad \text{Zhāngsān yǒu tā gēgē gāo} \\
\quad \text{Zhangsan have his brother tall} \\
\quad \text{‘Zhangsan is (at least) as tall as his brother.}
\]

\[
(80) \quad S \\
\hspace{1cm} \text{DP} \\
\hspace{2cm} \text{tā gēgē} \hspace{2cm} \text{DegP} \\
\hspace{3cm} \text{AP} \\
\hspace{4cm} \text{AP} \\
\hspace{5cm} \text{gāo} \\
\hspace{6cm} \text{being a sub-interval/subset of } e_i
\]

---

27 *Bǐ* can be used not just for monadic comparison, but for dyadic comparison as well. The representation in (77) illustrates monadic comparison. The reader can refer to Lin (2009) for discussion on using *bǐ* to express comparison with respect to more than one topic.

28 C. Liu (2011) proposed that *bǐ* is not a degree word, contra Lin’s (2009) analysis. Because the current paper is not about the *bǐ*-construction itself, I do not want to take up the issue of comparing C. Lin’s (2011) and Lin’s (2009) analyses. Rather, I merely use Lin’s analysis of the *bǐ*-construction as a convenient point of departure. My analysis of the possessive equative construction, in essence, does not hinge on the soundness of Lin’s (2009) analysis.

29 The “ee” subscript in (81) indicates that the definition is for possessive equative sentences where X and Y are both individual-denoting DPs.
4.2.6 Deriving the semantics of the possessive equative construction

Now that we have a clear understanding about what the covert small clause in the possessive equative construction is like, deriving the semantics of the construction is a relatively trivial matter. Toward this end, I follow Kennedy (1999, 2007a) and many others to assume that a gradable predicate denotes a measure function from individuals to their degrees on the dimension specified by the predicate. For instance, the gradable adjective gāo denotes a function from individuals to their heights.

\[
\text{[[gāo]]} = \lambda x. \text{d}_x \text{[x is } d\text{-tall]}
\]

The interpretation of the covert small clause involved in the LF for the sentence in (79) is given in (83). The final result of the derivation for the small clause shows that it compares the height of his brother and the height of an individual which is to saturate the variable e. The small clause is the underlying object of yǒu. The verb contributes the necessary abstractor by absorbing the trace of the QR-ed subject. This requires the variable trace binder to do the real abstraction over the individual variable e in the small clause. The abstraction guarantees that e is saturated by the matrix subject zhāngsān, and consequently that the comparison relation occurs between Zhangsan and his brother. The structure in (84) illustrates the semantic derivation of the whole sentence. Obviously, the derivation applies to other similar possessive equative sentences in which the Y element is a DP that denotes an individual, an event, etc.

\[
\text{(83)}
\]

As mentioned in Section 2, Y in the “X + yǒu + Y + G” construction can be a measure phrase. The semantic derivation for such cases essentially proceeds in a similar fashion. For such cases, the G element is optional when the (extra-)linguistic context specifies the relevant dimension for the measure phrase. For example, shí bàng ‘ten pounds’ in (85) necessarily denotes a degree on the dimension of weight and cannot denote a degree on any other dimension. When the phrase is used in the possessive equative construction, it does not matter whether or not to follow it with zhòng ‘heavy’ to specify the relevant dimension.

\[
\text{(85)}
\]

30 It has been noted in Subsection 2.2 that G in the “X + yǒu + Y + G” construction can be a dimension noun. Dimension nouns can be understood to denote a measure function from individuals to degrees, along the lines of (82). Therefore, the semantics of possessive equative sentences in which G is a dimension noun can be derived in a similar fashion to (84).
However, there are dimensions that can be associated with more than one dimension perspective. Typical examples are measure phrases like “five feet” and “three miles.” The degrees they denote are values on the dimension of physical extent. But the dimension can be seen from different perspectives (e.g. length, width, height, depth). Only when the context specifies which dimension perspective such a measure phrase is located on can the G element be omitted without causing ambiguity or even unacceptability. For example, because the context in (86) makes it clear that depth is the relevant dimension for the otherwise perspectivally ambiguous measure phrase yī mǐ ‘one meter,’ the adjective shēn ‘deep’ does not have to appear after the measure phrase. If such a context and shēn are both missing, the second clause in (86) would be multi-way ambiguous among several dimensions. In any case, it is reasonable to assume that when there is no overt G element in a possessive equative sentence where Y is a measure phrase, dimension information can still be recovered to specify what X is measured against.

(86) zhèr de hé dōu hěn qiǎn, zhè tiáo zhǐ yǒu yī mǐ (shēn) here MOD river all very shallow, this CL only have 1 meter deep

‘The rivers here are all very shallow. This one is just one meter deep.’

In order to derive the semantics of possessive equative sentences in which the Y element is a measure phrase, the definition of “being a sub-interval/subset of” given in (81) needs to be adjusted. Note that the definition in (81) relates two individuals with respect to a property, but for possessive equative sentences where Y is a measure phrase, one of the two relata is a “bare” degree to start with, under the assumption that measure phrases denote degrees. To reflect this difference, “being a sub-interval/subset of” is defined as in (87) for possessive equative sentences where the Y element is a measure phrase.31

(87) \[[being a sub-interval/subset of]\]_\text{d} = \lambda x \lambda P \lambda d. \, d \leq P(x)

Given the above set-up, the second clause in (86) (with zhǐ being ignored for the sake of simplicity) has the semantic derivation in (88). The end result says that the sentence specifies the depth of the river to be one meter or more. This conforms to naïve intuition about the meaning of the sentence.

31 (Name to be provided) suggested to me that for possessive equative sentences that contain a measure phrase as the Y element, the syntactic representation and semantic interpretation can be simplified. According to his suggestion, there is a covert variable between yǒu and Y to serve as the subject for “Y + G,” which is analyzed as a predicate. The variable is “saturated” by the matrix subject. The covert variable and “Y + G” form a small clause. Moreover, this small clause has an overt counterpart.

This suggestion makes several wrong predictions. First, because the covert small clause contributes the meaning of the whole sentence and yǒu is only an abstractor, the suggestion wrongly entails that the sentence in (i) has the same meaning as (ii). But this is not the case. The former sentence means the door is at least two meters wide. By contrast, the latter sentence means that the door is exactly two meters wide. My native Mandarin Chinese consultants confirmed this difference. In addition, there are corroborating empirical, theoretical and experimental evidence that number words (measure phrases by extension) have the “exactly” interpretation (König 1991; Breheny 2008; Huang et al in press). Second, it is not clear how to extend the suggestion to possessive equative sentences whose Y element is not a measure phrase. There is no natural overt sentence which can correspond to the covert small clause in (iii) (see (iv)). Hence, the suggestion would lead to a loss of analytical uniformity that is easily achieved in the proposal that I pursue.

(i) nà shān mén yǒu liǎng mǐ kuān
that CL door have two meter wide

‘The door is (at least) two meters wide.’

(ii) nà shān mén liǎng mǐ kuān
‘The door is two meters wide.’

(iii) nà shān mén yǒu zhè shān mén kuān
that CL door have this CL door wide

‘That door is (at least) as wide as this door.’

(iv) *nà shān mén zhè shān mén kuān
To summarize, in this section I showed that the small clause-based analysis of possessive verbs can be successfully extended to the possessive equative construction in Mandarin Chinese. For the possessive equative construction, the overt object of *yǒu* is supplemented by a covert predicate (i.e. “being a sub-interval/subset of e”) which contains a variable that is eventually saturated by the subject of *yǒu*. The predicate specifies a sub-interval/subset relation between X and Y along the dimension specified by G. Therefore, just like non-degree uses of the verb, *yǒu* in the possessive equative construction is a functional item that has no semantic content on its own. It merely provides a formal mechanism for the subject to bind a variable in its small clause object. *Yǒu* has a uniform semantic contribution in all its (degree and non-degree) uses.

5. Theoretical implications

In the previous section, I showed that the small clause-based approach to possessive verbs can be readily extended to analyze the possessive equative construction in Mandarin Chinese. There are several alternative analyses of possessive verbs that have been proposed in the literature. In this section, I argue that none of the alternative analyses of possessive verbs can accommodate the possessive equative construction. My discussion will be rather informal and brief, and only point out the most serious problems that the alternative analyses are faced with. If my argument is on the right track, the possessive equative construction will constitute a good test case for the validity of the different proposals on the syntax and semantics of possessive verbs.

There are three major alternative analyses of possessive verbs. The Locative Existential analysis (Freeze 1992) holds that, derived from the same structure as the existential *there be*-construction, *have*-sentences of various kinds are underlyingly existential sentences with a locative argument in the subject position. Extending it to the possessive degree construction, the analysis would say that, just like existential sentences, the construction has an underlying structure where the surface matrix subject starts out as a preposition phrase of some sort. This is equivalent to saying that the subject in a possessive equative sentence predicates of the location of the degree denoted by the “Y + G” chunk. However, being an abstract interval on a scale, a degree cannot be predicated of or restricted by a preposition phrase. This claim is evident from the ungrammaticality of the sentence in (89) with a subject denoting a degree. The ungrammaticality stands in contrast with the grammatical sentence in (90) with a subject denoting an entity. A degree is distinguished from an individual or an event, which can be temporally or locatively restricted.

(89) *wu mǐ zài zhuōzi shàng
five meter at table on
(90) yi běn shū zài zhuōzi shàng
one CL book at table on
“There is a book on the table.”

The Semantic Incorporation analysis proposed by Landman (2004) holds that the possessive verb *have* denotes a “contentless” relation between two entities (of type e) and a state (of type s). By contrast, the object of *have* denotes a “contentful” counterpart of such a relation. After the object vacuously intersects with *have*, the result is exactly the same as the object. The rest of the proposal does not concern us. The analysis can be
schematically represented in (91) with the phrase “have a sister” for example. Blank boxes represent “contentless,” solid boxes represent “contentful,” and X, Y, and S represent the content (i.e. X stands in a sister-of relation to Y in a state S). As Landman himself admitted, the analysis is restricted to cases in which have embeds relational nouns (e.g. sister, enemy, price) and pragmatically coerced relational uses of lexically non-relational nouns. Other (uses of) nouns do not establish a relation. The analysis cannot be extended to the possessive degree construction either, for the complement of yǒu (“Y + G”) does not express a relational notion of any sort; nor can it be regularly coerced into a relational concept via pragmatic means. Zhangsan’s brother’s height, for example, is a degree that exists on its own right and does not have to relate to anything else for it to be a degree.

(91) “have”: 

```
<p>| | | |</p>
<table>
<thead>
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<th></th>
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```
(91) “have”: 
```

The Type Shifting analysis, proposed by Partee (1999), shares a lot of similarities with the Semantic Incorporation analysis. One major difference, though, is that in the former analysis, there is a division of labor between have and its object. Details aside, Partee (1999) ascribed a (relational) generalized quantifier denotation to the object of have. The semantics of have specifies a property for its object. If the analysis is extended to the possessive equative construction, it would require the semantics of equative yǒu to make reference to the property associated with the G element. Recall that G can be an adjective, an adverb, a verb, or even a dimension noun. It is undesirable to say that the semantics of possessive equative yǒu needs to incorporate an adjective, an adverb, a verb, or a dimension noun. Hence, the Type Shifting analysis also encounters difficulty in the context of the possessive equative construction.

6. Final remarks
To summarize, in this paper I discussed the Mandarin Chinese possessive verb yǒu ‘have’ appearing in the possessive equative construction “X + yǒu + Y + G.” On the empirical side, I provided a detailed description of some key properties of the construction. It shows similar empirical patterns to the English as...as equative construction. On the theoretical side, I argued that the small clause-based analysis of possessive verbs proposed by Iatridou (1996), Ritter and Rosen (1997), and particularly Sæbø (2009) can easily be extended to the degree use of yǒu in the construction. The verb yǒu functions as an abstractor over an individual variable which is eventually saturated by the matrix subject. The possessive equative construction involves individual comparison and sets up a sub-interval/subset relation between X and Y in terms of their degrees on the dimension specified by G. My analysis suggests that the degree use of yǒu has the same syntactic representation and semantic interpretation as other uses of the verb. If on the right track, my analysis lends strong support to Huang’s (1987) analytic intuition that all uses of yǒu uniformly take small clauses as the complement. Toward the end of the paper, I also discussed several alternative analyses of possessive verbs, and pointed out the major challenges they would be faced with in the context of the possessive equative construction. Thus, my discussion of the degree use of yǒu in Mandarin Chinese has even more general theoretical implications, for it provides independent crosslinguistic evidence to validate the small clause-based analysis of possessive verbs and to rule out alternative analyses proposed in the literature.

That being said, there are still some open issues that I did not have the space or resources to address in this paper, of which I will mention two most important ones. First, the possessive equative construction as discussed in this paper is unique to Mandarin Chinese, but the general degree use of possessive verbs is present in other languages (e.g. English, Romanian). It shows considerable crosslinguistic variations. How can my analysis accommodate such variations? For instance, the English verb have cannot appear in the exact equivalent of the Mandarin Chinese possessive equative construction. But it can embed a degree-denoting phrase of a certain type to make comparison (e.g. (?)The river has a depth of 50 feet.). A potentially plausible explanation of the contrast between Mandarin Chinese yǒu and English have in this regard may lie in the idea that different comparison strategies (individual vs. degree comparison) are involved in the two languages.

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Second, the possessive equative construction compares X and Y with respect to their degrees on the dimension specified by G. It does not compare X or Y to the contextual standard of being G. So, the possessive equative construction, in and by itself, is not evaluative. That is, when a possessive equative sentence is true, neither X nor Y is necessarily G. At the same time, as already indicated in the paper, the lexico-semantic properties of G affect the evaluativity judgment of possessive equative sentences.

The situation is rather complicated. When G is a negative dimensional adjective, the possessive equative sentence in which it appears is not always grammatical. This mixed grammaticality judgment itself is an interesting topic worth further exploration. Moreover, when a possessive equative sentence with a negative dimensional adjective is acceptable, the sentence necessearily entails that both “X is G” and “Y is G,” as illustrated by the sentences in (92). (92a) entails that Zhangsan’s GPS and the hearer’s radio are both small, but (92b) says nothing regarding whether the GPS or the radio is big in the relevant context.

(92) a. Zhāngsān mǎi de GPS yǒu nǐ de shǒuyīnjī nàme xiǎo
   Zhangsan buy MOD GPS have you MOD radio that small
   ‘The GPS that Zhangsan bought is as small as your radio.’
b. Zhāngsān mǎi de GPS yǒu nǐ de shǒuyīnjī nàme dà
   Zhangsan buy MOD GPS have you MOD radio that big
   ‘The GPS that Zhangsan bought is as big as your radio.’

The evaluativity pattern of the possessive equative construction parallels what has been observed with the as...as equative in English (Rett 2008a, b). Formal details aside, Rett held that the evaluativity of negative dimension adjectives in the English as...as equative construction arises as a product of the polarity of the adjective and the nature of degree quantifiers. Getting into the details of Rett’s account would make the paper unnecessarily lengthy. For my purpose, I would like to just point out that her account, as it is, cannot be extended to explain the evaluativity pattern of the possessive equative construction. Her analysis most crucially depends on the dubious assumption that the as...as construction has an “exactly” meaning (cf. Horn 1972; Klein 1980; inter alia). However, the semantic treatment of the possessive equative construction that I proposed takes the construction to have the “at least” interpretation as the semantic default. At this stage I do not have a good alternative account of the evaluativity of negative dimension adjectives in the possessive equative construction and lack thereof when the G element is a positive dimension adjective. This is another interesting topic that I have to leave for future research.

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