

THE RELEVANCE OF GRADABILITY IN NATURAL LANGUAGE:
CHINESE AND ENGLISH

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THE RELEVANCE OF GRADABILITY IN NATURAL LANGUAGE:
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This dissertation explores how the syntax and semantics of gradability contribute to the understanding of other linguistic phenomena. Within this research agenda, I examine three different topics instantiating the interaction between gradability and other linguistic notions. The exploration is important not only for studying the linguistic properties of these phenomena, but also for understanding theoretical issues behind them.

Chapter 1 provides an overview of the basics of degree semantics and the interval-based ontological formalization of degrees. Chapter 2 presents a detailed description and syntactic-semantic analysis of the construction in which a possessive verb takes a surface degree expression. During the description and analysis, the construction is compared to other degree constructions. The interpretation of the construction can be derived from the function of the possessive verb interacting with the interval-based representation of degrees. My proposal provides additional support to the small clause-based analysis of possessive verbs.

Chapter 3 deals with the interaction between nominal and adjectival gradability, through examining size adjectives used as degree modifiers for gradable nouns. In particular, I examine the status of the Bigness Generalization, which says that only positive size adjectives can degree-modify gradable nouns. I show that the

generalization is not categorical, because negative size adjectives indeed can be degree modifiers for gradable nouns in certain contexts. In the chapter I propose an analysis of the phenomenon at the semantic-pragmatic interface that explains the violable nature of the Bigness Generalization.

Chapter 4 explores the relevance of gradability to the interpretation of weak generic sentences best represented by *Dutchmen are good sailors*. Interpreting such a sentence requires restricting the domain of individuals that the sentence quantifies over and determining what the underlying predicate is. The first aspect makes reference to a contextual standard associated with the population denoted by the subject, and the second aspect makes reference to a different standard, which is associated with the population alternative to the denotation of the subject.

BIOGRAPHICAL SKETCH

Zhiguo Xie was born in Shuyang, Jiangsu, China and spent his first 18 years there. After finishing his college education from the University of Science and Technology of China in 2001, he worked in media for two years. In 2003, he came to the United States and enrolled in the Linguistic Studies Program at Syracuse University. After obtaining his master's degrees in 2005 from Syracuse University, he entered the doctoral program in linguistics at Cornell University. He has primarily worked on semantics, syntax, and their interface.

Dedicated to my family

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LIST OF ABBREVIATIONS

BI: Chinese comparative marker *bi*

CL: classifier

MOD: Chinese modification marker *de*

LE: Chinese aspectual *le*

DE: Chinese degree *de*

GUO: Chinese experiential *guo*

EMP: emphatic marker

Chapter 1

Introduction

1.1. An overview

This dissertation aims to explore how gradability relates to and explains some other linguistic phenomena that are kin to this rather broad notion. As a linguistic concept, gradability provides one tangible means of manifesting the fundamental human capacity to establish ordering among entities according to the extent to which they possess some gradable property. Such ordering is an essential component of the human cognitive system, which is able to interact with other parts in the system to yield more complex cognitive mechanisms and processes. As a cognitive capacity that is intrinsically grounded in human cognition, natural language should, as it does, provide strategies to describe the interactions between gradability and other linguistic notions.

The syntactic and semantic literature has dealt with many different cases in which gradability bears upon the understanding of other language phenomena. For example, Dowty (1979), Abusch (1986), and Kennedy and Levin (2008) suggested that variable telicity in degree achievements with some verbs can duly be linked to the semantic properties of the corresponding gradable adjectives from which the verbs are derived. McCready (2009) showed that gradability and expressivity are both at work for the enterprise of understanding particles expressing emotional attitude and intensification, such as *man* in the sentence *Man, I just passed the exam*. Some modals, such as *probable*, *possible* and *certain*, appear to encode both modality and gradability. One plausible approach to analyzing their semantics is to incorporate the semantics of gradable adjectives into a theory of modality. Portner (2009) and Lassiter (2010) constitute reasonable recent attempts along these lines.

This dissertation deals with three specific topics instantiating the broad range of interaction between gradability and other language phenomena. The first topic has to do with the semantic interpretation of a construction in which the possessive verb “have”, or its Chinese near-equivalent *you*, takes a degree expression as the surface object. In my analysis I adopt the “standard” representation of gradability as ordering of degrees along some scale (Creswell, 1976; von Stechow, 1984; Kennedy, 1999, 2001; cf. McConnell-Ginet, 1973; Klein, 1980). In this framework, degrees are treated as a primitive semantic artifact that is comparable to individuals, events and times. Just like phrases denoting the latter three types of concepts, degree expressions also can appear in the object position of the possessive verb “have” and *you*, as though they stand in some abstract possessee-possessor relation with the subject. This “possessive degree” construction has an equative interpretation that I will show to be derived from a degree relation that the possessive verb establishes between the subject and the object. The degree use of the possessive verb has the same semantic interpretation as its other uses.

The semantic literature on gradability has been mostly confined to the adjectival category. However, gradability has been suggested to be a wide-spread cross-categorial property that is present in nouns, verbs, and even prepositions (Sapir, 1944; Bolinger, 1972; Doetjes, 1997; Kennedy and McNally, 2005; Kennedy and Levin, 2008). The second topic that I will explore in this dissertation has to do with the interaction of gradability in the nominal domain with gradability in the adjectival domain. More specifically, adjectives that normally express physical size can be used to characterize the degree to which gradable nouns of a certain category hold (e.g. *a big flop* and *an enormous fan of music*). The phenomenon suggests a close analogy between modification of nominal gradability and that of adjectival gradability. In particular, the use of size adjectives as degree modifiers is subject to a violable constraint that positive size

adjectives like *big* and *enormous* can serve as degree modifiers for gradable nouns. This constraint and exceptions to the constraint have root in the interface between the semantics and pragmatics of the scale structure of gradable nouns and of size adjectives used as degree modifiers.

The third topic deals with how some gradable predicates interact with generic quantification. The main task is to capture the elusive weak interpretation of one particular subset of generic sentences best represented by the Port Royal Puzzle sentence *Dutchmen are good sailors*. Only until recently has it been suggested that the semantics of gradability plays a role in understanding such weak generic sentences (Nickel, 2009, 2010a). The interaction is evident from two related aspects. First, gradability restricts the domain of individuals that are generically quantified over. Second, gradability is an essential component in the predicate of such weak generic sentences. I show that the proper interpretation of those sentences should combine the two aspects together.

1.2.Key theoretical assumptions

1.2.1. Degree semantics

In this dissertation, I will adopt one dominant framework for understanding gradability proposed in the literature (Seuren, 1973; Cresswell, 1973, 1976; von Stechow, 1984; Heim, 1985; Bierwisch, 1989; Kennedy, 1999, 2007a; Rett 2008b, among others). Along the lines of such works, the semantic interpretation of a gradable predicate makes crucial reference to degree as a semantic primitive. A set of degrees can be totally ordered along some dimension and form (part of) a scale. Gradable predicates are associated with different types of scale structures, and as such they manifest varied linguistic patterns. The major competing alternative to this framework, often referred to as the vague predicate analysis (McConnell-Ginet, 1973; Kamp, 1975; Klein,

1982; Larson, 1988), makes no recourse to the notion of degree or scale structure. I do not adopt the alternative framework, because it has been shown to face serious empirical challenges.

Within the first broad framework, there are different versions of actual implementations. In this dissertation, I adopt the analysis of gradability by assuming that a gradable predicate denotes a measure function of the semantic type $\langle e, d \rangle$ from an individual to the individual's actual degree on the relevant scale specified by the gradable predicate, with d being used as the semantic type label for degrees. The measure function corresponding to the adjective *tall*, for example, takes an individual as its argument and yields the individual's height.

As such, the gradable predicate does not denote a property. It cannot directly combine with an argument to yield a proposition. Rather, the predicate has to be transformed into a property of individuals by being the argument to a degree morpheme that most typically specifies some relation between the degree resulting from the subject argument being applied to the gradable predicate and another degree that is either contextually or linguistically supplied. The degree morpheme can be overtly realized in the form of such degree modifiers as *very*, *extremely*, *how*, *more*, and *most*. It also can be a covert POS morpheme that behaves on a par with overt degree morphology (Kennedy, 1999, 2007a). The general structure of intransitive degree morphology can be represented as in (1), in which I use the covert POS morpheme for illustration¹. In the definition of the morpheme (2), STND is a function that yields the contextual standard of comparison for a gradable predicate. Transitive degree morphology involves an extra level of projection corresponding to the second argument (e.g. the *than* constituent for comparative sentences)

¹ Degree morphemes such as *very*, *extremely*, *a bit*, and *POS* involve the degree of one individual argument, and in this sense, they are all intransitive. By contrast, degree morphemes like *more* and *as...as* involve degrees of two individuals and are transitive.

(Kennedy, 2001: p38). For example, the “positive” and “negative” degrees (e.g. length vs. shortness) of an entity x on some scale S correspond to complementary regions on S .



Figure 1: ontology of degrees

The formalization has conceptual and theoretical import. For instance, it provides appealing explanation of the puzzle that negative adjectives are incompatible with measure phrases (e.g. **six feet short* vs. *six feet tall*). Intuitively, measure phrases are understood to have positive polarity and cannot combine with an adjective of the opposite polarity. Degree comparison is meaningful only when the degree arguments have the same polarity of ordering. CPA sentences involve comparison of degrees of opposite polarities, and that is why they are unacceptable.

1.3.Outlines

1.3.1. Chapter 2

Chapter 2 provides a syntactic-semantic interface analysis of a construction in which possessive verbs take degree expressions in the surface object position. Empirical data on which my analysis is based are the degree use of the Chinese possessive verb *you* ‘have’, because the verb is more productive in taking a degree expression than its English counterpart “have”. More specifically, *you* can appear in the “X + *you* + Y + G” construction to express comparison between two individuals X and Y with respect to the property associated with the gradable predicate G (3). The comparative relation shows similar patterns to the English *as...as* equative construction and essentially expresses an equative one. I will propose that the degree use of *you*

specifies a subset/subinterval relation between X and Y along the dimension specified by G. The syntactic representation and semantic function of the equative use of *you* are closely parallel to its other uses.

(3) zhangsan **you** ta gege da/gao/mang/jiji/taorenxihuan

John have his elder brother big/tall/busy/active/pleasing

‘John appears to be as big/tall/busy/active/pleasing as his elder brother.’

My analysis of the degree use of *you* is based on the assumption that *you*, whether in the degree use or non-degree uses, takes a small clause complement and assumes the semantic role of abstraction (Sæbø, 2009; Iatridou, 1996; Ritter and Rosen, 1997; among others). The surface object of the degree use of *you*, “Y + G”, is covertly augmented by a covert predicate P which provides a variable for the variable binder introduced by the Quantifier Raised subject of *you*. In addition, the predicate P contains some relation that eventually links X and Y by way of comparing the two entities along the dimension specified by G. Given the nature of comparative constructions in Chinese, the relation necessarily specifies that Y be a subset/subinterval of X along the dimension specified by G. My analysis captures the meaning of the “X + *you* + Y + G” construction, viz. that X’s degree of being G equals or exceeds Y’s degree of being G. My analysis suggests that the degree use of possessive verbs has similar syntactic representation and semantic interpretation to their other uses.

1.3.2. Chapter 3

Chapter 3 deals with the phenomenon in which a size adjective modifies a gradable noun and characterizes the degree to which the latter holds of an individual (4). There are two constraints

that regulate this degree use of size adjectives. According to Morzycki (2005, 2009), the so-called Position Generalization requires that degree modification of gradable nouns by size adjectives is available only for size adjectives that appear in the attributive position, but not for size adjectives that appear in the predicate position (5). The Bigness Generalization says that only positive size adjectives like *big*, *huge*, and *enormous* can have degree uses when they modify gradable nouns, while negative size adjectives like *small* and *tiny* cannot (6). Morzycki (2005, 2009) took both generalizations to be categorical and adopted a purely semantic approach to analyzing them.

(4) He is an enormous enthusiast of replica Rolex.

=_{degree} His enthusiasm for replica Rolex is enormous.

(5) The idiot standing over there is big.

!= The person standing over there is a big idiot.

(6) John is a small idiot.

!= John's degree of idiocy is small.

In Chapter 3, I will cite empirical evidence to suggest that the Bigness Generalization is a violable constraint. Negative size adjectives indeed can degree-modify gradable nouns in some contexts. Morzycki's purely semantic analysis of size adjectives as degree modifiers cannot account for the violability. In addition, his analysis crucially relies on the unjustified assumption that measure phrases such as *six feet* receive the "at least" interpretation. It also makes several wrong predictions. I will propose an alternative analysis that lies at the interface between the semantics and pragmatics of gradability. Positive size adjectives always can act as degree

modifiers for gradable nouns, because the modification has well-defined semantics no matter what the pragmatic contexts are like. The scale structure of a negative size adjective differs from its positive counterpart in terms of polarity. The standards for an antonym pair of size adjectives each stand in a relation to the standard of the gradable noun they modify. What the relation is like depends on how large the extension gap between the standards for the antonym pair of size adjectives is. The negative size adjective can serve as a degree modifier when the extension gap between the standards for the antonym pair does not exist or is contextually small. In such cases, the standard of the negative adjective with respect to the gradable noun falls above the standard for the gradable noun. The modification of the gradable noun by the negative size adjective does not denote an empty set and, as such, is acceptable. On the other hand, when the contextual extension gap between the standards for the antonym pair of size adjective is contextually large so that that the standard of the negative adjective with respect to the gradable noun falls below the standard of the gradable noun, the negative size adjective cannot act as a degree modifier for the gradable noun. My analysis makes use of the contextual notion of “extension gap” and is more pragmatic in nature. It correctly allows room for contextual variation in negative size adjectives used as degree modifiers.

1.3.3. Chapter 4

In Chapter 4, I will address a small subset of generic sentences of the form *Ks are Q* that are best represented by the Port Royal Puzzle sentence in (7). This subset of generic sentences is special in having rather weak truth conditions: most Dutchmen do not know how to sail, and *a fortiori* do not sail well. I take the sentence in (7) as being representative of generic sentences with weak truth conditions. I attempt to answer two interrelated questions about the semantic interpretation of this particular sentence. The first question is which sub-group of Dutchmen is relevant for

evaluating the sentence, and the second question is how good at sailing this sub-group of Dutchmen should be to verify the sentence.

(7) Dutchmen are good sailors.

I will first show that the most crucial entailment pattern often taken to provide crucial evidence for refuting a quantificational analysis of weak generic sentences can receive an alternative explanation. It does not argue against an analysis of generic sentences that makes reference to the *GEN*(eric) operator. Then I will review two proposals about the semantic interpretation of weak generic sentences, by Cohen (1999, 2001) and Nickel (2009, 2010a) respectively. Both analyses face theoretical flaws and empirical challenges, but each provides some good motivations for the analysis that I would like to pursue. My analysis employs the *GEN* quantifier, restricts the domain of generic quantification, and incorporates degree comparison in the underlying predicate. In the interpretation, I make use of two alternative sets, *ALT*(*K*) and *ALT*(*Q*), which play an essential role in determining two standards. One of the two standards, the “internal” one, specifies the threshold for those individuals in the denotation of $K \wedge ALT(Q)$ to meet in order for them to qualify as being *Q* evaluated within the population denoted by *Ks*. The other standard, the “external” one, specifies the threshold for those individuals in the denotation of $ALT(K) \wedge ALT(Q)$ to meet in order for them to qualify as being *Q* evaluated within the population denoted by *ALT*(*K*). The restriction on the quantification domain makes reference to the “internal” standard, and the degree comparison in the underlying predicate makes reference to the “external” standard.

The semantics of the Port Royal Puzzle sentence in (7) requires that there be generic-many Dutchmen whose sailing skills are good relative to their fellow countrymen exceed the Dutch-external standard of having good sailing skills, and at the same time the Dutch-internal standard of having good sailing skills exceeds the Dutch-external counterpart. My “dual-standard” analysis successfully avoids the problems noted for Cohen’s and Nickel’s analyses.

Chapter 2

Degree Expressions as Surface Objects of Possessive Verbs

2.1 Introduction

This chapter is devoted to examining the degree use of possessive verbs. I will mainly focus on what I call the possessive equative construction in Chinese. I choose to draw on Chinese data because the Chinese possessive verb *you* appears to be more productive than “have” in the degree use. This use of possessive verbs has so far received little discussion in descriptive or theoretical literature. Therefore, in this chapter I will devote some space to providing a detailed description of the use and its most essential linguistic properties. I will also offer an analysis of the syntactic representation and semantic interpretation of the phenomenon.

2.1.1 Diverse meanings of “have”

Before introducing Chinese data, let us start with some more familiar data involving the English possessive verb “have”. It has been observed that “have” can appear in a variety of constructions and have a rather unconstrained range of meanings (Cowper, 1989; Belvin, 1993; Iatridou, 1996; Ritter and Rosen, 1997). The surface object of “have” can be an indefinite nominal phrase that denotes an individual, an event, a time, or even a phrase supplemented by a predicate (1-4).

- (1) a. John has a new car.
b. John had a shock just now.
c. John has three visitors today.
- (2) a. John had a talk with his son.
b. The fans are having a party in celebration of the team’s victory.

- (3) a. I finally had a few minutes to formulate a thought.
b. They had the whole morning to revise the document.
- (4) a. Mary still has a grandparent alive.
b. The boy had his bicycle stolen.

The verb “have” *prima facie* has different meanings in the various contexts. Though a most common reading of the verb is a possessive one, it only accounts for one reading among the broad range of meanings that *have*-sentences can express. On the intuitive level, the verb appears to mean “to possess” in (1a), “to experience” in (1b), “to receive as a guest” in (1c), “to engage or take part in” in (2a), “to carry out or hold” in (2b), “to make at one’s disposal” in (3a) and (3b). What the verb means in (4a-b) is not as clear. It seems that the two sentences can be paraphrased without any trace of “have”. The former means that “Mary’s grandparent is still alive”, and the latter means that “The boy’s bicycle was stolen”.

2.1.2 “Have” taking a degree object

The four different categories of objects that “have” takes in (1) through (4) correspond to, on a pre-theoretical level, individuals, events, intervals of time, and states of affairs. They are notions of different basic semantic types. There is still another basic semantic type that plays an important role in understanding natural language: degrees. In spite of the vast syntactic and semantic differences that exist among all the different semantic types, the domains they represent show strong cognitive and linguistic similarities (Chierchia, 1984, 1998; Partee, 1973; Heim, 2000; Rett, 2008b). Since “have” can take a surface object that denotes an individual, an event, a temporal interval, or a state of affairs, a natural question to ask is whether it also can take a surface object that denotes a degree.

The answer appears to be positive, a point which is already hinted in Bierwisch (1989: p110). The sentences in (5-7) all involve a phrase that *prima facie* denotes a degree. There are reasons to claim that the objects of *have* in the sentences denote some degree notions, rather than individuals. First, *have* usually cannot take a bare definite individual-denoting phrase as its surface object (8). The sentences in (5-6) both involve definite phrases embedded under *have*. This suggests that the two phrases do not denote artifacts of the individual type. Second, it is not acceptable to coordinate, say, *a height of 4 feet* and *a toy teddy bear*. If the former phrase has the same individual type of semantic interpretation as the latter, the coordination should be acceptable. This further suggests that *a height of 4 feet* does not have a denotation of the individual type. Third, the object of this particular use of *have* can be an argument of a comparative sentence that compares degrees, as evident by the sentence in (10). Given all the evidence, it is natural to conclude that the object denotes not an individual, but a degree notion.

- (5) Due to malnutrition, the boy only has the weight of a nine-month-old baby.
- (6) Joan's three kids are all short. None of them has their mother's height.
- (7) The river has a depth of 50 meters and a width of 25 meters.
- (8) *John has Peter's friends. (Gutiérrez-Rexach, 2006: (60a))
- (9) *The boy has a toy teddy bear and a height of 4 feet.
- (10) ?The river has an average depth of 50 feet, which is less than a depth of 50 meters.

The sentences in (5-7) involve dimension nouns (*weight* and *width*). Degrees associated with these dimensions usually can be measured by measure phrases (e.g. *6 lbs*, *dozens of meters*, etc). The scales of such dimensions are often assumed to contain units of measurement

(Bierwisch 1989). There are another set of nominal phrases that are associated with scales on a dimension but with units of measurement. They can take an argument of the individual type to yield a degree on the relevant dimension. Expressions that express such degrees, which generally cannot be measured by a measure phrase, also can serve as the surface object of *have*. For instance, *his love of the land* in (11) measures the extent of affection that the old man shows for the land. However, there is no natural unit to measure degrees of affection. The most natural interpretation of (11) is a degree one: the old man's son did not love the land as much as the old man did. For (12), the object of *have* means something like "the degree to which a preschool teacher is patient".

(11) The old man's only son did not have his love of the land and left to work in the city.

(12) If you cannot have the patience of a preschool teacher, you should not apply for the job.

The claim that the object of this particular use of *have* denotes a degree becomes even clearer against the observation of such sentences as in (13-14). The objects of *have* in the sentences are both headed by the noun *degree*, and as such they unequivocally denote degrees.

(13) Everyone has some degree of instinctive cruelty.

(14) Not all bamboo has the same degree of hardness.

Given my claim that *have* can take an object that denotes a degree, a natural ensuing question is whether a measure phrase, which canonically denotes a degree, can appear as the object of *have*. The answer is negative, as evident by the ungrammaticality of (15). However, the

ungrammaticality of such sentences does not undermine the claim. Rather, I hypothesize that the ungrammaticality of sentences like (15) arises from a syntactic requirement of the English verb *have*: it cannot sub-categorize for measure phrases.

(15) *The machine needs to have at least ten meters.

There has been extensive discussion in the literature with regard to the syntactic structure and semantic function of *have*. However, little attention has been devoted to the use of *have* which embeds a degree-denoting expression as the surface object. The phenomenon raises several interesting questions. Is the underlying object of *have* the same as its surface degree-denoting object? If so, how does the subject enter into a relation with the object in a compositional manner? If not, what extra covert element is involved in the underlying object? What is the syntactic configuration and semantic function of the degree use of *have*? Is this use the same as the other uses in terms of the structure and meaning? In this chapter, I extend Sæbø's (2009) small clause-based analysis of *have* to the degree use of *have*. The gist of the idea is that the object of this use of *have* is covertly "supplemented" by a predicate that specifies a subset/subinterval relation between degrees for two individuals. The verb takes a small clause as its real object. It makes no real semantic contribution to the meaning of the sentence in which it appears. My analysis suggests that *have* has a uniform syntactic and semantic function regardless of what type of surface object it takes.

My analysis of possessive verbs embedding a degree-denoting expression primarily draws data from Chinese. I choose to use Chinese data because the counterpart of *have* in the language is more productive in taking a degree-denoting expression as its surface object. In

addition, by drawing on Chinese data I hope to bring some hitherto under-discussed crosslinguistic data on possessive verbs to the attention of theoretical linguists.

In the next section, I will first describe the construction in which the Chinese counterpart of the English *have* (i.e. *you*) taking a degree expression as its surface object. In Section 3 I show that the construction expresses an equative relation between two degrees. It has similar properties to the *as...as* equative construction in English. Reflecting this similarity, I call the construction the possessive equative construction. In Section 4, I review Sæbø's analysis of the English *have* (in its non-degree uses). The essence of his analysis is that the object of *have* is always a small clause, either overt or covert; *have* contributes abstraction and transforms its small clause object into a predicate. In Section 5, I show that the non-degree uses of *you* show similar empirical patterns to the non-degree uses of *have*, and the small clause analysis, originally developed based on the English *have*, applies to cases in which *you* takes various kinds of non-degree objects. In Section 6, I will extend the small clause analysis to the possessive equative construction: the construction denotes a subset/subinterval relation between two degrees on the same scale. Section 7 concludes the chapter.

2.2 Chinese data on the degree use of *you*

2.2.1 Introduction

In English, *have* is just one of the several lexical items that can express possession. Other such lexical items include *own*, *possess*, and *be in possession of*. These lexical items do not have the same range of uses as *have*. As indicated above, the English verb *have* can take various types of objects and appears to have a diverse range of meanings. By contrast, *own*, *possess*, and *in possession of* are restricted to express ownership, either in the strict sense or in a broadly-construed sense (such as physical access as in *He possesses magic powers*). In particular, while it

is perfect for *have* to take a degree-denoting object, the other possessive predicates cannot be used in a parallel fashion (16-17).

(16) *The boy does not own/does not possess/is not in possession of his mother's height.

(17) *Everyone owns/possesses/is in possession of a degree of desire to seclude.

Chinese behaves in a parallel fashion in this respect. Several lexical items in the language have possession as their core meaning: *you* 'have', *yongyou* 'possess', *zhanyou* 'possess, occupy' and *xiangyou* 'possess and enjoy (rights, prestige, privileges, etc). Of these verbs, *you* is the only one that expresses meanings other than ownership or possession in a rather broad sense. The verb *you* can take objects of different basic types and express possession, location, existence, the part-whole relation, etc. The sentences in (18-20) illustrate some uses of *you* that lack equivalents for the other possessive verbs. More examples will be given later in the chapter when I discuss the similarity between the Chinese *you* and the English *have*.

(18) xuexiao tiyuguan mingtian hui **you**/*zhanyou/*xiangyou/*yongyou yi chang bisai.
school stadium tomorrow will have/*occupy/*enjoy/*possess one CL match
'There will be a game in the school stadium tomorrow.'

(19) yisheng jintian zhi **you**/*zhanyou/*yongyou ban ge xiaoshi de kongxian shijian.
doctor today only have/occupy/*possess half CL hour MOD free time
'The doctor will only have half an hour of free time.'

- (20) na ge fangjian **you**/*zhanyou/xiangyou/*yongyou si shan chuangu
 that CL room have/*occupy/*enjoy/*possess four CL window
 ‘The room has four windows.’

One particularly interesting aspect about *you* is that it is very productive in taking a degree expression as its surface object. More specifically, *you* can appear in the construction “X + *you* + Y + G(gradable predicate)”, to express comparison between X and Y with respect to their degrees along the dimensions specified by the gradable predicate G. The sentences in (21-22) illustrate the general pattern. For the sentence in (21), *zhangsan* ‘John’ corresponds to the X element, *ta gege* ‘his brother’ the Y element, and *gao* ‘tall’ the G element. The sentence means that John exceeds or equals his brother in terms of height. For the sentence in (22), the Y element is *liu yingchi* ‘six feet’. Its meaning is that John’s height equals or exceeds six feet, with an implicature that John is exactly six feet tall.

- (21) zhangsan **you** ta gege gao
 John have his brother tall
 ‘John is as tall as his elder brother.’

- (22) zhangsan **you** liu yingchi gao.
 John have six feet tall
 ‘John is at least six feet tall.’

2.2.2 Comparability between X and Y

The properties of the possessive equative construction have been rarely discussed in the literature. It is worthwhile to spend some space discussing a few essential properties of the individual

components in the construction. They will prove to be helpful in the later analysis. First, on the intuitive level the construction compares X's degree on the dimension specified by the gradable predicate G against Y (when Y is a measure phrase) or against Y's degree on G (when Y denotes an individual, an event, etc). When X and Y both denote an individual, an event, etc, for the comparison to be meaningful, X and Y must be comparable with respect to the dimension or dimension perspective specified by G². If X or Y cannot be associated with a degree on the G dimension, the resulting sentence is either infelicitous or has to be interpreted in some metaphorical sense. The *internal* beauty of a person is different from the *external* beauty of an astronomical phenomenon. This explains the oddness of the sentence in (23)³. In order to make the sentence acceptable, *you* in it can be changed to *xiang* 'like', a preposition which is often used to introduce metaphors. The sentence in (24) is at best marginal. To the extent it is acceptable, it only can be interpreted as an emphatic way to say that John's sister is not smart.

(23) %tade xinling **you** tian shang de xingxing name mei
 her heart have sky in MOD star that beautiful

(24) %shitou dou **you** zhangsan de jiejie congming
 stone even have John MOD sister smart

'Even stone is as smart as John's sister.'

When the comparability requirement is met, the exact denotations of X and Y are flexible.

They can be expressions that denote an individual (25-26), an event (27), or even a time (28).

² A gradable predicate can be ambiguous and associate with more than one dimension perspective. For example, *mei* 'beautiful' can describe the inner beauty of an individual or the external beauty of a thing. I take them to be two separate dimension perspectives.

³ In this chapter I use the '*' symbol to indicate ungrammaticality, and the '%' symbol to indicate infelicity. When the two cases converge, I use the '*%' symbol.

(25) zhangsan mei **you** mali xihuan xue yuyanxue
John not have Mary like study linguistics

‘John does not like linguistics as much as Mary does.’

(26) zhe zhong pingguo zhi **you** pingpang qiu da
this kind apple only have pingpong ball big

‘This kind of apple is only as big as a Ping-Pong ball.’

(27) paobu zenmehui **you** tiqiu youqu?
run how come have play soccer fun

‘How come running is as fun as playing soccer?’

(28) xianzai henduo jiating dou mei **you** guoqu youqian le
nowadays many families all not have before wealthy LE.

‘Nowadays many families are not as wealthy as before.’

In addition, the Y element can be a relative clause (29). I do not think that this case causes a challenge to the claim that X and Y must be able to be compared with respect to G, because Mary’s height and the height that I thought to be associated with Mary are comparable.

(29) mali mei **you** wo xiangxiang de piaoliang
Mary not have I imagine MOD beautiful

‘Mary is not as beautiful as I thought.’

2.2.3 Y being a measure phrase

In addition to being a phrase that denotes an individual, an event, etc, the Y element also can be a measure phrase. In such cases, the possessive equative construction says that what X measures

on the dimension specified by G equals or exceeds the denotation of Y. For example, the sentence in (30) specifies the thickness of the book to be at least 20 centimeters, and the sentence in (31) says that the sword weighs tens of kilograms.

(30) na ben shu **you** ershi limi hou
that CL book have twenty centimeter thick
'The book is as thick as 20 centimeters.'

(31) zhe bing duanjian **you** ji shi gongjin zhong
this CL dagger have several ten kilogram heavy
'The dagger weighs tens of kilograms.'

When the Y element is a measure phrase, the gradable predicate G can be omitted if the linguistic or extra-linguistic context precludes ambiguity with regard to what dimension X is measured against. For (32), the first clause makes depth of the river solely relevant in the utterance context, the dimensional adjective *shen* 'deep' does not have to appear in the complement of *you* in the second clause. For (33), because "kilogram" can only associate with the dimension of weight, the dimensional adjective *zhong* 'heavy' is omissible.

(32) bingquan xiao hu de shui hen qian, zhi **you** yi mi (shen).
Bingquan small lake MOD water very shallow only have one meter deep
'The small lake in Bingquan is shallow and is only one meter deep.'

- (33) na ge baobao chusheng shi zhi **you** liang gongjin (zhong)
 that CL baby born when only have two kilogram heavy
 ‘The baby weighed just two kilograms when he was born.’

2.2.4 Omissibility of Y

When the speaker describes a degree with the use of gestures, or when the linguistic context has already made some degree prominent, the Y element can be omitted. In such cases, a demonstrative pronoun, such as *zheme/zheban/zheyang* ‘this’ and *name/naban/nayang* ‘that’, is mandatory and normally receives focus intonation. In addition, the gradable predicate G can no longer be omitted. The sentence in (34) can be used when the speaker shows a *ping-pong* ball to the hearer and intends for the hearer to know that she is comparing the size of pears to the size of the ball. For the sentence in (35), *name da* in the second clause refers to 18 years old, which has been made prominent by the first clause.

- (34) houyuan li de lizi yijing zhang de **you** zheme da le
 backyard inside MOD pear already grow DE have this big LE
 ‘The pears in the backyard have grown as much as this big.’

- (35) ta sahuangshuo ziji shiba le; zhaogongde zhidao ta mei **you** name da
 he tell a lie self eighteen LE recruiter know he not have that big
 ‘She lied that she was already 18, but the recruiter knew that she was not that old.’

2.2.5 G must be gradable

Because the possessive equative construction compares X and Y with respect to their degrees on the dimension specified by G, G has to be an element that expresses a gradable notion. The

sentence in (36) is ungrammatical precisely because a thing is either imported or domestic, and nothing can fall between. Similarly, the ungrammaticality of the sentence in (37) is due to the fact that the adjective *bingleng* ‘ice-cold’ is not a gradable adjective, as evidenced from the fact that the adjective cannot be modified by degree modifiers like *youdian* ‘somewhat’, *feichang* ‘extraordinarily’, and *jile* ‘extremely’.

(36) *zhe ge paizi de kafei mei **you** na ge paizi jinkou.
this CL brand DE coffee not have that CL brand imported
‘*This brand of coffee is at least as imported at that one.’

(37) *tade shou **you** shitou bingleng.
his hand have stone ice-cold, freezing
‘His hand is as cold as a stone.’

When this gradability requirement is met, the G element can be an adjective, adverb, or verb phrase, as indicated by the example sentences above. The sentences in (21), (26), and (27) all involve an adjective as the G element. The sentence in (25) has a verb phrase as the G element^{4,5}. The sentences in (38-39) illustrate cases where the G element is an adverb phrase.

⁴ It has been a wide-spread idea that in Chinese adjectives can be analyzed as belonging to the category of intransitive stative verb. Evidence crucial for this idea includes adjectives functioning as a predicate without a copula and the presence of the modification marker *de* before adjectives used as adnominal modifiers. Paul (2005) argued that adjectives should be recognized as a separate part of speech in Chinese. I adopt Paul’s analysis here.

⁵ Examples of gradable verbs include *like*, *want*, *understand*, and *respect*. They can be modified by degree modifiers like *very much* and *a lot*, for example. These verbs are gradable and determine an associated scale on their own. For example, *like* is associated with a scale on which elements are degrees of being kind and friendly, and *understand* with a scale whose elements correspond to how well a person comprehends something. There are other verbs which prima facie express gradable notions but are not gradable on their own. For example, the verb *work* can be modified by *a lot*, but it is not a gradable verb, because there is no inherent scale associated with it. It can be modified by degree modifiers, because there are other elements in the event structure that may be gradable. For example, the sentence in (i) can be true when the speaker worked on many things or for a long time. It is the number of things or the amount of time that are a lot, not any degree of the event itself is a lot.

(38) Zhangsan pao de **you** lisi (pao de) kuai
 Zhangsan run DE have Lisi run DE fast

‘Zhangsan runs at least as fast as Lisi does.’

(39) Na jian shiqing zhangsan chuli de **you** lisi (chuli de) tuodang.
 That CL matter Zhangsan handle DE have Lisi handle DE properly

‘Zhangsan handled the matter as properly as Lisi did.’

2.2.6 The optional presence of demonstrative pronouns

A demonstrative pronoun such as *zheme/zheyang/zheban* ‘this’ and *name/nayang/naban* ‘that’ can intervene between Y and G, and their presence does not affect the meaning of the sentences. The sentence in (40) minimally differs from the sentence in (21) in containing the demonstrative pronoun *name* ‘that’, and the two sentences have the same meaning. As in many other languages, Chinese demonstrative pronouns have an additional use as a degree modifier roughly meaning ‘so, very’. This additional use is not the meaning at stake in the possessive equative construction. The evidence is obvious: changing the demonstrative pronoun in a possessive equative sentence to similar degree modifiers like *hen* ‘very’ and *feichang* ‘extraordinarily’ would yield an ungrammatical sentence.

(i) I worked a lot today.

Of course, real gradable verbs can act as the G element in the possessive equative construction. For a verb that is not inherently gradable, only predicates describing the relevant gradable elements (e.g. duration and quantity) in its event structure can be the G element. The verb itself cannot serve as the G element. For example, while (ii) is an acceptable sentence in Chinese, (iii) is ungrammatical.

(ii) zhangsan jingtian gongzuo mei you ta gege duo / shijian chang
 John today work not have his elder brother many/much time long
 ‘John did not work as much/long as his elder brother.’

(iii) *zhangsan jingtian mei you ta gege gongzuo
 John today not have his elder brother work

(40) zhangsan **you** ta gege name gao

John have his brother that tall

‘John is as tall as his elder brother.’

(41) zhangsan mei **you** mali name xihuan xue yuyanxue

John not have Mary that like study linguistics

‘John does not like linguistics as much as Mary does.’

2.2.7 G cannot be modified by a degree modifier

As indicated in the previous subsection, the G element in “X + *you* + Y + G” cannot be subject to modification by adverbial degree modifiers like *hen* ‘very’, *youdian* ‘a bit’, or *feichang* ‘very much’ (42-43). The overall ban of degree modifiers in the construction points to the conclusion that demonstrative pronouns, when appearing in the construction, do not modify the degree to which G holds. Rather, they behave like a pronominal to identify a degree available in the linguistic context.

(42) zhangsan **you** ta gege (*hen) gao.

John have his elder brother very tall

(43) zhangsan pao de **you** mali kuai (*de duo) / (*yidian)

John run DE have Mary fast DE much a bit

2.2.8 The status of dimension nouns as G

It has been pointed out above that the gradable predicate G specifies the dimension against which to measure X’s and Y’s degrees. However, the G element generally cannot be a dimension noun like *zhongliang* ‘weight’ and *gaodu* ‘height’. Changing a G element that is a gradable adjective

to the corresponding noun expressing the same dimension information would generally give rise to ungrammaticality. For instance, the sentence in (44) involves the dimension noun *gaodu* as the G element. The phrase *yaoming de gaodu* is acceptable on its own. The ungrammaticality of the sentence is attributable to *yaoming de gaodu* being embedded under the possessive verb *you*. Its ungrammaticality stands in clear contrast with the sentence in (21). Likewise, the Chinese sentence in (45a) is not grammatical. Comparing it to (45b), its unacceptability appears to stem from the object of *you* containing a dimension noun.

(44) zhangsan feichang gao, */?? ta **you** yaoming de gaodu
 John extraordinarily tall he have Yao Ming MOD height
 ‘John is extraordinarily tall. He has Yao Ming’s height.’

(45) a. *wo laopo dui che mei **you** wo de reqing (chengdu)
 my wife towards car not have me MOD passion degree
 ‘My wife does not have the same (level of) passion for cars as I have’

b. wo laopo dui che mei **you** wo reqing
 my wife towards car not have me passionate
 ‘My wife is not passionate about car as I do.’

In the meantime, it is worthwhile to point out that a special type of dimension nouns indeed can appear as the G element. In Chinese, some dimension nouns are formed out of a pair of antonymous gradable adjectives. For reasons irrelevant for the present purpose, such nouns do not require the presence of the modification marker *de* to introduce the modifier. They can

appear immediately after the Y element without *de*⁶. A possessive equative sentence with a noun of this class as the G element generally has the same meaning as its equivalent with the unmarked positive element of the antonymous pair. For example, the sentence in (46) has the same interpretation as the counterpart in which the G element is *da* ‘big’. Similarly, replacing *cu-xi* ‘thick-thin’ with *cu* ‘thick’ does not affect the meaning for the sentence in (47). Other such dimension nouns include *changduan* ‘long-short, length’ and *shenqian* ‘deep-shallow, depth’.

(46) na ge mugu **you** zuqiu da-xiao
 that CL mushroom have soccer ball size (= big-small)
 ‘The mushroom is as big as a (typical) soccer ball.’

(47) mei ke shu dou **you** wankou cu-xi
 every CL tree all have bowl-mouth thickness(=thick-thin)
 ‘Every tree is as thick as a bowl.’

Not all nouns that are formed out of a pair of adjective antonyms can appear in place of the corresponding positive size adjective in the possessive equative construction. For example, *heibai* ‘black-white’ and *meichou* ‘beautiful-ugly’ cannot be used in such a way, as suggested by the ungrammaticality of (48). They differ from *daxiao* ‘size’ and *cuxi* ‘thickness’ in that they are not dimension nouns. It is no surprise that they cannot appear in the same construction. For example, *heibai* means either “black-white” as in *heibai dianshi* ‘black and white TV’ or “good

⁶ The claim that such combinations are nominal (dimension nouns) rather than adjectival is evident in the fact that they can be used as the head of a relative clause. It is an intuitive assumption and theoretical postulation (e.g. del Gobbo, 2010) that the head of a relative clause is nominal.

(i) shangchuan weijian de daxiao bixu zai shangchuan zhiqian queding
 upload files MOD size must at upload before certain
 ‘The size of every file to be uploaded must be confirmed before uploading.’

and bad” as in *heibai bu fen* ‘cannot tell bad (black) from good (white)’. It does not determine a scale which measures (say) the degree of lightness or darkness of the color of an entity. Likewise, *meichou* generally cannot denote the dimension against which to measure an individual’s degree of being beautiful or ugly.

- (48) *ta de huzi **you** zhi name heibai
 he MOD beard have paper that black-white
 intended: ‘His beard is as white as the paper.’

2.2.9 Different contexts of use

The possessive equative construction is compatible with various linguistic contexts. The sentences in (25), (28), (35) and (41) show that the construction can be negated by affixing *mei* ‘not’ to *you*. The negative form of the construction expresses that X falls below Y with respect to their degrees on the dimension specified by the gradable predicate G. For instance, (28) expresses that many families are less wealthy nowadays than before.

X and Y also can be a quantificational phrase, and the presence of *you* does not bring any extra complexity to the scope relation. For example, the sentence in (49a) says that for each male student there is one corresponding female student such that the former “has the heights” of the latter. It cannot mean that there is a female student such that every male student “has the height” of this particular female student. The scope relation is the same as the sentence in (49b), which does not have contain the verb *you*.

(49) a. (?) mei ge nan sheng dou **you** yi ge nv sheng gao
every CL male student all have one CL female student tall

‘Every male student is as tall as a female student.’

b. (?) mei ge nan sheng dou xihuan yi ge nv sheng
every CL male student all like one CL female student

‘Every male student likes a female student.’

Both X and Y can be questioned with an appropriate *wh*-word. One caveat, however, is that the *wh*-word usually has to be D(iscourse)-linked (Pesetsky, 1987, 2000) for the question to be felicitous. The specification of the two questions in (50-51) explicitly restricts the domain of answers and requires the answers “to be drawn from a set of individuals previously introduced into the discourse, or when the set forms part of the “common ground” shared by speaker and hearer.” (Pesetsky, 2000: p16).

(50) zhe ji ge haizi zhong, shei mei **you** zhangsan congming?
this several CL kid among who not have John smart

‘Among the several kids, who is not as smart as John?’

(51) ni juede zhangsan mei **you** tade naxie tongxue yonggong?
you think John not have his which classmate hard-working

‘Who, among his classmates, do you think John is not as hard-working as?’

2.2.10 Interim summary

In this section I introduced the degree use of the possessive verb *you* in Chinese. The possessive equative construction “X + *you* + Y + G(radable predicate)” expresses comparison between X

and Y with respect to their degrees along the dimension specified by G. I discussed some empirical properties of the construction. X and Y must be comparable with respect to the dimension specified by G. Y can be a measure phrase, in which case the G element can be omitted if the context is clear with regard to the dimension for the measure phrase. G must be a phrase that expresses some *gradable* notion or another. Non-gradable phrases are barred from the position. When the gradability requirement is met, G can be an adjective, adverb, verb phrase, or even a noun of a certain class. G cannot be modified by any degree modifier. A demonstrative pronoun can optionally intervene between Y and G, without affecting the meaning of the sentence. The construction can be used in a variety of contexts.

So far I have described some empirical linguistic facts about the degree use of *you* in Chinese. During the discussion I assumed that the “X + *you* + Y + G” expresses an equative relation between two degrees. In the next section I will justify the assumption by showing that the construction shows similar behaviors to the English *as...as* equative construction.

2.3 An equative construction

2.3.1 Previous proposals

To the best of my knowledge, there has been little discussion in the existing literature regarding the precise meaning of the “X + *you* + Y + G” construction. The only consensus that the limited literature has agreed on appears to be the intuition that the construction expresses some relation between degrees. Under this broad umbrella, different writers take different positions about what the construction exactly means. According to Li and Thompson (1981), the construction is restricted to negative contexts to express inferiority of X to Y in terms of the degrees on the dimension specified by G. Zhu (1982: pp169-170) distinguished the construction into two cases based on what the Y element is. One is where the Y element is a measure phrase or an expression

which denotes some typical measurement (e.g. “a pencil (long)”, “a soccer ball (big)”, “a story of building (high)”). In the other type, Y is an expression that denotes an individual, an event, etc. According to Zhu, for the former type of cases, the construction measures X against Y on the dimension specified by G. For the latter type of cases, the construction uses the measurement of Y on the dimension specified by G as a *standard* for measuring X on the same dimension. It says that X meets the standard. The dichotomization has two immediate issues. First, Zhu divided the construction into two types as if each corresponds to a distinguished interpretation. This division loses the intuition that the two types are essentially variants of the same construction. I would like to make this point clear via a crosslinguistic analogy to English comparative constructions, in which one of the comparative items can be either a measure phrase or some phrase of a different type. Among such construction are the *-er* comparative construction and *as...as* equative construction (52-53). For either construction, no matter what type of phrases it involves, it is just one uniform construction.

(52) a. John is taller than his sister.

b. John is taller than five feet.

(53) a. John is as tall as his sister.

b. John is as tall as five feet.

Liu et al (2001) and Liu (2004) followed Zhu's suit and divided the construction into exactly the same two types. However, they attributed different interpretations to the two types. When Y is a measure phrase, they held that the construction expresses epistemic approximation, that is, that the speaker believes that X *approximately* has reached the degree denoted by the

measure phrase on the dimension specified by G. By using the construction the speaker makes a subjective estimation about X's degree, based on her knowledge or evidence available to her. For example, according to Liu et al, the sentence in (54) says that the speaker estimates John's height to be in the proximity of six feet. For the second type, "Y + G" denotes a standard for comparison; and the construction says that X has reached this standard.

(54) Zhangsan **you** liu yingchi gao.

John have six feet tall

'John is six feet tall.'

Lü (1980) also divided the construction into two different categories. But the interpretation he attributed is more or less the opposite of Liu et al (2001). When Y is a measure phrase, the construction expresses that X has reached what the measure phrase denotes on the dimension specified by G. On the other hand, when Y denotes an individual, event, etc, the construction has a subjective approximation component and expresses that X and Y are *approximately* the same in terms of the degree on the dimension specified by G. For instance, Lü (1980: p559) took the sentence in (55) to mean that the kid and the speaker are *roughly* of the same height.

(55) zhe ge haizi yijing **you** wo gao le.

this CL child already have I tall ASP

'The kid is as tall as me.'

2.3.2 Illusionary epistemic approximation

My criticism against Zhu (1982) applies to Liu et al (2001), Liu (2004), and Lü (1980) as well. In addition, epistemic approximation is not an essential part of the semantic meaning of the possessive equative construction, whether the G element is a measure phrase or not. When the speaker is absolutely certain regarding X's degree on the dimension specified by G, she can still felicitously use the construction. For example, after measuring the heights of two individuals, John and Mary, during a physical check-up, the nurse read the scale and knew what their individual height was. She also was certain that the scale worked accurately. No epistemic approximation was involved in this case, but the nurse still could use the possessive equative construction to report their heights compared to a contextual reference height (56). She also could use the construction to compare the heights of the two individuals, especially when the context does not require the greater informativity whereby John is actually taller than Mary (57). The felicity of the two sentences suggests that epistemic approximation is not an essential part in the semantics of the construction, whether the Y element is a measure phrase or an expression that denotes an individual, an event, etc.

(56) Zhangsan **you** liu yingchi gao, keshi mali mei **you** name gao.

John have six feet tall but Mary not have that tall

'John is at least six feet tall, but Mary is not as tall as that.'

(57) Zhangsan **you** mali gao.

John have Mary tall

'John is (at least) as tall as Mary.'

The scope relation between epistemic and root modals (e.g. deontic modals) provides some additional evidence for the absence of epistemic approximation in the “X + *you* + Y + G” construction. It has been established that epistemic modals necessarily scope over root modals (Cinque, 1999; Hacquard, 2009) and that the reverse scope relation is not possible. If the interpretation of the “X + *you* + Y + G” construction has an epistemic component, the modality most likely comes from *you*. Then *you* should not be able to appear under a deontic modal. But the prediction is not true, as suggested by the grammaticality of (58). It follows that *you* is not a modal. As far as I can see, there is nothing else in the construction that can contribute a modal component to the interpretation.

- (58) (yao xiang shenqing), zhangsan bixu **you** mali gao /liu yingchi gao
 if want apply John must have Mary tall six feet tall
 ‘(If he wants to apply), John must be as tall as Mary / as tall as six feet.’

Moreover, if the “X + *you* + Y + G” construction encodes epistemic approximation in the semantic interpretation, modifying it with an adverbial phrase expressing epistemic uncertainty would give rise to two layers of epistemic modality or noticeable redundancy. This is not the case, however. In fact, when the construction is used to convey approximation, it generally explicitly includes adverbs like *dagai* ‘about’, *chabuduo* ‘roughly’ and *guji* ‘seemingly’. The presence of these epistemic modal adverbs does not introduce a second layer of modality or epistemic redundancy. This suggests that the construction itself does not involve epistemic approximation.

Nevertheless, epistemic approximation is often perceived to be associated with the “X + *you* + Y + G” construction. I propose that the perception is attributable to the Gricean conversational maxims of quality and/or quantity (59-60), depending on the knowledge and/or intention of the speaker. As later discussion will suggest, the “X + *you* + Y + G” construction is an equative construction which says X equals or exceeds Y in terms of the degree on the dimension specified by G. Meanwhile, there are two other comparative constructions in Chinese. The *gen...yiyang*-construction expresses exact identity between two comparative items (61). The *bi*-construction expresses a “more than” relation between two comparative items (62). Given the semantic interpretation of the “X + *you* + Y + G” construction, it functions like a combination of the two constructions and can be considered to be in competition with each of them. In certain contexts the speaker may lack adequate evidence to specify whether X equals Y or X exceeds Y with regard to their degrees on the dimension specified by G. The Maxim of Quality would prompt her to use the possessive equative construction, rather than the two competing constructions that convey more informative messages. This lack of knowledge can be perceived by the hearer as epistemic indeterminacy on the speaker’s side. On the other hand, the speaker may have perfect knowledge about whether X equals Y or X exceeds Y with regard to their degrees on the dimension specified by G. However, she may still use the ‘X + *you* + Y + G’ construction, because more informative contributions are not required for her purpose of communication (Maxim of Quantity). For instance, if the hearer only cares whether John is shorter than Mary, it is sufficient for the speaker to use the sentence in (56) to let the hearer know that John is NOT shorter than Mary. From the hearer’s perspective, this second case is often not distinguishable from the first case and may be taken to involve epistemic approximation as well.

(59) Maxim of Quality

- Do not say what you believe to be false
- Do not say that for which you lack adequate evidence.

(60) Maxim of Quantity

- Make your contribution as informative as is required (for the current purposes of the exchange).
- Do not make your contribution more informative than is required.

(61) zhangsan gen ta gege yiyang gao.

John with his elder brother the same tall

‘John and his elder brother are of the same height.’

(62) zhangsan bi ta gege gao.

John than his brother tall

‘John is taller than his brother.’

2.3.3 The nature of the comparative relation

In this section I argue that the “X + *you* + Y + G” construction shows similar behavior to the *as...as* equative construction in English and is uniformly an equative construction that asserts that X equals or exceeds Y with respect to the property denoted by G. The starting point is the native intuition that the “X + *you* + Y + G” construction compares X and Y with respect to their degree on the dimension specified by G. After this comparative relation being taken a priori, there are just three possibilities regarding the exact nature of the comparison relation the construction expresses: an equative construction that expresses exact identity (“=”) between two comparative items (like the *gen...yiyang* comparative as illustrated in (61)), a comparative one (in the narrow sense of the word “comparative”) which expresses that one comparative item

exceeds (“>”) the other in terms of their degree on the dimension specified by G (similar to the English *-er* comparative or its Chinese counterpart as illustrated in (62)), or the combination (“≥”) of the two construction (similar to the English *as...as* equative construction). I will show that the “X + *you* + Y + G” construction behaves like the English *as...as* equative construction.

The first piece of evidence is native intuition. When asked to translate the “X + *you* + Y + G” construction into English, the most immediate response from a native speaker of Chinese is to paraphrase it as the *as...as* equative construction (“≥”). When X and Y are exactly the same with respect to their degrees on the dimension specified by G, native speakers of Chinese I consulted with all agreed that, besides using the *gen...yiyang* construction expressing exact identity, the “X + *you* + Y + G” construction also can be employed to describe the situation. This suggests that the “X + *you* + Y + G” construction has an identity component in the semantics.

However, exact identity does not account for the whole meaning of the “X + *you* + Y + G” construction. That is, the construction does not have exactly the same meaning as the *gen...yiyang* equative construction. One test to tell them apart involves the subject of an “X + *you* + Y + G” sentence being a quantificational phrase. The truth of the sentence in (63) does not require the boys to be of the same height. The boys only need to be no shorter than the teacher. By contrast, the truth of the *gen...yiyang* sentence in (64) requires that all the boys be of exactly the same height (i.e. the teacher’s height).

- (63) mei ge nanhai dou **you** na wei laoshi gao.
every CL boy all have that CL teacher tall.
‘Every boy is as tall as the teacher.’

(64) mei ge nanhai dou gen na wei laoshi yiyang gao.
 every CL boy all with that CL teacher same high
 ‘Every boy is of the same height as the teacher.’

More specifically, the extra component differentiating the “X + *you* + Y + G” construction from the *gen...yiyang* construction is that the former (partially) involves the “>” relation that is expressed by the *bi*-construction. This is obvious from the fact that a *bi*-sentence entails the corresponding *you*-sentence (65). Taking the additional “=” component into consideration, the “X + *you* + Y + G” construction expresses the “≥” relation.

(65) zhangsan bi ta gege gao. => zhangsan **you** ta gege gao
 ‘John is taller than his brother.’ ‘John is as tall as his brother.’

2.3.4 Factor phrases and measure phrases

Different types of gradable adjectives can occur in the “X + *you* + Y + G” construction, and the semantic interpretation of the construction shows sensitivity to what type of gradable element G is. In this respect the construction once again patterns with the *as...as* equative construction in English, rather than with the English *-er* comparative construction. According to Bierwisch (1989), there are two types of gradable adjectives: dimensional adjectives and evaluative adjectives. The former type of adjectives are those that measure some physical property of an individual, event, etc, such as *tall*, *narrow*, *long* and *shallow*. On the other hand, evaluative adjectives measure some subjective evaluation of an individual and carry the speaker’s judgment. Examples of evaluative adjectives include *wonderful*, *lazy*, *ugly* and *pretty*. The two types of adjectives show different syntactic and semantic properties. Within each type of adjectives, there

exists polar distinction. Adjectives such as *tall* and *deep* are positive dimensional adjectives, and *short* and *narrow* are negative dimensional adjectives. The adjectives *wonderful* and *pretty* are both positive evaluative adjectives, and *lazy* and *ugly* are negative evaluative adjectives.

As far as the “X + *you* + Y + G” construction is concerned, if the gradable predicate G is a positive dimensional adjective or an evaluative adjective (either positive or negative), it can be modified by a factor phrase like *liangbei* ‘twice’ and *shierbei* ‘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. This is illustrated by the sentences in (66-67). If G is a negative dimensional adjective, then it cannot be modified in this way (68).

(66) nvxing chengshou de yali **you** nanxing chengshou de sanbei duo
 female undertake MOD pressure have male undertake MOD three times much
 ‘The female undertakes pressure three times as much as the male does.’

(67) Mali hen chou, keshi ta meimei **you** ta san bei chou
 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.’

(68) *wo xie de wenzhang **you** ni de wubei duan
 I write MOD article have you MOD five-fold short
 ‘*The article that I wrote was five times as short as yours.’

As Bierwisch (1989) pointed out, if the relevant adjective in an *as...as* equative sentence is a positive dimensional adjective or an evaluative adjective, the sentence can be restricted by a factor phrase (69). By contrast, if the adjective is a negative dimensional adjective, the sentence

does not allow any factor phrase, as suggested by the ungrammaticality of the sentence in (70). Therefore, the distribution of adjectives in the “X + *you* + Y + G” construction exactly patterns with the English *as...as* equative construction⁷. On the other hand, the distribution is different from that in the English *-er* comparative construction. No matter what the gradable adjective in an *-er* comparative sentence is, the sentence is compatible with factor phrases (71-72). For some native speakers of American English, though it is not perfect for the comparative form of a negative dimensional adjective to be modified by a factor phrase, the resulting sentence (e.g. (72)) still fares better than the equative counterpart (e.g. (70)).

- (69) 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.
- (70) *The board is three times as short as the table.
- (71) The board is three times longer than the table.
- (72) (?)The board is three times shorter than the table.

Another related empirical test has to do with the fact that the “X + *you* + Y + G” construction disallow modification by a measure phrase which is intended to measure the difference between two comparative items. This is true irrespective of the type of adjectives. In this respect, the construction again behaves just like the *as...as* equative construction in English (73-74) and differs from the English *-er* comparative construction (von Stechow, 1984; Bierwisch, 1989) and the Chinese *bi*-comparative construction. The sentences in (75) suggest that the comparative constructions can be felicitously modified by differential measure phrases.

⁷ The *yiyang* comparative construction in Chinese is not helpful here, because *yiyang* means ‘the same’ and is incompatible with modification by factor phrases.

(73) *zhangsan (mei) **you** mali gao wu limi.
John not have Mary tall five centimeter

(74) *John is 5 inches as tall as his brother.

(75) a. John is 10lbs heavier than his younger brother.

b. zhangsan bi ta didi zhong shi bang.
John BI his younger brother heavy ten pound
'John is 10lbs heavier than his younger brother.'

2.3.5 Negation

The negative form of the “X + *you* + Y + G” construction means that X’s degree on the dimension specified by G falls below Y’s corresponding degree (Li and Thompson, 1981). For example, the sentence in (76) means that John is less happy than Mary today. They cannot be happy to the same degree. Once again, the construction patterns with the English *as...as* equative construction, as suggested by the similarity of (77) to (76) in meaning⁸. On the other hand, the interpretation of the negative form of the “X + *you* + Y + G” construction differs from that of the negative form of the English *-er* comparative and the Chinese *bi-* comparative. The sentences in (78) are both compatible with a situation in which John and Mary are happy to the same degree.

(76) zhangsan jintian mei **you** mali gaoping.
John today not have Mary happy

'John is not as happy as Mary today.'

(77) John is not as happy as Mary today = John is less happy than Mary today.

⁸ Mats Rooth (p.c.) pointed out to me that, though less naturally, the sentence in (77) can mean that John does not have exactly the same degree of happiness as does Mary. I believe that, in this case, the negation in the sentence is not a sentential one, but a meta-linguistic one. To get the reading, special intonation is needed.

- (78) a. John is not happier than Mary today.
 b. zhangsan jintian bu bi mali gaoxing.
 John today not than Mary happy

2.3.6 (Lack of) evaluativity with gradable adjectives

When the G element is not modified by a factor phrase, it can be either a positive dimensional adjective (e.g. *fast*, *tall*, and *expensive*) or a negative dimensional adjective (e.g. *slow*, *short*, and *cheap*). If the G element is a positive dimensional adjective, the “X + *you* + Y + G” construction does not entail the proposition “Y is G” (79). However, when G is a negative dimensional adjective, the equative *you*-sentence consistently entails both “Y is G” (80). The construction again patterns with the English *as...as* equative construction (81-82) and the *gen...yiyang* equative construction in Chinese (83-84). In this regard it differs from the English *-er* comparative construction and the Chinese *bi*-comparative construction. Neither of the two constructions shows a similar pattern, whether the relevant predicate is a positive dimensional adjective or negative dimensional adjective. For example, neither (85) nor (86) entails John’s brother is tall/short.

- (79) zhangsan **you** ta gege gao !→

John’s brother is tall.

- (80) zhangsan **you** ta gege ai →

John’s brother is short.

- (81) John is as tall as his brother. !→

John’s brother is tall.

- (82) John is as short as his brother. →
 John's brother is short.
- (83) zhangsan gen ta gege yiyang gao !→
 John with his elder brother same high
 John's brother is tall.
- (84) zhangsan gen ta gege yiyang ai →
 John with his elder brother same short
 John's brother is short.
- (85) John is taller/shorter than his brother. !→
 John's brother is tall/short.
- (86) zhangsan bi ta gege gao / ai !→
 'John is taller/shorter than his brother.'
 John's brother is tall/short.

In addition, negating the sentences in (79-86), to the extent that the resulting sentences are still grammatical, doesn't affect the original entailment pattern. The insensitivity to negation suggests that the relation between the "X + *you* + Y + G" sentence and the "Y + G" sentence, when G is a negative dimensional adjective, is one of entailment, rather than one of semantic or pragmatic implicature.

When G is a negative evaluative adjective, the "X + *you* + Y + G" construction is consistently evaluative (87). When it is a positive evaluative adjective, whether the construction is evaluative⁹ or not depends on the individual lexical items. For example, both *hao* 'good' and

⁹ Bierwisch (1989) called this type of evaluativity context-related, in order to set it apart from norm-related cases. In this chapter, I subsume the two types of 'relatedness' under the umbrella of evaluativity.

piaoliang ‘pretty, beautiful’ are positive evaluative adjectives, but possessive equative sentences containing them have opposite evaluativity (88-89). The entailment pattern is the same as with the English *as...as* equative construction (Bierwisch, 1989; Rett, 2008a, 2008b). The similarity is evidenced from the fact that in (87-89) the English translations also (dis)entail the corresponding (a-b) sentences.

(87) zhangsan **you** mali lan. →

John have Mary lazy

‘John is as lazy as Mary.’

a. John is lazy.

b. Mary is lazy.

(88) Mali de chengji **you** ta meimei de hao. ! →

Mary MOD grade have her younger sister MOD good

‘Mary’s grades are as good as her younger sister’s.’

a. Mary’s grades are good.

b. Her younger sister’s grades are good.

(89) Mali de wanju **you** ta meimie de piaoliang. →

Mary MOD toy have her younger sister MOD beautiful

‘Mary’s toys are as beautiful as her younger sister’s.’

a. Mary’s toys are beautiful.

b. Her younger sister’s toys are beautiful.

2.3.7 An equative construction

Based on all the above similarities between the “X + *you* + Y + G” construction and the English *as...as* equative construction, I conclude that the “X + *you* + Y + G” construction is an equative construction that expresses the “ \geq ” relation between X and Y with respect to their degrees on the dimension specified by G. This is why in this chapter I call the “X + *you* + Y + G” construction the possessive equative construction.

Before I conclude this section, I would like to address one potential criticism against my claim that “X + *you* + Y + G” is an equative construction. It has been pointed out that one property of equative sentences is that the two comparative items are reversible in order with no noticeable change in their grammaticality or interpretation. For example, (90a) and (90b) are both grammatical, and to some people they appear to have the same interpretation. The Chinese “X + *you* + Y + G” construction, however, does not pass the reversibility test. In fact, (91a) and (91b) express two exactly opposite propositions. The two sentences generally cannot be true at the same time, except in the special contexts in which the brother and the sister happen to be of the same height.

(90) a. The brother is as tall as the sister.

b. The sister is as tall as the brother.

(91) a. gege **you** meimei gao

brother have sister tall

b. meimei **you** gege gao

This irreversibility, however, does not undermine my conclusion that the “X + *you* + Y + G” construction is an equative construction. The reversibility test only holds for specificational constructions that establish an identity relation. Often, specificationality occurs when a property uniquely picks out one individual. For example, because “the smallest even number” uniquely describes the number “2”, the sentence in (92a) is specificational. Reversing the order of the subject and object still yields a sentence (92b) which has roughly the same meaning as the original sentence.

- (92) a. The smallest even number is two.
b. Two is the smallest even number.

An equative construction is specificational only under the “exactly” interpretation, viz. the compared individuals are identical with respect to the relevant property against which the individuals are compared. It collapses when an equative sentence has the “at least” or “at most” interpretations. I will use “non-identity” reading as a cover term for “at least” and “at most” interpretations. The literature has observed that the *as...as* equative construction is ambiguous between the “exactly” reading on one hand and the “non-identity” reading on the other (Rett, 2009). This can be seen from the felicity of the two responses to the sentence in (93). The one in (93a) takes the “exactly” reading of the sentence at stake and overtly denies it. On the other hand, (93b) takes the “at least” reading and denies it. If the *as ... as* equative construction only has the “exactly” interpretation, (93b) would be an infelicitous response. The “at most” reading of the construction can be observed in (94), which most naturally mean that the university planned to hire *at most* 20 new assistant professors. According to Rett (2009), whether a particular *as...as*

equative sentence allows the “at least” or the “at most” interpretation depends on the scalar ordering of its internal argument (e.g. “20 new assistant professors”).

(93) John is as tall as Sue is.

a. No, he is taller than Sue is.

b. Yes, in fact he is taller than Sue is.

(94) The university plans to hire as many as 20 new assistant professors this year.

When the “non-identity” interpretation is the most prominent for an equative sentence, the two comparative items cannot be reversed. Take the sentences in (95) for example. Suppose that the relevant contexts include five boys of varied heights. The most natural reading of the sentence in (95a) is that the shortest boy among the five is no shorter than Sue. Clearly, in such a context the reversed version of the sentence (i.e. (95b)) has the opposite truth value.

(95) a. The boys are as tall as Sue.

b. Sue is as tall as the boys.

The “exactly” reading and “non-identity” reading of the *as...as* equative construction do not have the same status. In this chapter I adopt the position that the “non-identity” reading is assigned by the semantics of the equative construction, while the “exactly” reading is derived via pragmatic scalar implicature (Horn, 1972; Klein, 1980; Chierchia, 2004). There are several reasons for taking the “non-identity” reading to be the semantic default interpretation of the *as...as* equative construction. The first one has to do with how the interpretation of a negative

as...as equative sentence relates to its positive counterpart. When a sentence that expresses an “exactly” proposition is negated, the resulting sentence is compatible with all “non-exactly” cases. For example, for the sentence in (96) to be true, John can have two children or four children. The only excluded number of children is three. If the *as...as* equative construction has the “exactly” reading as the default interpretation, it should behave the same. But this is not the case. The sentence in (97) does not mean that John’s degree of being qualified for the job is not exactly the same as Mary’s degree of being qualified for the job. Rather, it means that John is *less* qualified than Mary. Similarly, for the sentence in (98), it is not the case that we will hire John only under the condition that he has the same degree of being qualified for the job as Sue. The employment can also be granted when John is more qualified than Sue is.

(96) John does not have exactly 3 children.

(97) John is not as qualified for the job as Sue.

(98) We will hire John only if he is as qualified as Sue.

Rett (2009) ¹⁰ argued that the interpretation of the *as...as* equative construction “is sensitive to the scalar ordering of its internal argument.” Her analysis of the construction implicitly assumes that the “non-identity” interpretation to be the semantic default. If the “exactly” reading is the semantic default, reversing the ordering of the internal argument presumably will not switch the interpretation between “at least” and “at most”. There would be no conceivable way to explain why some *as...as* equative sentences have the “at least” interpretation and some others have the “at most” interpretation. Out of the two possible “non-

¹⁰ Rett (2008) assumed that the *as...as* equative construction has the ‘exactly’ interpretation. In Rett (2009), she changed her position.

identity” readings (“at least” and “at most”), the “at most” reading is marked compared to the “at least” reading.

The possessive equative construction has the “at least” interpretation. As far as this interpretation is concerned, the construction is not a specificational one. The requirement whereby the reversibility test need to go through does not hold for the possessive equative construction. In this respect, the construction patterns with the *as...as* equative construction.

Nevertheless, a difference exists between the *as...as* equative construction and the possessive equative construction with regard to scalar implicature. The former is specificational in contexts where the “exactly” interpretation is derivable by scalar implicature. In such contexts the construction passes the reversibility test. By contrast, the possessive equative construction does not have the “exactly” implicature. It does not pass the reversibility test.

With regard to where the difference comes from, there are two potential proposals. One proposal hypothesizes that it roots from the observation that the former involves the copula *be* and the latter uses the possessive verb *you*. The copula *be* can be specificational, but *you* specifies a subset relation, which generally is not reversible (Xie, 2011). The other proposal makes use of the fact that the possessive equative construction is marked compared to the *gen...yiyang* construction and the *bi*-comparative construction. In this regard, it contrasts with the *as...as* construction, because the *as...as* construction is not marked compared to the *the same...as* construction or the *er*-comparative construction. Due to its markedness, the possessive equative construction precludes the “exactly” scalar implicature. I will leave it open to decide which of the two proposals is the right one.

2.3.8 Interim Summary

I hope that through all the discussion above I have established that the “X + *you* + Y + G” construction is indeed an equative construction similar to the *as...as* equative construction. In addition to the possessive equative use, the verb *you* can denote possession, existence, part-whole relation, and so on. A natural question to ask is whether and how the equative use is different from the other uses in terms of the syntactic structure and semantic meaning. Descriptive works, like Lü (1980) and Zhu (1982), treated the various uses of *you* as being separate from each other. Liu (2004) and Zhang (1998), on the other hand, considered all the uses cognitively related in the sense that all of them express some notion or another that is related to possession or inclusion. Though their intuition is essentially on the right track, as descriptive linguists they did not specify how and why they are related.

In the rest of this chapter, I will formalize the intuition of Liu (2004) and Zhang (1998) by offering a syntactic-semantic analysis of the equative *you* which draws on a small clause-based analysis of *have* (Sæbø, 2009). The basic idea is that for a possessive equative sentence of the form “X + *you* + Y + G” to be true, the degree of X on the dimension specified by G is a subset/subinterval of the degree of Y on the same dimension, under the ontological representation of degree as intervals on a dimension.

2.4 Sæbø’s small clause-base analysis of *have*

2.4.1 Motivations

It is not the goal of this chapter to come up with a brand new analysis of possessive verbs which can successfully explain the possessive equative construction. It would be most ideal if a proper extension of an existing analysis of non-equative uses of possessive verbs, coupled with opportune recourse to some empirical properties of degree constructions, can provide a

satisfactory explanation of the possessive equative construction. This, hopefully, would align the syntax and semantics of the equative *you* to the other uses of the verb. Towards this end, it deserves some space to review the particular line of analysis which leads to the proposal that I would like to adopt for tackling the possessive equative construction. And this is the small clause-based analysis of possessive verbs.

It has been frequently observed that the verb *have* can appear in a variety of surface constructions and have a rather unconstrained range of meanings (Cowper, 1989; Belvin, 1993; Ritter and Rosen, 1997). On the intuitive level, the meanings of the verb range from being very clear, to being less clear, and to being pretty vague. This can be seen from the sentences in (99), in which the clarity of intuition regarding the meaning of *have* gradually diminishes from the (a) sentence to the (g) sentence. While *have* in the first sentence can be paraphrased as “to possess”, the same verb in the last sentence appears to defy a precise intuitive definition. Its meaning appears to be far away from anything related to possession, especially given that the popped-off button is not part of the shirt any more.

- | | | |
|------|--|---------------|
| (99) | a. John has a new car. | (possession) |
| | b. John has a headache today. | (experience) |
| | c. John 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) |
| | d. John had many visitors today. | (receiving?) |
| | e. John had a guy shouting at him. | (event?) |
| | f. The baby often has a story at bedtime. | (?) |

g. The shirt had a button pop off of it. (?)

It is obvious from the sentences in (99) that in some uses *have* makes no concrete semantic contribution to the sentence in which it appears. Removing *have* from the sentence, *mutatis mutandis*, often has little effect on the meaning. For instance, the sentence in (99g) has the same meaning as the trivially transformed one in (100). Therefore, it is very likely that *have* is a lexical item with only a functional meaning. In spite of the diverse contexts in which *have* can be used, there may well be just one single underlying structure and one single “meaning core” for all the uses.

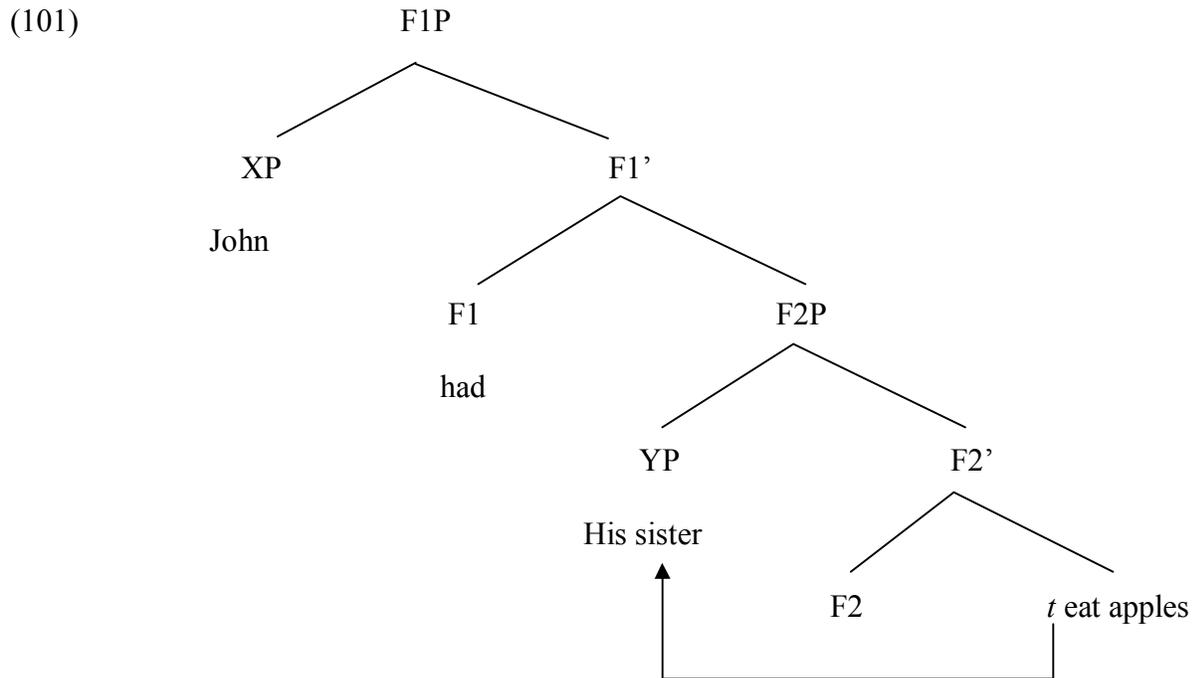
(100) A button popped off of the shirt.

2.4.2 Earlier small clause-based attempts

There indeed exists a large body of syntactic and semantic literature that pursues an analysis of *have* along the lines that the verb only has a functional import. Ritter and Rosen (1997) took a syntactically-oriented approach to pursuing this analytical intuition. They argued that there is just one single verb *have*, and that its diversified interpretations are derived from the syntactic structure that it projects. In spite of its many surface interpretations, *have* itself is not directly attributed with this semantic diversity on the lexical level. Rather, it is a functional item with no specific thematic content to assign. Rather, the verb provides an additional syntactic structure that makes it possible for *have* to have a variety of surface interpretations. The subject of *have* is interpreted either in accordance with the role it plays in the event depicted by the sentence or via co-referring with some element (overt or covert) in the complement of *have*. The verb furnishes the additional syntactic structure that supports the insertion of a covert argument or the activation

of an event structure. The exact interpretation of *have* in a sentence depends on what kind of syntactic structure and relation the verb sets up.

According to Ritter and Rosen, there are two functional projections for a *have*-sentence. The tree structure in (101) demonstrates the skeleton of the projections. For uses of *have* that are not as a perfect auxiliary, the specifier of the lower projection, YP, moves from the complement in the lower projection and corresponds to the DP in the object. The specifier of the higher projection, XP, is based-generated in the specifier position and corresponds to the subject DP. The F1 head manifests as *have*. The subject of *have* receives interpretation by receiving roles in an event or by co-referring. For the auxiliary perfect use of *have*, YP is empty, and XP moves from the complement in the F2P projection.

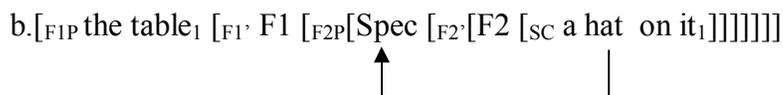


More specifically, when *have* embeds an eventuality, XP is assigned the role of instigator/causer. This holds both for cases in which *have* takes a verbal event argument (102a) and for cases in which *have* takes a nominal event argument (102b).

- (102) a. John had the students read the paper again.
 b. John had a lot fun in the reception.

The subject of non-eventive uses of *have* acquires an interpretation via co-reference with some constituent in the complement of *have*. Take for example the sentence in (103a) with a locational *have* and its syntactic structure as represented in (103b). Intuitively, the sentence means “A hat is on it” with the pronoun “it” referring to the table. The preposition phrase “on it” is predicated of the DP “a hat”. Hence, the argument of *have* appears to express a proposition which roughly is the same as the meaning of the whole sentence. The location interpretation of the sentence derives from the relation between the prepositional phrase predicate “on it” and the phrase “a hat”. The subject of the sentence “the table” co-refers with the pronoun “it”. The surface object “a hat on it” is subject-predicate construction without verbal inflection. It parallels canonical cases of small clauses, as represented by the sentence in (104). Thus, for (103), the surface object of *have* can be understood to be a small clause.

- (103) a. The table has a hat on it. (Ritter and Rosen, 1997: ex.26a)



- (104) I consider John smart.

Ritter and Rosen (1997) pointed out that the predicate in the small clause can be “phonetically null” (p315). For example, they analyzed the sentence in (105a) (their example (45a)) as having the LF in (105b) (their example (46a)). Through the null element *pro*, the matrix subject can co-refer with a covert constituent in the object. Ritter and Rosen also discussed various other uses of *have* to support their co-reference analysis, which I will not review here.

(105) a. John_i has Bill_j's book.

b. John_i has [_{sc} Bill_j's book [_{pp} P *pro*_i]]

The relevance of the notion of “small clause” to analyzing the syntax and semantics of *have* has been further entertained by Iatridou (1996). She posited that *have* “behaves as if it wants a variable in its complement”, which comes either from an indefinite NP or the predicate. When *have* has an indefinite DP alone in its complement, the DP often can provide a variable for the subject of *have* to bind. When the object DP is definite, however, it cannot provide such a variable. In this case, the verb “makes use of its ability to take a small clause complement”, 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 (106) is an example that involves an overt small clause “my car in his garage”. Here the pronoun “his” provides a variable for the subject “John” to bind. On the other hand, when the predicate is covert, Iatridou (1996) called it *TEMP/LOC* to “indicate that it has temporal or locative properties”. For (107), the *TEMP/LOC* predicate can be “under his custody” or “for his temporary use”, the choice depending on the contexts in which the sentence is used.

(106) John had my car in his garage.

(107) John had my car (TEMP/LOC).

2.4.3 Sæbø's small clause-based analysis of *have*

Though Ritter & Rosen (1997) and Iatridou (1996) both made use of the observation that *have* can take a small clause argument that provides a variable which co-refers with the subject, they did not address “the more important question of why HAVE needs a variable in its complement” (Iatridou, 1996: p199). Sæbø (2009) picked up this question by way of providing a formal analysis of the syntactic representation and semantic interpretation of *have*. His analysis is inspired by two essential analytical intuitions. One is that *have* is a lexical item that only has a functional meaning with no thematic role to assign. The other is that the subject of *have*-sentences not only can but also must bind a variable in the complement of *have*. These two points are made explicit in Sæbø's summarization of two most prominent problems that have to be addressed for a sufficient analysis of *have*. The “Redundancy Problem” is best illustrated by cases where the subject of *have* cannot saturate the internal argument of a relational noun in the complement of *have*. In such cases, the complement of *have* appears to contribute the whole “meaning core” of the sentence. The matrix subject appears redundant except for providing information about what the pronoun in the complement of *have* refers to, and the verb *have* just provides such a mechanism to make the referring possible and necessary. For example, the sentence in (108) simply means that Joan's grandparents are all alive. The subject specifies what the pronoun “her” in the complement of *have* refers to, and *have* seems to assume no concrete content.

(108) Joan has all her grandparents alive. (Sæbø, 2009: ex. 11)

The other problem, called the “Pertinence Problem”, states that the subject of *have* has to be related to the object, via binding a variable in the object. Though oftentimes such a variable explicitly exists in the surface object, the binding also can be implicit. For instance, for the sentence in (109) to make sense, the speaker has to 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). If the sentence in (109) is modified in a way such that the surface DP in the object of *have* cannot have a variable for the subject of *have* to bind, the speaker can only be the captain of the ship, but not the spymaster. This is illustrated by the sentence in (110), where the quantifier phrase “every local CIA agent” allows no variable for the subject to bind.

(109) I have a spy aboard. (Sæbø, 2009: ex. 13)

(110) I have every local CIA agent abroad.

Motivated by the two problems, Sæbø (2009) proposed that *have* always takes a small clause as its underlying object. It does not have a thematic role to assign directly. It only contributes abstraction over an individual variable, by way of transforming 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 (either in terms of content or formally). Schematically:

(111) Q_9 λx_9 [... x_9 ...]
 The poor boy has his fingers chopped off.

Given the representation in (111), on the one hand, *have* guarantees its subject to bind an indexed variable in its object. On the other hand, *have* supplies an abstractor over the variable in the object. The abstraction introduces a theta role to the subject of *have*; otherwise, the subject would have no thematic information and be truly redundant. An alternative way to construe it is that the subject of *have* starts out somewhere in the small clause object, with no theta role assigned to it. It moves to the matrix subject position. In this way, *have*-sentences are similar to passive sentences in English.

In Sæbø's final implementation of the idea, *have* achieves abstraction in a roundabout manner. He chose to do so in order to "avoid co-indexing *have* with its subject". I do not think that this co-indexing would cause any conceptual problems. In fact, Sæbø avoided co-indexing *have* to its subject at the cost of bringing other complexities (especially vacuous binding) in his actual final implementation. However, for simplicity of comparison with Sæbø's analysis, in this chapter I will follow the final version of Sæbø's implementation, which does not involve co-indexing *have* with its subject.

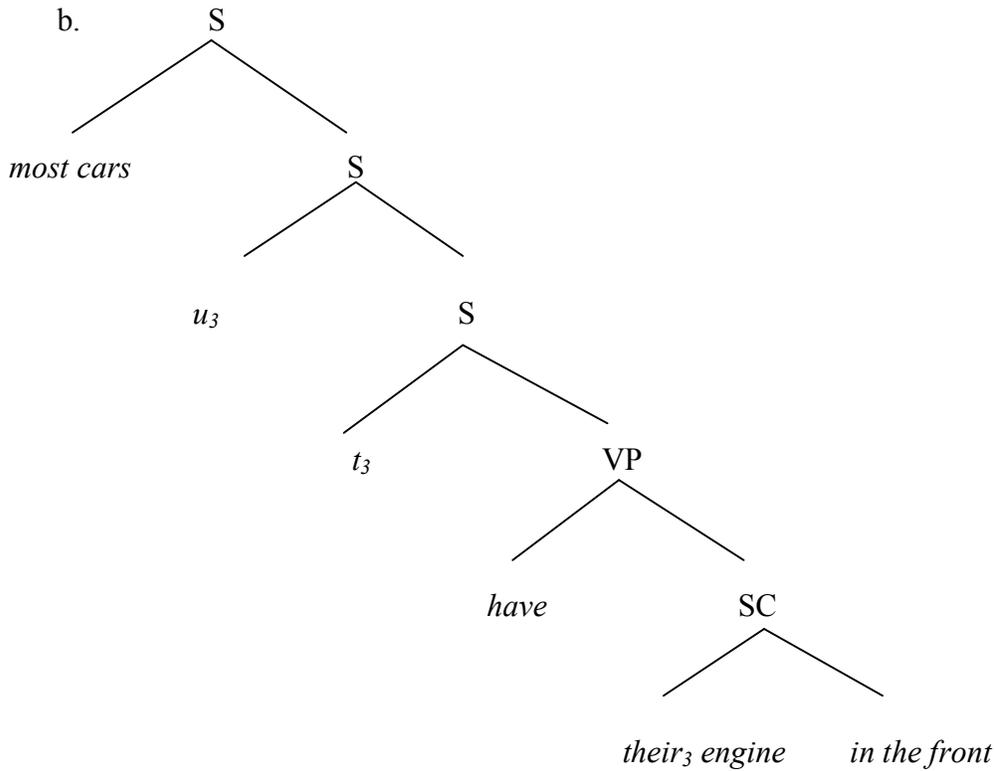
According to Sæbø, the abstraction is achieved in the following way. The subject of *have* undergoes Quantifier Raising, which leaves a trace and introduces a trace variable binder. The trace is absorbed by *have*. The object of *have* is necessarily an overt or covert small clause which contains a variable. This variable needs to be bound. However, after absorbing the trace of the QR-ed subject, *have* "melts away". As such, *have* no longer can bind a variable. However, the variable in the small clause object of *have* still needs to be bound. This imposes pressure on the trace variable binder introduced by the QR to assume the function. Schematically,

The LF in (114) outlines the general representation of QR and variable binding in *have*-sentences. The underlying object of *have* is a small clause. The small clause contains an indexed variable t_i . The verb *have* itself does not bear any indexing. The subject of *have* undergoes QR, leaving a trace t_i and introducing a trace variable binder u_i . To capture the requirement that the variable in the small clause necessarily co-indexes with the subject of *have*, u_i bears the same index as with the variable in the small clause.

(114) $[_{XP} [_{DP} \text{Subj.}] [_{XP} [\mu_i [_{XP} \dots t_i \dots [_{VP} \text{HAVE} [_{SC} \dots \alpha_i \dots]]]]]]$

The representation in (115b) gives the LF of a case in which the variable in the small clause comes from an anaphoric pronoun. The variable also can come from the internal argument of a relational noun or from some argument in the predicate of the small clause.

(115) a. Most cars have their engine in the front.



Sæbø (2009) proposed that *have* denotes a function that transforms its (underlying) small clause object into a predicate that involves the same proposition that is expressed by the small clause^{12, 13}. The semantic definition is constant regardless of variable assignment.

(116) $\llbracket \text{have} \rrbracket = \lambda \phi \lambda x. \phi$

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 is to co-index *have*

¹² Sæbø (2009) took ϕ to be a set of state. For the sake of simplicity, in this chapter I take ϕ to denote a proposition.

¹³ The abstraction mechanism of *have* is similar to that of a relative pronoun (Heim & Kratzer 1998: chapter 5), except for that the latter does not involve vacuous binding.

with its subject. However, in the definition given in (116), no such (co-)indexing exists. Even worse, there is no variable that is bound by the λx . The potential problem of vacuous binding arises. The vacuous binding, however, is necessary for the technical setup. It does not persist through the whole derivation. Specifically, the lambda introduced by the semantics of *have* serves to “throw away” the trace left by the QR of the subject. By doing so, *have* paves the way for the real abstraction to take place through the trace variable binder μ_i introduced by the QR (117). By way of variable assignment, the definition introduces an un-indexed lambda for the variable in the small clause object of *have*. The real abstraction introduces a theta role for the subject of *have*.

$$(117) \llbracket u_i \rrbracket^f = \lambda \phi \lambda z. \llbracket \Phi \rrbracket^{f[i \rightarrow z]}$$

The small clause object of *have* transforms into a predicate without any index. After the subject of *have* combines with the predicate via function application, it saturates the individual argument in the predicate. As such, the subject is naturally pertinent to the complement of *have*. Because a small clause object of *have* necessarily contains a variable, the pertinence is not only possible but also obligatory. This explains the “Pertinence Problem”, which requires that the subject of *have* bind some variable in the complement.

When the surface object of *have* is a bare DP, the DP is generally supplemented by a covert predicate. Sæbø, however, did not address the question of how to determine the covert supplementing predicate. Of course, the issue is important for an explanatorily adequate analysis of the meaning of *have*. If an overt DP object can be supplemented by any predicate, we would expect a *have*-sentence to be multiple-way ambiguous. However, this is not the case. For

example, the sentence “John has a sister” does not mean something like that “John has under his custody a girl who happens to be his sister”, a reading which would be possible if the covert predicate supplementing the object of *have* is unrestricted.

In this chapter I choose to follow Gutiérrez-Rexach (2006: p300-303) in proposing that the predicate is subject to linguistic and contextual constraints. When a cover 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 DP object. The relation either characterizes some essential property for the object or some property conventionally supplied by extra-linguistic contexts. The former type of relation includes existence, kinship, part-whole, etc, and the latter type includes location, custody, 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 (Jensen and Vikner, 1996). In this chapter I take a step further to hypothesize that a contextual, accidental relation kicks in only when the relation involved cannot be essential, such as when an essential relation leads to tautologies or contradiction. For instance, when *have* takes just a definite DP (like “my car” or “the red apple”) as its object, the relation cannot be one of existence, because, being definite, the DP itself presupposes existence. Supplementing the DP with a predicate specifying existence would yield to a tautological statement. Rather, in such cases, the covert predicate should be contextually determined, most likely to specify some temporal and locative information, along the lines of suggestions by Iatridou (1996) and Ritter and Rosen (1997). For instance, the same phrase “have my car” is supplemented with a different predicate in (118a) than in (118b). The predicate is most likely “for temporary use” for the former, but “in his repair garage” for the latter.

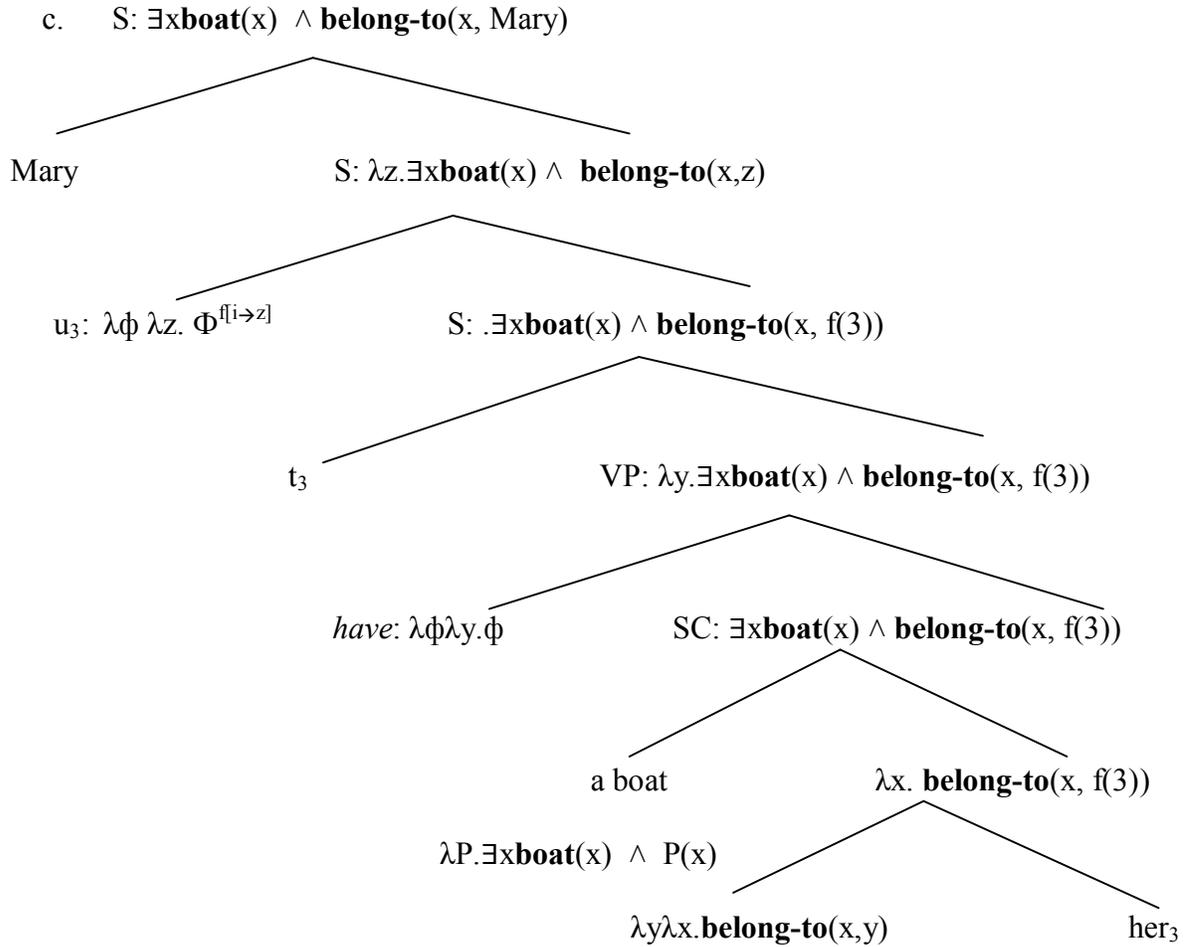
- (118) a. To go to work today, you can have my car.
b. My mechanic sometimes has my car for several weeks.

To illustrate Sæbø's small clause analysis of *have*, let us consider the sentence in (119a), in which the verb *have* only embeds a surface DP "a boat". The LF of the sentence is in (119b), and detailed derivation is given in (119c). Because the DP does not involve a relational noun and does not contain a variable for the subject to bind, the variable is provided by the covert predicate "belong to her₃" that supplements the DP. The predicate, which specifies an essential possessive relation, is determined by considering how a boat could relate to an individual. There are many possible such relations. No contextual information requires the relation to be an accidental one, so an essential relation is kicked in by default. The most inherent relation between a person and a boat is that the former owns the latter¹⁴.

- (119) a. Mary has a boat. (Sæbø, 2009: (44))
b. [Mary [u₃ [t₃ have [a boat [belonging to her₃]]]]]

¹⁴ I should acknowledge that the discussion is a bit stipulative and has potential issues. For example, while the sentence in (119a) is perfect and has a possessive interpretation as discussed, its counterpart with a definite DP is generally not grammatical and, to the extent it is, it does not have the same interpretation as (119a). The contrast illustrates the 'definiteness effect' often discussed in the literature on possessive verbs. The interested reader can refer to Gutiérrez-Rexach (2006) for some relevant discussion.

- (i) Mary has the boat.



The sentence in (120a) is another example. One difference between (119a) and (120a) is that for the latter the covert predicate specifies an accidental property of the object in relation to the subject (e.g. “under his custody”). Except for this difference, the syntactic representation and semantic derivation of the two sentences are the same.

- (120) a. John has all of Mary’s pets.
 b. [John [u_5 [t_5 have [all Mary’s pets [under his₅ custody]]]]]
 c. $\forall x \text{Mary’s cat}(x) \rightarrow x$ is under John’s custody

The verb *have* also has an auxiliary perfect use. The use often causes trouble to attempts for a unified analysis of *have*. De Acosta (2006) suggested that from a historic perspective, the construction in which Latin *habeo* takes a perfect participle small clause serves as the basis for the perfect in modern-day English. Towards the end of his paper, Sæbø (2009) entertained this suggestion and showed that the semantics of the perfect auxiliary use of *have* can indeed be derived from his treatment of *have* as taking a small clause object and abstracting over a variable in the object.

2.4.4 Interim Summary

The small clause-based approach to the syntactic representation and semantic interpretation of *have* has long been entertained in the literature. Sæbø's version is probably the most spelled-out one. According to his analysis, all *have* achieves is abstraction, which (indirectly) turns its object from a small clause to a predicate. Such treatment provides a uniform analysis of the various (non-degree) uses of *have*. However, none of the literature pursuing the small clause-based approach, Sæbø (2009) included, considered the possessive degree construction. In order to determine whether the small clause-based approach is explanatorily adequate, the possessive equative construction should be examined. This is especially important given that the small clause-based approach is just one of the several analyses of *have* that have been proposed in the literature. In the next section I will show that Sæbø's analysis can be readily extended to the possessive equative construction.

2.5 The small clause analysis and the Chinese *you* in its non-degree uses

Obviously, Sæbø's discussion was primarily based on English data. Even within English, he considered only the non-degree uses of *have*. There are two closely-related questions that still

remain to be tackled. The first one is whether his small clause-based analysis is extendable to the non-degree use of the Chinese *you*. The other one is whether the analysis can be applied to the possessive equative construction. In this section, I will focus on the first question. In particular, I will observe some similarities between non-degree uses of *you* with non-degree uses of *have*. These observations are compatible with or even point to the essential analytic intuitions that drive the small clause-based analysis: (i) the verb *you* is a lexical item that has a mere functional meaning with no semantic role to assign (i.e. the “Redundancy Problem”), and (ii) the subject of non-degree *you* binds a variable in the complement of the verb and has not other semantic import (i.e. the “Relevance Problem”). I believe that the similarities would establish that Sæbø’s analysis of non-degree uses of *have* can be applied to non-degree uses of *you*.

2.5.1 The diverse uses of *you*

On the intuitive level, the Chinese *you* appears to have a wide range of meanings. The heterogeneity of intuitive meanings of *you* is very similar to the case with *have*. The sentence in (121) says that John is in possession of some new car. (122a-b) specify what exists on the table. (122a) involves the subject *zhuozi shang* ‘table-top’. Following Huang (1987) I assume the subject is not a prepositional phrase, but a locative DP/NP. (122b) does not have an overt subject. The two sentences have very similar interpretations. (123) can be understood to involve an existential reading, as suggested by the English translation with *there be*. It is different from (122a) in that the subject does not denote a location. (124) expresses a part-whole relation between the windows and the room. (125) means that John being to the Great Wall has happened¹⁵. However, for some other uses, their intuitive meaning is not clear. Does the sentence

¹⁵ The use of *you* as an aspect marker is grammatical only in some dialects and registers of Chinese. Compared to the regular *guo* perfect maker, *you* is often used to stress “something has been done” in an attempt to dispute a previous claim that the thing has not been done.

in (126) mean the doctor will have the experience of seeing many patients today? Does the sentence in (127) mean they somehow possess or experience some relevant interest? Still for some other sentences, their intuitive meanings of *you* are even murkier. The verb *you* in (128) is absolutely optional and appears to contribute nothing to the structure and meaning of the sentence. For the sentence in (129), *you* takes a clause as its surface object and cannot have the hypothetically most likely “existence” or “part-whole” meaning, because the button has already fallen off from the shirt. The examples represent a broad range of contexts where the Chinese verb *you* can be used.

(121) Zhangsan **you** yi liang xin che (possession)

Zhangsan have one CL new car

‘Zhangsan has a new car.’

(122) a. zhuozi shang **you** san ben shu (location/existence)

table top have three CL book

‘There are three books on the table.’

b. **you** san ben shu zai zhuozi shang.

have three CL book at table top

‘There are three books on the table.’

(123) zhe ge anzi zuijin **you** le xin de jinzhan (happening)

this CL case recently have LE new MOD progress

‘Recently there has been some development with the case.’

- (124) zhe ge fangjian **you** si shan chuanguhu (part-whole)
 this CL room have four CL window
 ‘The room has four windows.’
- (125) zhangsan **you** qu guo changcheng. (aspectual)
 John have go GUO the Great Wall
 ‘John has been to the Great Wall.’
- (126) Wang yisheng jintian **you** henduo bingren (relational? experience?)
 Wang doctor today have many patient
 ‘Dr. Wang has many patients today.’
- (127) tamen **you** xingqu nadao suoxu de wenjian. (possession? experience?)
 they have interest obtain needed MOD document
 ‘They are interested in getting all the required documents.’
- (128) ta guang Beijing jiu qu le **you** haoji tang. (?)
 he alone Beijing EMP go LE have quite a few round of trip
 ‘He went to Beijing quite a few times, (let alone other places.)’
- (129) ta chenyi **you** ge niukou diao le (?)
 his shirt have CL button pop off LE
 ‘His shirt has a button pop off of it.’

2.5.2 The “Pertinence Problem” with *you*

Not only do *have* and *you* share a similar range of uses, but also in their shared uses, they display very similar properties. For the purpose of this chapter, I will discuss some similarities that are most relevant for extending the small clause-based analysis to the non-degree uses of *you*. In particular, I will examine whether and how the two general problems that motivate the small

clause analysis are relevant to the Chinese *you*. Let us start with the “Pertinence Problem”, which says that the subject of the possessive verb has to be pertinent to an element in the object. This holds for the canonical possessive use of *you*, because the subject must be related to the object by possessing it. The sentence in (130) will express a false proposition if any of the three books belongs to anyone else.

- (130) zhangsan **you** san ben shu
John have three CL book
‘John has three books.’

Things are more complex for the existential use of *you*. As discussed in Huang (1987), a *you*-existential can contain an overt locative DP subject (as in (122a)) or nothing overt occupies the subject position (as in (122b)). When the locative subject is overt, it denotes a location which relates to the object such that the location is where the object is asserted to exist. The pertinence relation between the subject and the object is obvious. When nothing overt is in the subject, there are two sub-cases, in which the pertinence relation is less obvious. In the first sub-case, the subject is contextually implied. This is possible because Chinese is a pro-drop language. The object of *you* can be pertinent to this pragmatically supplied subject. For instance, the sentence in (131) has an understood subject depending on the context of use (e.g. *chufang li* ‘kitchen-inside’, *zhe’er* ‘here’). The understood subject is the place where the object is located. In the second sub-case, the subject is a semantically empty expletive (132), and the pertinence relation is satisfied vacuously. The interested reader should refer to Huang (1987) for more discussion.

(131) **you** gui!

have ghost

‘There are ghosts (here).’ (Huang, 1987: p227)

(132) **you** san ge ren zai fangjian li shuohua.

have three CL people at room inside talking

‘There are three people talking in the room.’

In addition, when there is more than one way for the subject of a *you* sentence to be pertinent to an element in the object, the sentence is ambiguous. For example, the referent of *tamen* ‘they’ in (133) can bear a relation either to *mitan* ‘spies’ or to *chuan* ‘ship’. Just like the English sentence in (109), (133) is ambiguous between the situation in which the referent of *tamen* are operatives of the spies and the situation in which they are captains or owners of the ship.

(133) **tamen you** ji ming mitan cang zai chuan shang

they have several CL spy hide at ship in

‘They *have* several spies hidden on the ship.’

Furthermore, if the pertinence requirement for the subject of *you* is not satisfied, unacceptability would arise. In (134), the noun phrase *shizhengting* ‘town hall’ is hard to be conceived as being pertinent to the subject *tamen*. Nor can there be a covert supplementing predicate containing an element that is pertinent to the subject. This is why the sentence is ungrammatical.

(134) %tamen *you* ji ge moshengren zai shizhengting waitou shuohua
 they have a few CL stranger at town hall outside talk
 ‘%They have a few strangers talking outside of the town hall building.’

2.5.3 The “Redundancy Problem” with *you*

One essential characteristic of the small clause-based analysis of the possessive verb *have* is that it is a functional item without content contribution. If the syntax of a construction that contains a function item does not require overt presence of the item, then the item is optional. For *you*, there indeed exist cases where its semantic contribution is so trivial that it can be totally omitted without affecting the meaning of the sentence. For such cases, the subject has to be a clause which denotes a state or repeatable event that can be measured, and the object denotes the temporal duration of the state or the number of units (times, rounds of trips, etc) that the event happened. The omissibility of *you* in such cases suggests that it is most likely a functional item and makes no contribution to its semantic content. In (135) *ta dai yanjing* is a clausal subject; *hao ji nian* in the object position of *you* specifies how long the state of his wearing glasses has lasted¹⁶. The sentence means the same as its counterpart without *you*. The same remark applies to the sentences in (136).

(135) ta dai yanjing yijing (*you*) hao ji nian le
 he wear glasses already have some several year ASP
 ‘He has worn glasses for quite a few years.’

¹⁶ The verb *you* in (135) is not a perfect auxiliary. If it were, it would require a main verb in the predicate of the sentence. The subject is a clause, and the verb *dai* cannot be the main verb for the whole sentence. Therefore, *you* is the predicate for the whole sentence.

- (136) a. zhangsan guang Beijing jiu qu le (**you**) san tang
 John alone Beijing EMP go LE have three round of trip
 ‘John has made quite three trips to Beijing, (and he has done other things).’
- b. ta bing le **you** san ge yue le.
 he ill LE have three CL month LE
 ‘He has been ill for three months.’

2.5.4 *you* taking a surface small clause object

Just like the English *have*, *you* also allows a surface small clause as the object. Huang (1987) already argued that in an existential *you*-sentence in which a DP object is supplemented by a predicate, the object and the predicate together can be understood as a small clause. When an overt small clause is involved, the subject in the small clause can be either a weak or a strong DP. The sentence in (137) involves a weak DP, while (138-139) a strong DP. When the object is a weak DP, the supplementing predicate can be a stage-level or an individual-level one. However, when it is a strong DP, it can only be a stage-level predicate.

- (137) na ge lao ren xianzai zhi **you** ge nüer hai huozhe
 that CL old man now only have CL daughter still alive
 ‘Now the old man only *has* a daughter still alive.’
- (138) ta **you** naxie zhengju zai shou, yinggai gao na jia gongsi.
 he have those evidence in hand should sue that CL company
 ‘He has the evidence in hand and should sue the company.’

- (139) zhangsan mingtian **you** zhe san fen wenjian yao qian
 John tomorrow have this three CL document need sign
 ‘John has these three documents to sign tomorrow.’

Moreover, it has been repeatedly observed in the literature that the preposition *with* in English allows a small clause as its argument (van Riemsdijk, 1978; Fabricius-Hansen, 2006). The Mandarin verb *you* can be used very similarly, just as if it is just a preposition taking a small clause complement. The Chinese sentence in (140) has exactly the same meaning as the English sentence in (141). This parallel behavior provides additional evidence that a small clause can figure in as the object of *you* in Chinese.

- (140) **you** moshengren aichang, na ge haisi mei gan changge.
 have stranger present the CL child not dare sing

- (141) **With** strangers present, the kid didn’t dare to sing.

2.5.5 Some differences between *you* and *have*

The two verbs, *you* and *have*, do not have exactly the same range of uses or the same linguistic properties. Each has uses that the other does not share. For example, *you* does not have the causative use as English *have* does, as illustrated by the grammaticality contrast between (142a) and (142b). However, the absence of such a use per se poses no challenge to extending Sæbø’s analysis to the Chinese possessive verb. Sæbø took the causative *have* to be a separate lexical item, citing the evidence that in Mainland Scandinavian and German the causative reading corresponding to causative *have* in English is expressed by a verb different from the non-

causative correspondent of *have*. It is reasonable to assume that in Chinese the two lexical items do not converge into one either.

(142) a. Yesterday the teacher had the students read the article three times.

b. zuotian laoshi ***you**/rang/shi xuesheng du (le) na pian wenzhang san bian.
yesterday teacher have/let/make student read ASP that CL article three time

On the other hand, the Chinese verb *you* has its own peculiar uses that are absent from *have*. We have already seen that English does not have the equivalent of the sentences in (135-136). Here is an additional peculiar use of *you* that *have* lacks. *You* can be used to divide a group of individuals into subgroups based on distinguishing properties. The sentence in (143) involves this use of *you*. It enumerates groups of kids based on what activities they are doing. The English *have* has no equivalent use. Without getting into formal details, I hypothesize that this particular use of *you* is just a special case of its existential use. The sentence in (143) means that there are kids who are running, there are kids who are jumping, and there are kids who are playing basketball, and no kids are doing other activities. If the hypothesis is on the right track, this special use does not challenge the small clause-based analysis of possessive verbs, because the analysis is able to cover the existential use of possessive verbs.

(143) na'er haizi hen duo, **you** pao de, **you** tiao de, **you** da qiu de
there kid very many have run MOD, have jump MOD have play ball MOD
'There are many kids, some running, some jumping, and some playing ball.'

Even in the same use, *you* and *have* may exhibit distinct properties. For example, both verbs can take an overt small clause as its surface object. However, as discussed by Iatridou (1996), for the English *have*, the predicate in the small clause is a stage-level/episodic one. The restriction is much looser in the case of the Chinese *you*, as is evident from the grammaticality contrast between (144) and (145).

(144) a. *He has a student very smart.

b. He has a student standing over there.

(145) ta **you** ge xuesheng hen congming

he have CL student very smart

‘He has a student who is very smart.’

2.5.6 Extending the small clause analysis to non-degree uses of *you*

I have shown in sections 2.5.2-2.5.4 that the “Pertinence Problem” and “Redundancy Problem” also hold for the Chinese *you*. It is right the two problems that motivate Sæbø’s analysis of *have* as an abstractor. The similarities between *you* and *have* point to that the small clause-based analysis of the English *have* can be extended to *you*, (at least) as far as their shared non-degree uses are concerned.

It already has been observed that non-degree uses of *you* can take an explicit small clause as the object. In this case, the small clause must contain a variable which the subject of *you* can bind. This variable can be the internal argument of a relational noun in the small clause. For example, in (146) the overt object of *you*, *yixie lingjian huaile* ‘some parts broken’, expresses a proposition on its own and constitutes a small clause. The noun *lingjian* ‘a (mechanical) part’ expresses a relational notion because a part is always a part to some host (a

computer, a car, etc). The internal argument of the relational noun *lingjian* can be construed as a variable that needs to be bound by the subject of *you*. The sentence can be paraphrased as (147), which does not contain the verb *you* and has the internal argument position of *lingjian* ‘a part’ filled by *jiqu* ‘a machine’. The noun *jiqu* ‘a machine’ modifies, and forms a constituent with, *lingjian* ‘a part’. This claim is supported by the fact that the modifier marker *de* can be inserted between them (*jiqu de yixie lingjian* ‘some parts of the machine’) without affecting the meaning of the sentence. The equivalence of meaning indicates that in the original sentence in (146) *you* has no semantic role to play. The verb only provides a mechanism such that the matrix subject can saturate the internal argument of the relational noun. Sæbø argued that, for the English *have*, the saturation is achieved through the matrix subject binding a variable in the small clause object. I propose that for Chinese *you*, the saturation is realized in a parallel fashion.

(146) *jiqu you yixie lingjian huai le*
 machine have some part broken ASP

‘The machine has some parts broken.’

(147) *jiqu (de) yixie lingjian huai le*
 machine MOD some part broken ASP

Second, when non-degree uses of *you* take a definite phrase in its object, the phrase has to be followed by an overt predicate, and the overt predicate has to include a variable for the matrix subject to bind. For example, in (148) *xiachang bisai* ‘the next competition’ refers to one particular competition in a context and is a definite expression. Its presence in the sentence is ungrammatical unless it is supplemented by a predicate such as *yao canjia* ‘has to attend’.

Crucially, the predicate itself contains a variable which corresponds to the agent for *canjia* ‘attend’. The matrix subject binds the covert variable, and *you* makes the binding possible and necessary. The sentence can be paraphrased as (149) without the verb *you* but with the subject of *you* filling the subject position of the resulting clause. Again, the equivalence of the two sentences suggests that *you* makes no semantic contribution to the meaning of the sentence, except for providing a formal mechanism whereby the subject of *you* binds a variable in the small clause object.

(148) ta hai **you** xia chang bisai *(yao canjia).

he still have next CL competition must attend

‘He still has the next competition *(to attend).’

(149) ta hai yao canjia xiachang bisai.

The above two cases of *you* both involve an overt small clause as the object of *you*. There exist many cases in which *you* embeds a bare DP object without an overt supplementing predicate. Just as with English *have* sentences, in such cases the surface DP can be understood to be supplemented by an implicit predicate. For instance, for the canonical possessive use of *you*, its surface object is a DP (150a). With the small clause-based analysis of possessive verbs, the possessive interpretation does not come from the verb *you* per se. It is contributed by a covert predicate. This predicate cannot be a random one, but is restricted by some essential relation between the object and the subject. A person and a book, for example, are essentially related by the possessor-possessee relation (Gutiérrez-Rexach, 2006). The covert predicate for the canonical possessive interpretation of possessive verbs is something like “in her possession”.

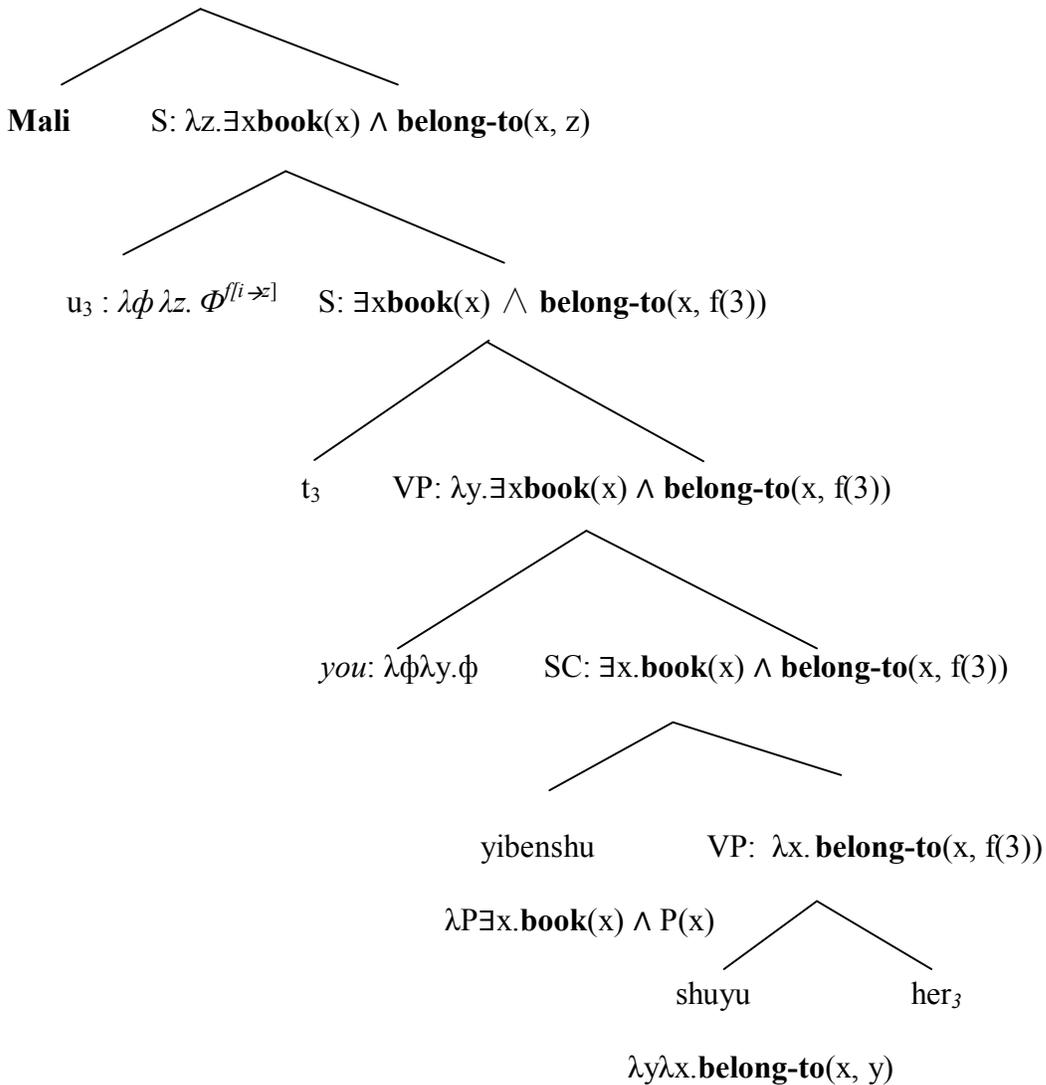
Adopting the formal representation proposed by Sæbø (2009), the Logical Form and semantic derivation of (150a) is given in (150b).

(150) a. mali **you** yi ben shu [shuyu ta].

Mary have one CL book in her possession

‘Mary has a book.’

b. S: $\exists x.\mathbf{book}(x) \wedge \mathbf{belong-to}(x, \text{Mary})$



This brief examination of the applicability of the small clause-based analysis of *have* to the Chinese *you* further suggests that the analysis successfully captures non-degree uses of *you*. In the next section, I will show that the possessive equative construction receives a natural explanation under the same analysis.

2.6 Analyzing the possessive equative construction

Recall that in Chinese there is a possessive equative construction of the form “X + *you* + Y + G”, as illustrated in (151). The construction means that X’s degree on the dimension specified by G exceeds or equals Y’s degree on the same dimension. Now that I have established that the small clause-based analysis of *have* is applicable to the non-equative uses of Chinese *you*, the question is reduced to whether this analysis can be extended to the possessive equative construction. Given how the small clause-based analysis works, the question further boils down to whether there can be an appropriate variable that can be bound by the subject of *you*. The variable is co-indexed with the subject and is present in “Y + G” or in a covert predicate which exists within or supplementing “Y+G”. 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. Otherwise, an alternative analysis should be sought for to explain the use of *you* in the possessive equative construction.

- (151) zhangsan **you** ta gege gao
John have his brother tall
‘John is as tall as his elder brother.’

2.6.1 “Y + G” is not a small clause

It is worth pointing out first that “Y + G” itself is not a small clause. There are many pieces of evidence in support of this claim. First, a small clause differs from a full-fledged clause only in that the former lacks an inflectional category. Because the missing inflectional category does not have semantic import, a small clause also denotes a proposition. Therefore, if “Y + G” itself is a small clause, it would have the same semantic interpretation as “Y is G” or “Y is G-er”, depending on what morph-syntactic properties of G (see Grano, 2011). The verb *you* does not affect entailment. We can expect the possessive equative construction to necessarily entail “Y is G” (or “Y is G-er”). However, the construction does not have such an entailment pattern¹⁷. For example, Rhode Island is the smallest state in terms of area among the 50 US states. Thus, “Rhode Island is big” and “Rhode Island is bigger” are both false in a context of comparing states in the US. If *luodedao zhou da* ‘Rhode Island is big(ger)’ in the sentence in (152) is a small clause, then the whole sentence would entail *luodedao zhou da*. Because the entailed proposition is false, the entailing sentence should also express a false proposition. But this is not the case. From this, we can conclude *luodedao zhou da* in (152) cannot be a small clause.

- (152) xinzexi zhou de mianji **you** luodedao zhou da
New Jersey state MOD area have Rhode Island state big
‘The state of New Jersey has an area as big as the state of Rhode Island.’

¹⁷ When the relevant adjective is inherently evaluative, the entailment pattern does exist. 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.

- (i) zhangsan you ta gege name ben
John have his elder brother that stupid
‘John is as stupid as his brother.’

In addition, when the Y element is a measure phrase rather than a phrase denoting an individual, event, etc, 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. If “Y + G” was a small clause, it would be equivalent to saying that any degree on the dimension associated with G exceeds the standard of being G. Obviously, this cannot be the case.

Second, a demonstrative pronoun such as *name* ‘that’ and *zheme* ‘this’ can optionally intervene between the Y element and G element, whether Y is a phrase denoting an individual, event, etc, or a measure phrase (153). What such a demonstrative pronoun refers to is dependent on the immediate context in which it is used. In Chinese, a demonstrative pronoun such as *name* and *zheme* cannot refer to a proposition. This is another piece of evidence that “Y + G” does not denote a proposition and thus cannot be a small clause.

(153) zhe ben shu mei **you** na ben na'me youyisi.
this CL book not have that CL that interesting
‘This book is not as interesting as that one.’

(154) yuanzi li de shu yijing **you** men zheme gao le
yard inside MOD tree already have door this tall ASP
‘The tree in the yard is already as tall as the door.’

Still another piece of evidence has to do with modifying of the G element with a factor phrase like *half* and *three times*. The sentence in (155) is grammatical. However, *ta meimei yiban yonggong* is ungrammatical if it is used as an independent clause (156). The ungrammaticality is attributable to the fact that the adjective *yonggong* ‘diligent’ has an open scale and cannot be

modified by “half” when it is used as a predicate (Kennedy and McNally, 2005). The grammaticality of (155) suggests that *yonggong* in the sentence is not a predicate, and as such *ta meimei yiban yonggong* cannot be a small clause.

(155) zai xuexiao, zhangsan zhi **you** ta memei yiban yonggong
at school John only have his younger sister half diligent
‘John is only half as diligent as his younger sister at school.’

(156) *ta meimei yiban yonggong

A closely related piece of evidence is that G cannot be modified by a degree modifier in general such as *hen* ‘very’ and *feichang* ‘extraordinarily’ (157). This is obviously different from a simple degree sentence, in which the gradable predicate can be modified by a degree modifier (158). The fact provides further support to the claim that G is not used as a predicate in the possessive equative construction, and that “Y + G” is not a small clause.

(157) wo zoulu **you** wo baba qi che (*hen) kuai.
I walk have my dad ride bicycle very fast
‘I walk as fast as my dad rides a bicycle.’

(158) wo baba qi che hen kuai.

2.6.2 Two restrictions on the dimension

In the possessive equative construction “X + *you* + Y + G”, the “Y + G” chunk does not denote a proposition. Furthermore, the chunk does not involve an anaphor, pronoun, relational noun, etc that can contribute a variable which eventually co-indexes with the subject X. In order for the

small clause analysis of possessive verbs to extend to the possessive equative construction, there has to be a variable in the complement of *you*. I propose that for the construction the variable is supplied by a covert predicate P that augments “Y + G”. The remaining task is to explore whether an appropriate predicate with a variable can be proposed from independent facts.

The previous discussion has already established that the possessive degree construction expresses some comparative relation. For a comparison to make sense, the two comparison items have to be comparable in the first place. It is valid to compare an apple to an apple, not an apple to an orange. On the intuitive level, the possessive degree construction “X + *you* + Y + G” compares X and Y with respect to the dimension specified by G. But is there any empirical evidence beyond intuition to motivate the claim that X and Y are compared with respect to one common dimension, i.e. G-ness?

There are indeed two restrictions, one crosslinguistically general and one Chinese-specific, to warrant the claim. The first one has to do with what is called degree incommensurability (Kennedy, 1999). Adjectives that have different dimensional properties are anomalous in comparative and equative constructions. This anomaly exists both in English and in Chinese (159-160). Therefore, for the possessive equative construction, the dimension against which Y is measured has to be the same as X is measured. More concretely, for (161), the dimension used to measure John has to be the same dimension to measure his brother, and this common dimension is the physical extent of entities. The sentence cannot mean, say, that John’s degree of intelligence equals or exceeds John’s brother’s height.

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

(160) a. *zhe ben shu gui bi na tai diannao zhong
this CL book expensive BI that CL computer heavy

a. *zhangsan kuai gen mali congming yiyang
John fast with Mary clever the same

(161) zhangsan **you** ta gege gao
John have his brother tall

‘John is as tall as his elder brother.’

There is another firmer restriction in Chinese. In Chinese, even when two adjectives express the same dimension (e.g. physical extent) but different dimensional perspectives (e.g. height vs. width), they are prohibited from appearing in a comparative or equative sentence. This particular constraint manifests itself in the subdeletion construction, a comparative/equative structure in which the embedded clause involves a predicate of a different dimensional perspective than the main clause does, and can stand on its own as an independent clause. Subdeletion is allowed in English, as evidenced by the grammaticality of the sentences in (162).

(162) a. The space telescope is longer than it is wide.

b. The Mars rock called “Barnacle Bill” is as wide as it is tall.

Kennedy (2007b) attributed the crosslinguistic variation regarding the availability of the subdeletion construction to different comparative strategies used in different languages. Comparatives in English express ordering between individuals and degrees, while comparatives in Chinese express ordering between individuals with respect to a property. This is why Chinese

disallows the subdeletion construction, as illustrated by the sentences in (163). Therefore, in Chinese not only cross-dimensional comparison is disallowed from being expressed via the comparative and equative constructions, but subdeletion within the same dimension yet across different dimensional perspectives is prohibited¹⁸.

- (163) a. *tianwenwangyuanjing chang bi ta kuan
 space-telescope long BI it wide
 intended: ‘The space telescope is longer than it is wide.’
- b. *tianwenwangyuanjing gen ta kuan yizhang chang
 space-telescope with it wide same long
 intended: ‘The space telescope is as wide as it is long.’

2.6.3 The exact nature of the relation in the small clause

The two restrictions above independently require the dimension against which X is measured to be exactly identical to the dimension (perspective) against which Y is measured. Now the task narrows down to specifying the exact nature of the relation that can hold between X and Y along the dimension specified by G, i.e. X’s degree of being G and Y’s degree of being G.

¹⁸ Lin (2009) analyzed that the sentences in (163) involve proposition comparison, and that proposition comparison is not possible in Chinese (also see Xiang (2003, 2005), Li (2008)). Though I agree with the general analysis in his paper, I believe that his explanation of the ungrammaticality of (163) is on the wrong track. Clausal comparatives should not be identified with proposition comparison; they are two separate notions. To see this, compare the sentences in (i) with (ii). The former involves proposition comparison. The two sub-clauses in the sentence both express propositions and involve a POS morpheme, which contributes the positive interpretation. The sentence means that it is more important for her to be happy than for her husband to be wealthy. It does not compare the degree of her being happy and the degree of her husband being wealthy. On the other hand, the sentence in (ii) does not involve a POS morpheme. It compares the table’s length to the table’s width, but not the proposition that the table is long to the proposition that the table is wide. I think that the sentences in (166) are parallel to (ii) but not to (i). They do not involve propositional comparison.

- (i) That she is happy is more important than her husband is wealthy.
 (ii) The table is longer than it is wide.

Towards this end, it is helpful to consider the ontology of degrees. Traditional analyses took degrees as points on a scale. Kennedy (1999, 2001) and Schwarzschild and Wilkinson (2002), among others, 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 constructions formed out of a pair of antonymous adjectives are semantically anomalous. The anomaly is exemplified by such sentences as in (164). Treating degrees as points cannot explain the anomaly. Based on such facts, Kennedy proposed that degrees should be formalized as intervals on a scale that ranges from the minimum point on that dimension to where the degree ends. It is not the maximum point of the degree interval. In addition, in the interval-based representation, degrees are classified into two types: positive degrees (for *fast*, *expensive* etc) vs. negative degrees (for *slow*, *cheap*, etc). The CPA construction is anomalous because it involves comparison of degrees of opposite polarity (Kennedy, 1999, 2001).

- (164) a. *The computer is more expensive than the book is cheap.
b. *The downtown area is dirtier than the suburb area is clean.

The possessive equative construction compares X and Y on the dimension specified by G. This amounts to saying that the construction compares X's degree of being G and Y's degree of being G. Because degrees are intervals, the construction compares two degree intervals that fall on the same scale. In addition, the two degree intervals have a common starting point (Bierwisch, 1989: p112-115).

Recall our assumption that possessive verbs generally characterize essential relations (e.g. possession, kinship, part-whole, etc.) between the subject and the object. Only when an essential

relation is impossible will an “accidental” relation (e.g. location, custody) come to the rescue (Gutiérrez-Rexach, 2006). The most essential relation that can exist between two intervals that have the same starting point is one interval being the sub-interval of the other. This is in agreement with Bierwisch’s idea (1989: p112-115) that the two degree intervals for comparison have a common starting point and enter into an overlapping relation. The question is which one is the sub-interval, and which one is the super-interval.

In order to answer this question, it is useful to look at some other uses of possessive verbs for possible hints. When doing so, I would like to maintain an informal discussion that mainly draws on native intuition. Both the subject and object of *have/you* can be a bare DP. The subject and the object can be type-shifted to denote a set whose elements are determined with reference to how the subject and the object are related to each other. With respect to the relation between the two sets, I hypothesize that the set corresponding to the object is always a subset of the set corresponding to the subject.

More concretely, for the canonical use of a possessive verb to denote possession or ownership, the set that contains the referent of the object is a subset of the set that contains the referent of the subject. For example, the sentences in (165) express that among the things that belong to John are two books written by Russell. For the existential use of possessive verbs, the same subset relation holds between the set containing the referent of the object and the set that specifies entities located within the referent of the subject. For the eventive use of *have* in (166), the reception is just one of all the things or events that will take place in the library tonight (whatever they will be). Possessive verbs can express the part-whole relation. The part-whole relation clearly coincides with the subset relation. The sentences in (167), for example, say that the three relevant doors exist as part of the house. It is equivalent to saying that the set whose

elements are the three doors is a subset of the set that contains all the constituents of the house. Possessive verbs can characterize the kinship relation as well. The kinship relation can also be construed as a subset relation. For the sentences in (168), the set that contains the three cousins of John is a subset of the set that contains, say, all John's relatives.

(165) a. John has two books written by Russell.

b. Zhangsan **you** liang ben luosu xie de shu
John have two CL Russell written MOD book

(166) a. The library will have a reception tonight.

b. tushuguan jintian wanshang **you** zhaodaihui.
library today evening have reception

(167) a. The house has three doors.

b. na ge fangzi **you** san shan men.
that CL house have three CL door

(168) a. John has three cousins.

b. zhangsan **you** san ge tangxiongmei
John have three CL cousins

Even for the intuitively most remote present perfect use of possessive verbs, the subset relation as depicted above holds. The complement of the perfect auxiliary usually denotes an event. The event yields a resultant state that succeeds the running time of the event (Kamp and Reyle, 1993). This state is one of the states in which the subject has experienced or brought

about through instigating an event. In (169), for example, the relevant state in which the apple has been consumed is one of the states which resulted from Mary's eating the apple.

(169) a. Mary has eaten the apple.

b. (?) Mali **you** chi le na ge pingguo

Mary have eat LE that CL apple

It is clear that the set associated with the object is the subset of the set associated with the subject. In this sense, the subject of possessive verbs is “super-ordinate” to the object. I assume that the same consideration applies to the degree use of *you* in the possessive degree construction. Given that degree intervals can be defined set theoretically as a convex, nonempty subset of a scale (Kennedy, 2001), the subinterval relation between the two degrees in the construction is tantamount to the subset relation observed with non-degree uses of possessive verbs. For the “X + *you* + Y + G” construction, Y's degree on the dimension specified by G is the subinterval/subset of X's degree on the dimension. For the sentence in (161) to be true, John's brother's height has to be a subinterval of John's height.

Under the small clause-based analysis of possessive verbs, the degree use of *you* does not directly set up the subinterval/subset relation between the two degrees. Rather, the relation is contributed by the predicate of the small clause. At the same time, the predicate should contain a variable that is co-indexed with the subject X. Given all the considerations, the predicate should be something like “being a subinterval/subset of e_i 's degree on the dimension specified by G”, where the index i comes from the subject. The covert predicate for the sentence in (161) is “being a subinterval of e_i 's height”.

2.6.4 Zooming in on the small clause

Now that it is clear about the surface form of the small clause in the possessive equative construction, what is the syntactic structure of the small clause? To answer the question, there are two issues that need to be taken into consideration. One has to do with the lack of comparative subdeletion with the possessive equative construction in Chinese. The other concerns the relation of the possessive equative construction to another comparative construction in Chinese. Addressing the two issues will provide clues to analyzing the syntactic structure of the possessive equative construction.

Comparative subdeletion is not allowed with the “X + *you* + Y + G” construction, as evidenced from the ungrammaticality of the sentences in (174-175). Kennedy (2007b) proposed that languages show parametric variation between individual comparison and degree comparison. Individual comparison expresses ordering between two individuals along a common dimension, and degree comparison expresses ordering between an individual and an arbitrary degree. Kennedy correlated the absence of comparative subdeletion to individual comparison. Individual comparison lacks degree abstraction, and as such, cannot compare degrees directly. Comparative subdeletion involves two degrees on different dimensions which need to be compared and is not possible with individual comparison. Under the dichotomization, the Chinese “X + *you* + Y + G” construction should involve individual comparison.

(170) *na zhang zhuozi **you** shujia gao kuan ¹⁹.

that CL table have shelf tall wide

‘The table is as tall as the shelf is wide.’

¹⁹ Changing the order of ‘gao’ and ‘kuan’ or moving them around in the sentence will not make it grammatical.

- (171) *zhe tiao he **you** na tiao he shen kuan.
 this CL river have that CL river deep wide
 ‘This river is as deep as that river is wide.’

The discussion in section 3 has suggested that semantically the possessive equative construction patterns with the English *as...as* equative construction. However, structurally, the possessive equative construction appears similar to the *bi*-comparative construction in Chinese. The only surface difference is that the former construction involves the verb *you* and the latter involves the preposition *bi*: “X + *you* + Y + G” versus “X + *bi* + Y + G”. The *bi*-comparative construction has been shown to involve individual comparison as well (Xiang, 2005; Lin, 2009; cf. Liu, 1996). Do the two constructions have parallel syntactic structure?

The question can be further narrowed down to whether the syntactic position of *you* in the possessive equative construction is identical to that of *bi* in the *bi*-comparative position. The answer is negative. In a *bi*-comparative sentence of the form “X + *bi* + Y + G”, *bi* and Y form a single constituent (Lin, 2009). For the possessive equative construction, *you* and Y do not form a syntactic constituent. The difference is illustrated by the contrast between (172) and (173).

- (172) zhangsan jintian bi wo mang, bi mali jiu geng bu yong shuo le.
 John today BI me busy BI Mary then even more not need say ASP
 ‘John is busier than me today; compared to Mary, there is no need to say.’

- (173) *zhangsan jintian **you** wo mang, **you** mali jiu geng bu yong shuo le
 John today have me busy have Mary then even more not need say ASP
 ‘John is as busy as me today; compared to Mary, there is no need to say.’

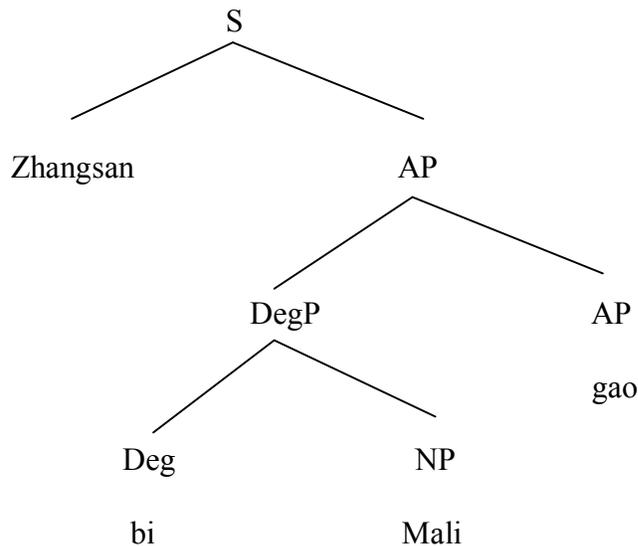
Lin (2009) proposed that the *bi*-comparative construction has the following syntactic structure (174)²⁰. The representation reflects the postulation that *bi* forms a constituent with *Mali*. The semantics of *bi* expresses individual comparison, as it takes two individuals and a gradable predicate as its arguments (175).

(174) a. zhangsan bi mali gao.

John BI Mary tall

‘John is taller than Mary.’

b.



(175) $\llbracket bi \rrbracket = \lambda x \lambda P \lambda y. P(x) < P(y)$

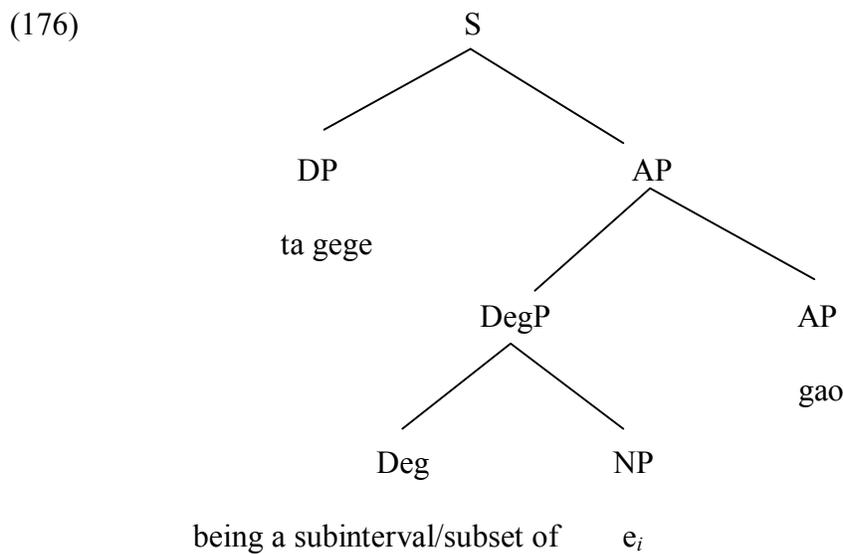
The possessive equative construction expresses individual comparison as well. The difference between *bi* and *you* with regard to constituency suggests that *you* cannot occupy the same position as *bi* in its syntactic structure. In addition, I have argued that *you* does not directly account for the equative interpretation of the possessive equative construction. Moreover, I

²⁰ The Chinese *bi* can be used not only for monoadic comparison, but also for dyadic comparison. The structure in (174) illustrates monoadic comparison. The interested reader should refer to Lin (2009) for discussion about dyadic comparison.

assume that the degree use of *you* shares a similar syntactic representation to the other uses of the verb. Obviously from the discussion in the previous sections, in its non-degree uses *you* occupies a different syntactic position that *bi* does in the syntactic structure in (174).

It is reasonable to hypothesize that, for the possessive equative construction, some covert element occupies the position comparable to that of *bi*. This covert element introduces the individual comparison. The discussion in the previous section has suggested that the construction involves a small clause which, in turn, involves a covert predicate *being a subinterval/subset of*. This predicate is a good candidate to occupy the same position in the syntactic structure of the possessive equative construction as *bi* does in the *bi*-comparative construction.

In addition, the small clause object of *you* contains a covert variable that is eventually saturated by the matrix subject of *you*. The variable occupies the complement position of the predicate *being a subinterval/subset of*. Given all the considerations, the syntactic structure for the covert small clause in the sentence (161) can be given in (176). The semantics of the Deg head *being subinterval/subset of* can be defined in a comparable fashion to *bi*.



(177) $[[\text{being subinterval/subset of }]] = \lambda x \lambda P \lambda y. P(y) \leq P(x)$

Given the syntactic representation, a DegP projection intervenes between the Y element (“*ta gege*”) and the G element (“*gao*”). The two do not directly combine together to denote a degree value. This explains why *you* cannot embed such degree phrases as *yaoming de gaodu* ‘Yao Ming’s height’ or *wo de reqing chengdu* ‘my degree/level of passion’ (178-179). At the best approximation, for (178) *yaoming* corresponds to Y, and *gaodu* corresponds to G. The use of the modifier marker *de* between *yaoming* and *gaodu* suggests that they form one constituent and denotes a degree. This contradicts with the specification that “Y” and “G” cannot form one constituent to directly denote a degree.

(178) zhangsan feichang gao, */?? ta **you** yaoming de gaodu
 John extraordinarily tall he have Yao Ming MOD height
 ‘John is extraordinarily tall; nevertheless, he still does not have Yao Ming’s height.’

(179) a. *wo laopo dui che mei **you** wo de reqing chengdu
 my wife towards car not have me MOD passion degree
 ‘My wife does not have the same (level of) passion for cars as I have’

It was observed in section 2.2.8 that some dimension nouns formed out of a pair of antonymous gradable adjectives can serve as the G element (180-181). On the surface, such sentences appear to be similar to the sentences in (178-179), but they involve different syntactic structure. Most crucially, *zuqiu* and *daxiao* in (180) do not form a constituent. If they do, *zuqiu* would necessarily modify *daxiao*. Then *zuqiu daxiao* would be equivalent to *zuqiu de daxiao*,

with the modifier marker *de* linking *zuqiu* and *daxiao*. However, adding *de* between them would make (180) ungrammatical. The phrase *zuqiu de daxiao* is a grammatical on its own (182), so the intervening *de* should not be held responsible for the ungrammaticality.

(180) na ge mugu **you** zuqiu da-xiao
that CL mushroom have soccer ball size (= big-small)

‘The mushroom is as big as a (typical) soccer ball.’

(181) mei ke shu dou **you** wankou cu-xi
every CL tree all have bowl-mouth thickness(=thick-thin)

‘Every tree is as thick as a bowl.’

(182) tade duzi gen yi ge zuqiu de daxiao chabuduo
his belly with one CL soccer ball MOD size almost the same

‘His belly is almost as big as a soccer ball.’

Therefore, the sentence in (180) should have the same syntactic structure as the counterpart in which *daxiao* is replaced by *da*. Semantically, *daxiao* provides the dimension along which two entities, the mushroom and the generic soccer ball, are compared.²¹ Therefore, it assumes the same function as does *da*.

²¹ My analysis of the possessive equative construction may face the potential criticism that it requires too much of covert elements: an implicit predicate AND an implicit variable. Some may suspect that proposing all the covert elements creates undue pressure on the syntax and/or semantics of the possessive equative construction. In addition, there exists no overt counterpart for the covert elements. I believe that the criticism is not a valid one. In linguistic analyses, proposing a covert element is justifiable when there are legitimate need and ground to do so. In my analysis, the implicit predicate and variable were posited out of reasonable motivations. They were not proposed just for the sake of convenience of argument. Besides, not all covert elements should correspond to an overt counterpart.

2.6.5 Deriving the semantics of the possessive equative construction

In this subsection I will show how to derive the semantics of the possessive equative construction. I follow Kennedy (1999, 2007a) and many others in assuming that a gradable predicate denotes a function from individuals to their degrees on the dimension specified by the predicate. For instance, the gradable adjective *gao*, or its English equivalent “tall”, denotes a function from individuals to their height²².

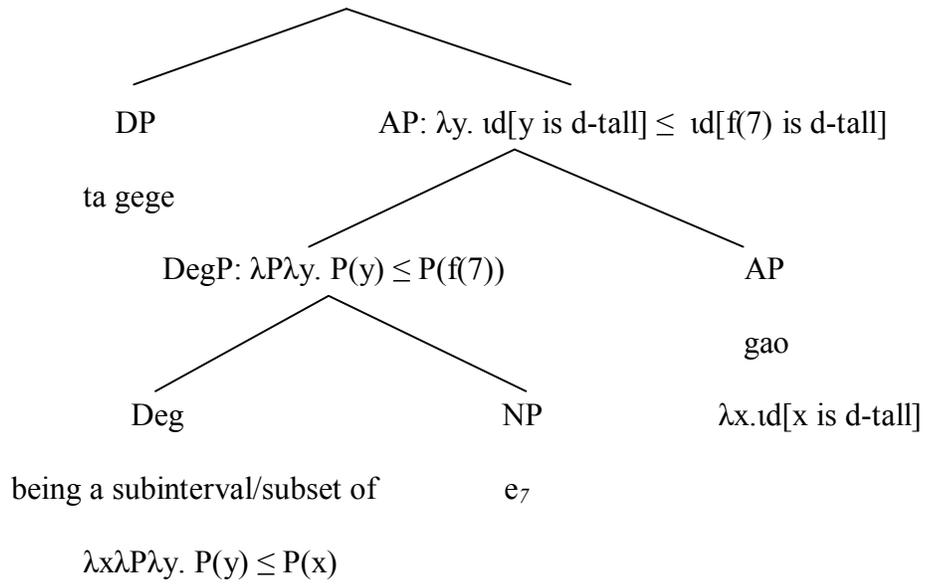
$$(183) \quad \llbracket \text{gao} \rrbracket = \lambda x. \lambda d. [x \text{ is } d\text{-tall}]$$

The interpretation of the covert small clause involved in the LF for the sentence (161) is given in (184). The final result of the derivation shows that the small clause compares the height of his brother and the height of an individual which is to saturate the variable e_i . The small clause is the underlying object of *you*. The verb contributes the necessary abstractor by absorbing the trace of the QR-ed subject and pressures the variable trace binder to do the real abstraction over the individual variable e_7 in the small clause. This guarantees that e_7 is saturated by the matrix subject *zhangsan* and that the comparison relation occurs between John and his brother. (185) illustrates the semantic derivation of the sentence in (161)

²² There are alternative ways of defining the semantics of gradable adjectives. For instance, under some other systems, a gradable adjective *A* denotes a function from an individual to a set of degrees or from a degree to a set of individuals. I believe that the exact choice of the definition does not affect my overall argument.

(184)

S: $\text{id}[\text{his brother is d-tall}] \leq \text{id}[f(7) \text{ is d-tall}]$



The discussion above focuses on possessive equative sentences where the Y element is a DP that denotes an individual. In the introduction it was observed that Y also can be a measure phrase. In such cases, the G element is optional, when the linguistic or extra-linguistic context specifies the relevant dimension for the measure phrase. For example, the measure phrase *shi bang* ‘ten pounds’ necessarily denotes a degree on the dimension of weight and cannot describe 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 *zhong* ‘heavy’ to specify the relevant dimension.

- (187) ta gang mai de na tiao yu **you** shi bang (zhong)
 he just now buy MOD that CL fish have ten pound heavy
 ‘The fish that he just bought is ten pounds.’

There are dimensions that can be associated with more than one dimensional perspective. Typical examples are such measure phrases as “five feet” and “three miles”. The degrees they denote are values on the dimension of physical extent. But the dimension can be seen from the perspectives of height, width, and height. Only when the context specifies which dimensional perspective such a measure phrase is located on can the G element be omitted. For example, because the context in (188) makes it clear that the relevant dimension for the measure phrase *yi mi* ‘one meter’ is depth, the adjective *shen* ‘deep’ does not have to appear after the measure phrase.

(188) zher de he dou hen qian, zhe tiao he zhi you yi mi (shen)
here MOD river all very shallow, this CL river only have one meter deep
'The rivers here are all very shallow. This one is just one meter deep.'

I assume that when there is no overt G element in a possessive equative sentence, a contextually determined covert G exists to specify the dimension against which X is measured. In addition, I assume that a language-specific type shifting rule to transform a measure phrase from the degree-type to the individual-type. The assumption is not a far-fetched one, given the strong parallels between degrees and individuals (Heim, 2000; Rett, 2008b). For example, measure phrases and individuals both can serve as the subject of a gradable predicate (189). The type shifting rule does not apply whenever a gradable predicate (of the type <e, d>) is modified by a measure phrase, which normally denotes some degree. Rather, I assume that it applies only when a "measure phrase + gradable predicate" chunk is not used as a predicate. The exact definition of the rule is irrelevant for the purpose of this chapter²³. In the non-predicate use, the phrase *liu chi gao* 'six feet tall' denotes the height of six feet. In this sense, the phrase differs from the bare *six feet* just in that the former restricts the dimension on which the degree of six feet falls, parallel to the difference between *six feet* and *six feet in height*.

(189) a. zhangsan hen gao.
John very tall
'John is tall.'

²³ Alternatively we can assume that measure phrases are ambiguous between a degree reading and a less common individual reading.

b. 10 mi hen gao.

ten meter very tall

‘Ten meters is tall.’

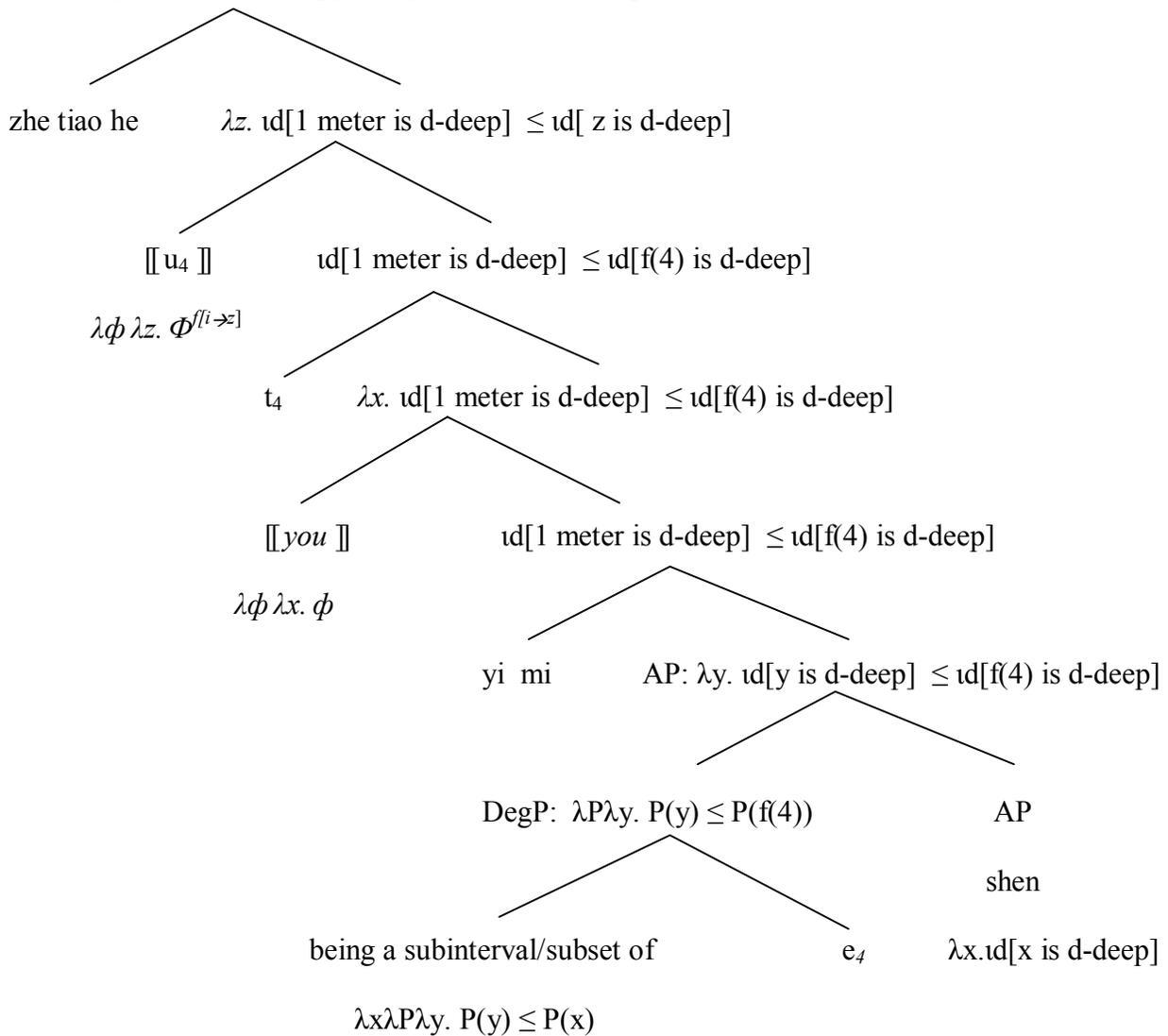
(190) $\llbracket \text{six feet tall} \rrbracket = \llbracket \text{tall} \rrbracket (\llbracket \text{six feet} \rrbracket) = \lambda x. \text{id}[x \text{ is } d\text{-tall}] (\text{six feet}) = \text{id}[\text{six feet is } d\text{-tall}]$

Given all the set-up, the second clause in (188) (*zhi* ‘only’ is ignored for the sake of simplicity) has the semantic interpretation in (191)²⁴.

²⁴ John Whitman (p.c.) 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 *you* and Y to serve as the subject for the Y predicate. The variable is ‘saturated’ by the matrix subject. The small clause has an overt counterpart. This suggestion makes a couple wrong predictions. First, because the covert small clause contributes the meaning of the whole sentence and *you* is only an abstractor, the suggestion wrongly entails that the sentence in (i) has the same meaning as (ii). The former sentence means the door is *at least* two meters wide. On the other hand, there are empirical, theoretical and experimental evidence that number words (measure phrases by extension) have the ‘exactly’ interpretation (König, 1991; Breheny, 2008; Huang et al, 2010, among others). Given this, the latter sentence means it is *exactly* two meters wide. The two sentences have different interpretation. In addition, 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 (iv) which can correspond to the covert small clause in (iii).

- (i) na shan men you liang mi kuan
that CL door have two meter wide
‘The door is at least two meters wide.’
- (ii) na shan men liang mi kuan.
‘The door is two meters wide.’
- (iii) na shan men you zhe shan men kuan
that CL door have this CL door wide
‘That door is as wide as this door.’
- (iv) (*na shan men zhe shan men kuan

(191) $\text{id}[1 \text{ meter is d-deep}] \leq \text{id}[\text{ this river is d-deep}]$



2.6.6 Summary

In this section I showed that the small clause analysis of possessive verbs can successfully be extended to the possessive equative construction. Just as in the non-degree uses of *you*, in the possessive equative construction the object of *you* is supplemented by a predicate and contains a variable that eventually gets saturated by the subject. The predicate specifies a subinterval/subset relation between X and Y along the dimension specified by G. In the degree use, *you* is a

functional item that does not have semantic content on its own. It provides a formal mechanism for the subject to bind a variable in its small clause object.

2.7 Final remarks

To conclude, in this chapter I discussed the degree use of possessive verbs, which has received little attention in the literature. I primarily concentrated on describing and analyzing the Chinese possessive verb *you* ‘have’ appearing in the possessive equative construction “X + *you* + Y + G”, where the G element is normally a gradable predicate. I provided a fairly detailed description of the construction. The construction shows similar, though not identical, empirical patterns to the English *as...as* equative construction. I argued that the small clause-based analysis of possessive verbs can be extended to the degree use of *you* in the construction. The verb *you* 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 subset/subinterval relation between X and Y in terms of their degrees on the dimension specified by G. My analysis suggests that the degree use of *you* has the same syntactic representation and semantic interpretation as its other uses. The various uses of *you* are not as different as many traditional descriptive works have assumed.

There are many open questions that I did not address in this chapter. In particular, the possessive equative construction as discussed in this chapter is unique to Chinese, but the general degree use of possessive verbs has presence in other languages. How can my analysis accommodate crosslinguistic variation in the degree use of possessive verbs? For instance, the English verb *have* cannot appear in the exact equivalent of the Chinese possessive equative construction. But *have* can embed a degree-denoting expression 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 *you* and *have* may lie in the assumption that different comparison strategies (individual comparison vs. degree comparison) are involved in English and Chinese. I will leave the project for future research.

Chapter 3

The Degree Use of Size Adjectives at the Semantic-Pragmatic Interface

3.1. Two types of gradable nouns

3.1.1 Gradability exists in all syntactic categories

The previous chapter dealt with the interaction of degree with possessive verbs. In this chapter I will shift gears and turn to another realm in which it is not immediately obvious how gradability plays a role in understanding a phenomenon. It has to do with what gradability in the nominal domain means and how it is modified by a special category of gradable adjectives. It has long been observed since the earliest studies of gradation (e.g. Sapir, 1944; Bolinger, 1972) that linguistic elements of different morpho-syntactic categories have gradability as one of their features, either inherently or through interacting with other components of grammar or contexts. More specifically, though adjectives and adverbs have often been taken to be the canonical categories which involve gradability, the other grammatical categories, including nouns, verbs, and prepositions, all have members that can establish some ordering among individuals based on their degrees to which some relevant property holds of an entity. Moreover, gradable predicates of different categories share many similar scalar properties. Kennedy and McNally (2005), for example, used deverbal adjectives such as “acquainted”, “desired” and “loaded” to probe into the scale structure of gradable predicates. They showed that the scale structure of a deverbal gradable adjective shows a strong correlation either with the algebraic part structure of the event denoted by the source verb or with the algebraic part structure of the individuals that can serve as the arguments for the source verb. Degree modifiers such as “very”, “well” and “much” have semantic representations that are sensitive to the scalar distinctions among deverbal gradable

adjectives. This is the reason why such degree modifiers are often not interchangeable. For instance, while “very frightened” is grammatical, “much frightened” is not.

3.1.2 A subset of gradable nouns

This chapter specifically will address gradability in the nominal domain and its interaction with degree modification. There are a subset of nouns that share the same scale structure as, and show similar properties to, gradable adjectives (Morzycki, 2005, 2009; Sassoon, 2010). For example, the nouns “idiot”, “joke” (meaning a thing or situation laughed at rather than taken seriously)”, and “hypocrite” all express gradable notions. This claim makes sense on the intuitive level. Presumably not all idiots have the same degree of stupidity. For the noun “joke”, some trifling matters are more laughable than others. Different hypocritical individuals are characterized by different levels of pretentious and deceptive characteristics.

Beyond the native intuition, there is empirical evidence supporting the claim that such nouns are gradable. First, many such nouns have a corresponding adjectival form that is unambiguously gradable²⁶. There is “idiotic” for “idiot”, “enthusiastic” for “enthusiast”, and “hypocritical” for “hypocrite”. The adjectives “idiotic”, “enthusiastic” and “hypocritical” are a gradable adjective, as suggested by the fact that they can be modified by canonical adverbial degree modifiers (1-2). I assume that the adjectival forms result from category transformation from the noun, and that the transformation process itself does not introduce an extra gradability component into the meaning. It follows that the source nouns “idiot”, “enthusiast”, and “hypocrite” should be gradable to begin with.

²⁶ It should be noted here that an adjective and the corresponding noun does not have exactly the same range of uses. They should be compared under the same sense. For instance, the noun ‘idiot’ appears to have an epithetic use that is absent from ‘idiotic’. An individual can be an idiot epithetically, but without being really idiotic. In addition, ‘idiot’ can be only used for humans, but ‘idiotic’ does not have such a requirement (‘an idiotic remark’).

- (1) Luckily, I'm not idiotic enough to fall for the pitfall.
- (2) Some Americans think that democrats are more hypocritical than republicans.

In fact, nouns can be modified by adverbial degree modifiers even without surface category transformation to adjectives. Because adverbial degree modifiers cannot directly combine with a noun due to categorial mismatch, the modification usually occurs with mediation by the preposition “of” (3-5). Obviously, the preposition itself does not contribute gradability. Thus the gradability has to come from the meaning of the noun (or its interaction with the pragmatic world). This is another piece of corroborating evidence in favor of the claim that (some) nouns are gradable. The test correctly predicts, *modus tollens*, that non-gradable nouns cannot be modified by an adverbial degree modifier. For example, the noun “monograph” is intuitively non-gradable and cannot be modified by a degree modifier (6).

- (3) Rick is more of a hypocrite than the politicians he despises.
- (4) He was too much of an idiot to understand or pass the exam.
- (5) The whole plan to stimulate the economy was just a bit of a joke.
- (6) *The book on the left is less of a monograph than the one on the right²⁷.

Furthermore, some nouns can be modified by such modifiers as “absolute”, “complete”, “real”, and “total”, subject to certain lexical restrictions which I will not go into in this chapter. These modifiers are degree modifiers. The modifiers for the boldface nouns in (7-9), for instance, characterize the large extent of the agenda being a joke, of the president being an idiot, and of the

²⁷ In this sentence I am focusing on the meaning of ‘monograph’ to refer to books written by one single author rather than by co-authorship. In this sense, the noun is not gradable, because a book is written either by one person or by multiple authors.

board director being a hypocrite, respectively. If the modifier “complete” in (7), for example, does not have degree interpretation, it would be synonymous to “whole”, which is not a degree modifier. Replacing “complete” with “whole”, however, would make the resulting sentence quite bizarre, or at least it does not have the same interpretation as before the substitution. The modification of a gradable noun with the degree modifier “complete” suggests that the degree expressed by the gradable noun holds to the full extent (mutatis mutandis pragmatic inaccuracy).

(7) The president’s whole agenda to revive the economy is an absolute **joke**.

(8) Is the president a complete **idiot** or does he simply hate his job?

(9) The director of the school board turned out to be a total **hypocrite**.

Nouns like “idiot” and “hypocrite” have corresponding adjectives (“idiotic” and “hypocritical”) that are clearly gradable. In the meantime, ad-adnominal modifiers like “complete” and “absolute” have adverbial cognates (“completely” and “absolutely”) which are clearly degree modifiers. Such gradable adjectives can be modified by the adverbial degree morphemes. This modification has, or at least can have, the same interpretation as the modification of the corresponding noun by the corresponding ad-adnominal modifier. For instance, changing the nouns in (8-9) to the corresponding gradable adjectives and the ad-adnominal degree modifiers to their adverbial counterparts at the same time does not change the meanings of the sentences in any noticeable manner (10-11). This is an additional piece of evidence that these nouns encode gradability. Furthermore, the similarity suggests that gradable

nouns like “idiot” and “hypocrite” have scale structures identical to their adjectival counterparts²⁸.

(10) Is Obama completely **idiotic** or does he simply hate his job?

(11) The director of the school board turned out to be totally **hypocritical**.

I hope that the above evidence is sufficient enough to establish that there are a subset of nouns that express gradable notions, and that they have scale structures similar to those of gradable adjectives.

3.1.3 Distinguishing two types of gradable nouns

I should point out that this particular subset of nouns of interest to this chapter are not the whole range of elements in the nominal domain that involve scalar properties. There are another subset of nouns that are often considered gradable. However, this latter subset of gradable nouns differ from such gradable nouns as “idiot” and “hypocrite” in that they have scale structures distinguished from gradable adjectives. My analysis in this chapter only deals with the former subset of gradable nouns. It is helpful to disentangle the two types, in order to avoid potential confusion about my discussion.

According to Sassoon (2010), nouns like “bird”, “fruit”, and “vehicle” also come with a scale of some gradable property, e.g. how typical a vertebrate measures along the dimensions of being a bird (small size, feathered, can fly, etc). There exist distinctions between central/typical members of a category and peripheral/non-typical members (Lakoff, 1973). The distinctions are gradual and form a spectrum that can be perceived similar to scales for gradable predicates.

²⁸ For the purpose of this chapter, I do not consider the differences of scale structure (open vs. closed, relative vs. absolute) among gradable adjectives.

These nouns can be modified by degree morphemes mediated by the preposition “of”, as evident from the grammaticality of the sentences in (12-13). The pattern is similar to what has been observed with such gradable nouns like “idiot” and “hypocrite”. The similarity suggests that nouns like “bird”, “fruit” and “vehicle” are gradable as well.

(12) Robins are more of a bird than penguins or ostriches.

(13) To cooks, tomatoes are more or less a fruit.

However, gradable nouns of the second subset (“bird” and “fruit”) do not share the exactly same range of properties as gradable nouns of the first subset (“idiot” and “hypocrite”). It has already been observed that the first subset of gradable nouns can be modified by adnominal degree modifiers like “complete” and “absolute”. Modifying a gradable noun that belongs to the second subset with such degree modifier is ungrammatical under the degree reading²⁹.

(14) The animal in the cage is a(n) *absolute/*complete/*total/%real **bird**.

(15) Apples are a(n) *absolute/*complete/*total/%real **fruit**

I have argued that the first set of gradable nouns have scale structures similar to gradable adjectives. The second subset of gradable nouns, by contrast, have scale structures that are distinguished from gradable adjectives. According to Sassoon (2010), a gradable adjective has a single criterion of categorization or a set of such criteria integrated together through Boolean conjunction (for “normal” and “healthy” for example) or disjunction (for “different” and “sick”

²⁹ I use the ‘*’ symbol to indicate the ungrammaticality of a sentence, and ‘%’ to indicate the lack of degree reading of a size adjective or a sentence containing a size adjective. When the two cases collapse together, I will use * only.

for example)³⁰. The use of the positive form of a conjunctive gradable adjective requires an individual to reach the standard for every dimension, and the use of the positive form of a disjunctive gradable adjective requires an individual to reach the standard for some dimension.

The structure of the dimension(s) can determine the modification pattern of gradable adjectives (Kennedy and McNally, 2005). An individual can have impeccable (i.e. maximal) function in lung or (even) in every aspect of body and mind. It is reasonable to assume that the scale associated with “healthy” is upper closed. So the adjective can be modified by upper endpoint-oriented degree modifiers like “100%” and “completely” (16).

(16) Mary is completely healthy with respect to lung function.

I hypothesize that the first subset of gradable nouns, just as gradable adjectives, also have a simple categorization criterion or a set of such criteria integrated together via Boolean operations. An idiot is characterized by the criterion of intellectual deficiency or social inappropriateness depending on the sense in which the word is used in a context. Similarly, for *automobile enthusiast*, the distinguishing criterion is enthusiasm for (fancy) cars; for *joke*, it is inadequacy and ridiculousness of a plan, a situation, etc.

For the second subset of gradable nouns, their scale structure clusters together multiple dimensions which are integrated through weighted-mean operations rather than Boolean operations (Sassoon, 2010; Kamp, 1975). For each entity in the category denoted by a gradable noun of the second subset, its weighted-mean of the values on all the dimensions relevant for the noun is a good indicator of its typicality among all entities in the category. The degree of typicality of an entity is generally identified with how similar the entity is to the prototype for the

³⁰ The interested reader should refer to Sassoon’s original paper for some evidence based on language processing.

concept. The prototype often has a conceptual import only. There usually exists no entity that is considered exactly identical to the prototype, in spite of the central members vs. peripheral members distinction discussed in Lakoff (1973). I hypothesize that there is no maximum similarity to the prototype, and I take it to be the reason why the second subset of gradable nouns cannot be modified by such degree modifiers as “complete” and “total”. Take the noun “bird” for example. The dimensions for being a bird may include small size, feathered, winged, flying, eating insects, bearing young in a hard-shelled egg, and so on. Those dimensions do not have the same weight for the averaging operation: being feathered and winged, for instance, may be more definitive of a bird than eating insects. For some entity to be qualified as a bird, its weighted mean degree on the relevant dimensions for being a bird should be typical enough to meet the bird-membership threshold. Some animals are considered more representative of being a bird than others. However, no bird can be identified as being maximally representative member of the Aves class. That is why it is not grammatical to use “a complete bird” to mean “a bird to the maximum degree.”

Sassoon’s discussion of the differences between gradable adjectives (and the first subset of gradable nouns by extension) and the second subset of gradable nouns is based on conceptual, neurological and acquisitional evidence. The differences can be reflected in formal semantics, although this chapter will not pursue the task. The first subset of gradable nouns receive formal representations that are similar to gradable adjectives. The second subset of gradable nouns have semantics that is distinguished from gradable adjectives and the first subset of gradable nouns by extension. This chapter does not assume the task of distinguishing the two types of gradable nouns from a formal perspective. Rather, in the rest of the chapter I will consider how the first

subset of gradable nouns interact with one particular type of degree modifiers (i.e. the degree use of size adjectives).

3.2. Size adjectives degree-modifying gradable nouns

3.2.1 Size adjectives as degree modifiers

It has already been observed that the first subset of gradable nouns can be modified by some adnominal degree modifiers, and the second subset of gradable nouns cannot. There is still another set of adjectives that are less often treated as degree modifiers but nevertheless can characterize the degree to which a gradable noun of the first subset holds of an individual³¹. They are adjectives that normally express size notions, such as “big”, “huge” and “enormous”. This observation is illustrated by the sentences in (17a) and (18a) (both taken from Morzycki, 2009). Under the most natural interpretation of the two sentences, the size adjectives within them do not describe the physical size, age, significance, etc, of the referent of the subject. Rather, they specify that the gradable nouns that they modify hold of the relevant individual(s) to a big degree. This claim is evidenced by the fact that the (a) sentences in (17-18) have a reading that is clearly distinguished from the (b) sentences, where the size adjectives most naturally predicate of the physical size of the relevant individuals. The size adjectives in the (a) sentences characterize the high degree of George’s idiocy and of the three people’s enthusiasm for goat cheese, respectively (Morzycki, 2009).

- (17) a. George is a(n) big/enormous/huge/colossal/gargantuan idiot.
b. George is an idiot, and he is big/enormous/huge/colossal/gargantuan

³¹ Gradable nouns of the first subset may have differences in terms of scale structures. The differences restrict what degree morphemes can modify what gradable nouns. Morzycki (2011) discussed the issue and provided an explanation. I leave it open whether his proposal is on the right track or not.

- (18) a. The three huge goat cheese enthusiasts were arguing in the corner.
b. The three goat cheese enthusiasts, who were huge, were arguing in the corner.

The second subset of gradable nouns cannot be modified in a similar way to have the degree reading. Both “bird” and “American”, for example, are gradable nouns that belong to the second subset. Modifying them with size adjective like “big” and “enormous” is either ungrammatical or, if grammatical, does not yield degree interpretations comparable to (17a) and (18a). In the rest of the chapter I will only focus on size adjectives as degree modifiers for gradable nouns of the first subset. Because doing so will not give rise to any confusion, I will simply use “gradable nouns” to refer to the first subset of gradable nouns.

- (19) a. A robin is a(n) %big/%enormous/%huge bird.
b. The soldier is a(n) %big/%enormous/%huge American.

Morzycki (2005, 2009) observed that the degree readings of size adjectives are licensed in a variety of syntactic and semantic contexts including comparatives, equatives, exclamatives, and *how*-questions (20-23). He showed that the degree readings of size adjectives are not due to lexical vagueness or an extra-linguistic cognitive process of metaphor. Rather this use of size adjectives has an independent status.

- (20) The senator is a bigger idiot than his secretary.
(21) Vincent is as huge an auto enthusiast as his brother.
(22) What an enormous fan he is of healthy eating!

(23) How big an idiot is the senator?

3.2.2 The “Position Generalization” for size adjectives as degree modifiers

The degree use of size adjectives is syntactically and semantically constrained. Morzycki (2005, 2009) discussed two generalizations regarding this particular use. The Position Generalization requires that degree modification of gradable nouns by size adjectives is available only for size adjectives that appear in the attributive position, but not for size adjectives that appear in the predicate position. This is illustrated by (24a) and (25a). The most natural readings of the two sentences describe the physical size of the idiot and of the Red Sox fans, respectively. They do not say that the relevant individual(s) has/have a high or big degree of idiocy or enthusiasm. By contrast, the (b) sentences both have the size adjectives in modifier positions and allow for degree readings. Morzycki held that the Position Generalization holds categorically and applies crosslinguistically, with which I concur.

(24) a. The idiot standing over there is big.

b. A big idiot is standing over there.

(25) a. These fans of the Red Sox are enormous.

b. These are enormous fans of the Red Sox.

I would like to point out that the same generalization holds not just for size adjective as degree modifiers, but also for other adnominal degree modifiers such as “complete” and “total”. While the sentence in (26a) is grammatical and says that uselessness of the car is to a very high or even the maximum extent (whatever that might be), moving the degree modifier to a predicate position makes the sentence ungrammatical (26a).

(26) a. The car breaks down all the time and is a complete white elephant.

b. The car breaks down all the time. *It is a white elephant that is complete.

The Position Generalization can serve as a suggestive test to tell whether a particular instance of size adjectives has the degree reading. If transforming a size adjective from a modifier position to a predicate position results in a grammatical sentence with the same meaning, then the size adjective cannot have degree reading in the original sentence. This test is particularly helpful in telling the degree use of size adjectives from the semantically similar “abstract size” use. In the latter use, size adjectives can freely occur in modifier and predicate positions (27).

(27) a. Suburban poverty is a big problem.

b. The problem of suburban poverty is big.

The test is not definitive, though. When transforming a size adjective from an attributive position to a predicate position leads to an ungrammatical sentence or a grammatical sentence but with a different meaning, the size adjective does not necessarily have degree reading in the original sentence. Size adjectives have another non-size reading which is very close to the degree use and are largely (though not always) subject to the Position Generalization. Morzycki (2009) called this particular use the significance reading, because this use of size adjectives always involves a notion of significance. The sentence in (28a), for example, has the size adjective “big” in the modifier position. Transforming the adjective to a predicate position yields a sentence (28b)

whose meaning is different from the original sentence. The pattern is the same as with size adjectives used as degree modifiers. The sentence in (28a) says that Mary plays a significant role in the Catholic Church but not in Protestantism. However, there exists no gradable property inherent in the noun “figure” that the adjective “big” can characterize, so “big” is not used as a degree modifier in (28a).

(28) a. Mary is a big figure in the Catholic Church but not in Protestantism.

b. %As a figure in the Catholic Church but not in Protestantism, Mary is big.

3.2.3 The “Bigness Generalization” for size adjectives as degree modifiers

The other generalization observed by Morzycki (2005, 2009), the Bigness Generalization, says that only positive size adjectives like “big”, “enormous”, and “gigantic” can have degree uses when they modify gradable nouns, and negative size adjectives like “small”, “tiny” and “minute” cannot receive degree interpretation when they modify gradable nouns (29-30)³². As pointed out by Morzycki, the generalization does not arise from any conceptual difficulty in talking about low degrees, as suggested by the acceptability of talking about low degrees using other linguistic strategy (31). The generalization is systematic and productive. Morzycki (2009: p180) showed that coined size adjectives obey the generalization as well.

(29) George is a %small/%tiny/%minuscule/%microscopic/%diminutive/%minute idiot.

(30) Present in the party were just several %small/%tiny fans of the band.

(31) A mineral has a very small degree of consciousness.

³² According to Morzycki, adjectives like ‘minor’ and ‘slight’ are not size adjective synchronously. The fact that they can be degree modifiers for gradable nouns (e.g. ‘a minor idiot’) does not challenge the validity of the ‘Bigness Generalization’. I assume that the same remark applies to ‘little’ and ‘petty’.

Morzycki (2005, 2009) took the Bigness Generalization to be a categorical restriction on size adjectives as degree modifiers. His analysis of the phenomenon reflects this assumption in that it is syntactic-semantic in nature and allows no contextual or pragmatic variability. In this chapter I will argue that Morzycki's analysis is too strong and that the Bigness Generalization does allow contextually supported exceptions. It is exactly the exceptional cases to the Bigness Generalization that provide motivation to my analysis of the same phenomenon. Due to its violable nature, the Bigness Generalization cannot be used as a suggestive test to tell whether or not a size adjective is used as a degree modifier in a sentence.

Any explanatorily adequate analysis of size adjectives modifying gradable noun, minimally, has to account for the two generalization and exceptional cases to the Bigness Generalization. This is the task that I undertake in the rest of the chapter. Here is the outline of this chapter. I have argued that gradable adjectives and (the first subset of) gradable nouns show similar properties. It is helpful for analyzing degree modification of gradable nouns to start with a review of some essential concepts used in the syntactic and semantic analysis of gradable adjectives. This is what I do in Section 3. Morzycki (2009, 2005) offered the first and (so far) only theoretical analysis of degree modification of gradable nouns by size adjectives. Though the analytical intuition that underlies his proposal is largely on the right track, his actual implementation of the intuition rests on an unjustified assumption and makes several wrong predictions. These problems provide empirical and theoretical motivations for my treatment of the phenomenon. Thus, in Section 4 I will offer a review of Morzycki's analysis and discuss several issues that it is faced with. In particular, I will show that the Bigness Generalization is not categorical: negative size adjectives can serve as degree modifiers in some contexts. Morzycki's proposal leaves no room for the exceptions. I will lay out my own proposal in

Section 5. My idea draws on the scale structures of size adjectives and gradable nouns, the relation between the standards of antonymous dimensional adjective pairs³³, the ordering relation between the standards of size adjectives and the gradable nouns that they modify, as well as the semantic-pragmatic notion of “extension gap”. The Bigness Generalization receives an explanation at the semantic-pragmatic interface, instead of being a purely semantic phenomenon. My proposal allows room for contextual variation in negative size adjectives used as degree modifiers. The phenomenon of size adjectives serving as degree modifiers is not restricted to English. Section 6 concludes the chapter.

3.3. Gradability in the adjectival domain

An adequate analysis of gradable nouns that are degree-modified by size adjectives requires a clear understanding of the semantic representation of gradable nouns. The similarity of scale structure between gradable adjectives and gradable nouns provides a hint that the semantics of gradable nouns may parallel that of gradable adjectives. There are two major approaches to gradable adjectives (or probably gradability in general). The first was developed in the super-valuation analyses of vagueness (Klein, 1980; Kamp, 1975; among others). It makes no use of the notion of degree but rather treats gradable predicates just like other predicative expressions. The other, more recent approach assumes that gradable predicates have degree arguments (Rotstein and Winter, 2004; Kennedy, 1999; among others). It is beyond the scope of this chapter to give a detailed review or evaluation of the two approaches. I will adopt the now “standard” Kennedian approach in this chapter, though I will use the notion of “extension gap” which is more prevalent in the first approach.

³³ Gradable adjectives are classified into two categories: dimensional adjectives and evaluative adjectives (Bierwisch 1989). Pairs of dimensional adjective antonyms make reference to the same scale of some dimension and only differ in terms of the ordering on the scale. By contrast, pairs of evaluative adjectives make reference to different scales. This chapter merely concerns antonymous size adjectives. I assume that they behave like pairs of dimensional adjectives.

Kennedy's (1999, 2007a) theory of adjectival gradability can be extended to the domain of nominal gradability. Within the Kennedian framework, a gradable adjective *A* denotes a function from an individual to the degree of the individual's having the property denoted by *A*. For example, the adjective "tall" take an individual of type *e* as its argument and yields the individual's (actual, maximum) height (32).

$$(32) \llbracket \text{tall} \rrbracket = \lambda x. \text{id } [x \text{ is } d\text{-tall}] \quad (= \mathbf{tall})^{34}$$

Given the semantic definition for gradable adjectives, such simple positive degree sentences as (33) would denote a degree (e.g. John's actual height), rather than the desired truth condition that John's height exceeds a contextual standard of being tall. Therefore, extra mechanisms are needed to derive the correct semantics for simple positive degree sentences. Gradable adjectives have to combine with some degree morphology to derive a property of individuals. Under the Kennedian framework of gradability, such degree morphology can be overly spelled out as "very", "more", "as ...as", etc. Simple positive degree sentences do not have any overt degree morphology. To cope with the mismatch, it is assumed that there is a covert degree morpheme POS which has the same semantic function as the overt degree morphemes (von Stechow, 1984; Kennedy, 1999; among others).

(33) John is tall.

The POS morpheme for gradable adjective (POS_e^{35}) maps the function denoted by an adjective *A* to a set of individuals whose degrees of *A*-ness equal or exceed the contextual

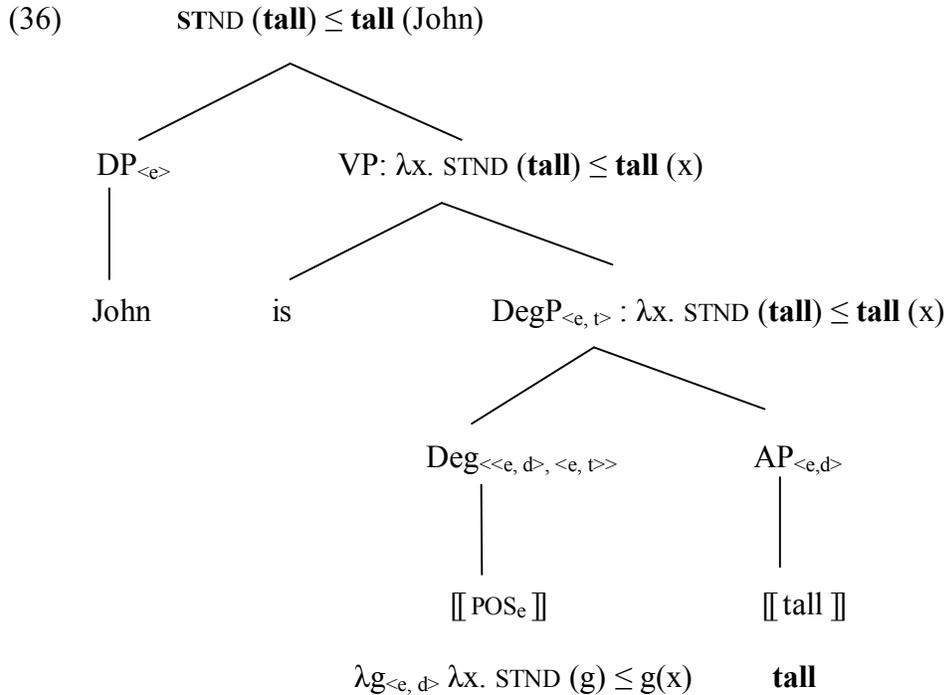
³⁴ During the discussion, I will put certain simple lexical items in bold face to denote their semantic interpretation.

standard of being A (Kennedy 1999, 2007a; Kennedy and McNally 2005). The function $STND$ used in the definition of POS_e (34) maps a gradable adjective to its standard of comparison. The standard is contextually determined and sensitive to the comparison class, the group of individuals against which the interpretation of a gradable predicate is relativized. The comparison class is often introduced by a *for*-clause such as *John is tall for a six-year-old*. Obviously, the standard of being tall for adult basketball players is different from the standard of being tall, say, for primary school students. Applying the function POS_e to the function denoted by “tall” yields a set of individuals whose height does not fall below the contextual standard of being tall for the relevant comparison class (e.g. adults, college basketball players, seven year olds, etc) (35). According to the semantic derivation for the sentence in (33), the sentence means that John’s height equals or exceeds the standard of being tall.

$$(34) \quad \llbracket POS_e \rrbracket = \lambda g_{\langle e, d \rangle} \lambda x. STND(g) \leq g(x)$$

$$(35) \quad \llbracket POS_e \rrbracket (\llbracket tall \rrbracket) = \lambda x. STND(\mathbf{tall}) \leq \mathbf{tall}(x)$$

³⁵ The subscript *e* on POS_e stands for individual and serves to distinguish the POS morpheme for gradable adjectives from the the POS morpheme for size adjectives to be proposed in the next section.



There is another common use of gradable adjective: adjectives modified by measure phrases (MPs) like “six feet tall” and “two years old”. Morzycki (2009, 2005) made use of the insightful analytical intuition that the degree use of size adjective in some respects parallel measure phrases that modify gradable adjectives. He followed Svenonius and Kennedy (2006) and Kennedy and Levin (2008) in proposing that a degree morpheme MEAS^A licenses MPs³⁶. The MEAS^A morpheme, as defined in (37), requires that the degree to which the adjective holds of an individual equals or exceeds the minimum element of the set of degrees denoted by the MP modifying the adjective. MEAS^A makes reference to the minimality operator MIN , which implies that an MP is assumed to denote a set of degrees rather than a single degree. For instance, “6 feet” is assumed to denote the degree set {6 feet, ... 7 feet, ... 8 feet, ...}. Morzycki took an MP to have the “at least” interpretation, rather than the “exactly” interpretation (Horn, 1972, 1992).

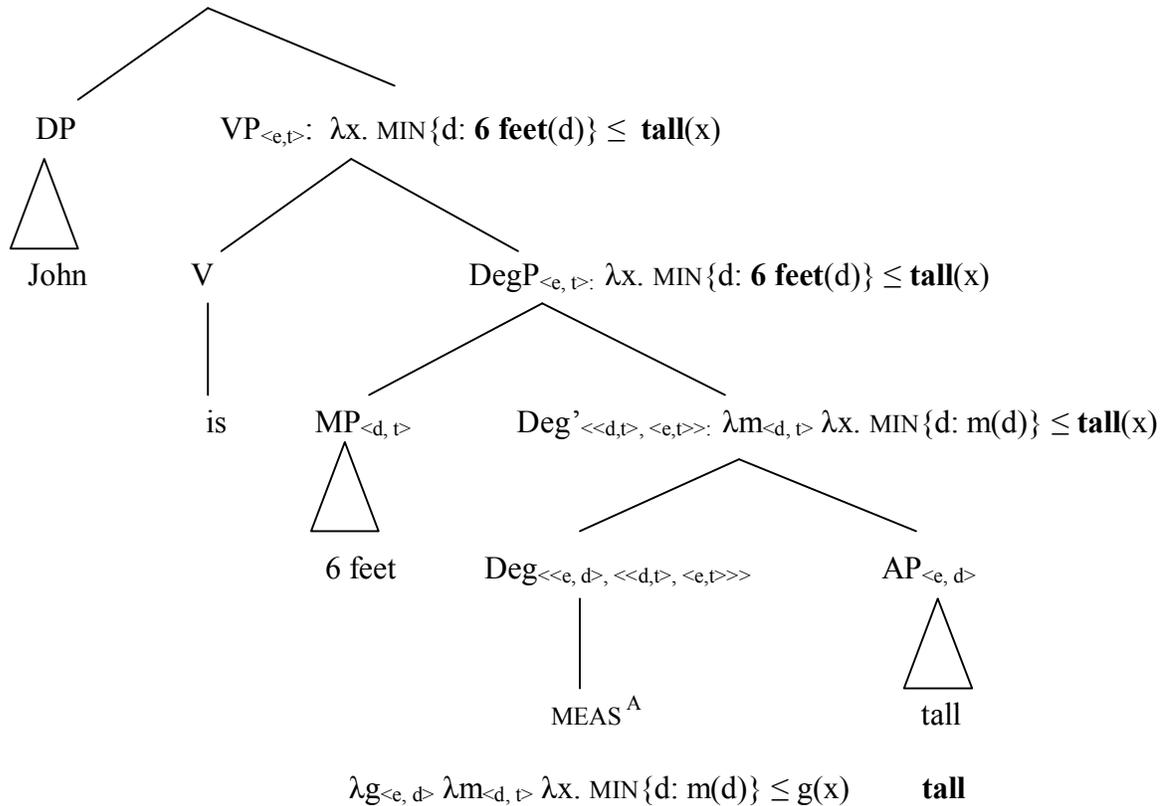
³⁶ The superscript A on MEAS^A stands for adjectival and distinguishes this MEAS morpheme from its counterpart for size adjectives degree-modifying gradable nouns.

Given the above set-up, the semantics of “6 feet tall” denotes the set of individuals whose height measures 6 feet or more (38). Applying this predicate to the subject “John” yields the truth condition for the sentence “John is six feet tall”: it is true if and only if John’s height equals or exceeds 6 feet.

$$(37) \llbracket \text{MEAS}^A \rrbracket = \lambda g_{\langle e, d \rangle} \lambda m_{\langle d, t \rangle} \lambda x. \text{MIN} \{d: m(d)\} \leq g(x)$$

$$(38) \llbracket \text{6 feet MEAS}^A \text{ tall} \rrbracket = \lambda x. \text{MIN} \{d: \mathbf{6\text{-feet}}(d)\} \leq \mathbf{tall}(x)$$

$$(39) \text{ S: } \text{MIN} \{d: \mathbf{6\text{-feet}}(d)\} \leq \mathbf{tall}(\text{John})$$



With this background on the syntax and semantics of gradability in the adjectival domain, let us turn to examine the degree modification in the domain of nominal gradability. In the next section I will start by reviewing Morzycki’s analysis of gradable nouns degree-modified by size

adjectives and point out some problems that it is faced with. The problems will serve to motivate my proposal to be laid out in section 5.

3.4. Morzycki's analysis and its problems

3.4.1 Morzycki's analysis

According to Morzycki, gradable nouns receive interpretations which are parallel to gradable adjectives. A gradable noun *N* denotes a function from individuals to their degrees of *N*-iness. The gradable noun “idiot”, for instance, denotes a function from an individual to the individual's degree of idiocy (43)³⁷.

$$(40) \llbracket \text{idiot} \rrbracket = \lambda x_e. \text{id}_d [x \text{ is } d\text{-stupid}] \quad (= \mathbf{idiot})$$

There is also covert degree morphology in the domain of nominal gradability. Gradable nouns denote measure functions. In a simple degree sentence, it has to transform to properties of individuals by the degree morpheme pos_e as defined in (37). Thus, the sentence in (41a) has an LF parallel to the sentence in (36). (41a) has the interpretation in (42) and means that John's degree of being an idiot equals or exceeds the contextual standard of being an idiot.

(41) a. John is an idiot.

b. John is an $[\text{pos}_e \text{idiot}]$.

$$(42) \llbracket \text{John is } [\text{pos}_e \text{idiot}] \rrbracket = \text{STND}(\mathbf{idot}) \leq \mathbf{idot}(\text{John})$$

³⁷ I have pointed out in a previous footnote that ‘idiot’ and ‘idiotic’ does not have exactly the same range of meanings, mutatis mutandis category difference. I use ‘stupid’ in the definition of ‘idiot’, in good faith to avoid the problem. I will not address whether this is a successful strategy or not.

Regarding the syntactic representation and semantic interpretation of gradable nouns degree-modified by size adjectives, Morzycki posited that the modification is parallel to AP-modifying MPs. The intuition is that both the degree use of size adjectives and AP-modifying MPs somehow measure the degree to which a predicate (gradable nouns and gradable adjectives respectively) holds of an individual. For the phrase “six feet tall”, for example, the MP “six feet” characterizes the (minimum) degree of an individual on the scale of height. Similarly, for “big idiot”, the size adjective “big” characterizes the degree of an individual on the scale of idiocy.

It has been mentioned that a degree morpheme $MEAS^A$ is needed to mediate the interpretation of AP-modifying MPs. Pursuing the line of similarity between the degree use of size adjectives and AP-modifying MPs, Morzycki further posited that the interpretation of the degree use of size adjectives are also mediated by a MEAS morpheme. However, this MEAS morpheme differs from its counterpart for AP-modifying MPs in two major respects. First, the same size adjective can apply to degrees on many different scales. The size adjective “big”, for example, can modify idiocy (for “a big idiot”), enthusiasm (for “a big enthusiast”), ridiculousness (for “a big joke”), liking (for “a big fan”), and so on. Thus, there are many single minimum degrees along different dimensions that can satisfy a size adjective degree phrase. It is very likely that those minimum degrees are not comparable or commensurable among themselves. Relevant in the definition of the MEAS morpheme for degree readings of size adjectives ($MEAS^N$ henceforth)³⁸ are only degrees on the scale particularly associated with the gradable nouns that are modified by size adjectives. Therefore, the interpretation of size adjectives necessarily makes reference to the gradable nouns they modify. That is, the definition of $MEAS^N$ should make reference to qualification from gradable nouns. As far as the

³⁸ The superscript N on $MEAS^N$ stands for nominal, to indicate that the MEAS morpheme is for the interpretation of gradable nouns.

interpretation of a size adjective degree-modifying a gradable noun is concerned, a degree associated with the size adjective should be “restricted” by the scale associated with the gradable noun modified by the size adjective.

Second, an MP that modifies an AP does not require the AP to absolutely hold of the individual that the AP predicates of. Whether someone who is five feet tall counts as tall or not depends on the contextual comparison class. By contrast, the degree use of a size adjective requires the modified gradable noun to hold of the individual that the noun predicates of. Someone who is a big idiot is necessarily an idiot. Therefore, $MEAS^N$ should make reference to the standard of the modified gradable noun. In this sense, the $MEAS^N$ morpheme appears to semantically encode a POS morpheme. Given these considerations, Morzycki defined $MEAS^N$ as in (43). The variable “g” in the definition corresponds to the gradable noun, and “m” to the size adjective. The semantics of the morpheme requires that an individual x satisfy the gradable noun which the morpheme heads to some degree that: (i) “is at least as great as the smallest degree that satisfies the size adjective DegP”; and (ii) “is at least as great as the standard for the gradable predicate.” (Morzycki, 2009: p195).

$$(43) \quad \llbracket MEAS^N \rrbracket = \lambda g_{\langle e, d \rangle} \lambda m_{\langle d, t \rangle} \lambda x_e. \text{MIN} \{d: d \in \text{scale}(g) \wedge m(d)\} \leq g(x) \wedge \text{STND}(g) \leq g(x)$$

In addition to the $MEAS^N$ degree head, the LF for “size adjective + gradable noun” involves still another degree head POS_d . The latter degree morphology takes the size adjective as its argument and yields a set of degrees (44). It serves to capture the intuition that, say, a big idiot necessarily has a degree of idiocy that is contextually big, just like a tall man necessary has a

height that is contextually tall³⁹. The POS_d morpheme is identical to POS_e as defined in (34) except for differences in type: POS_e is of the type <ed, et>, and POS_d is of the type <dd, dt>. The difference reflects the fact that size adjectives can predicate of the size of an individual (45) and the “size”, so to speak, of the degree (46)⁴⁰.

(44) $\llbracket \text{POS}_d \rrbracket = \lambda g_{\langle d, d \rangle} \lambda r_d. \text{STND}(g) \leq g(r)$ (The subscript *d* stands for degree.)

(45) The boxing champion is huge.

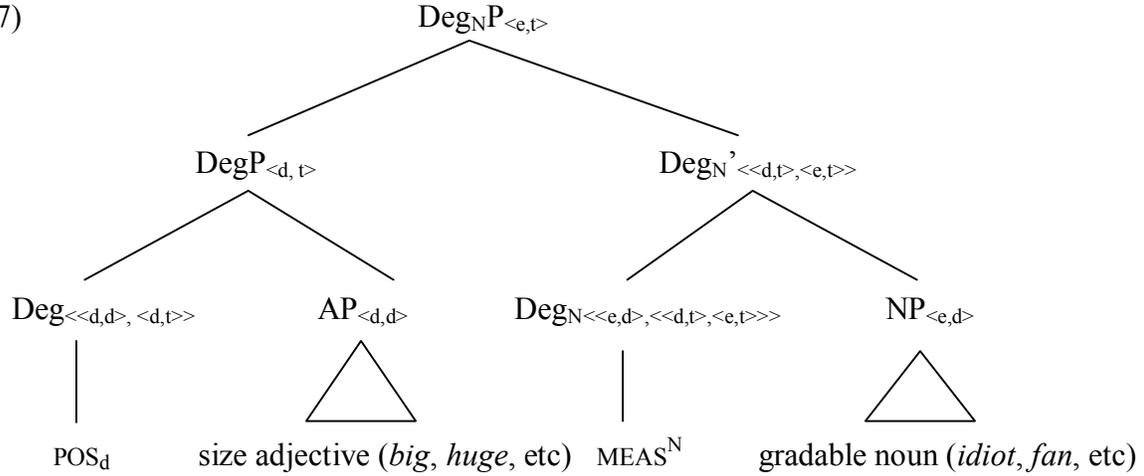
(46) The man’s enthusiasm for fancy cars is huge.

With all the preliminaries, the general LF for gradable nouns being degree-modified by size adjectives is given in (47). The Position Generalization, which states that degree readings of size adjectives are possible only in an attributive position but not in the predicate position, trivially follows from the syntactic configuration. Degree readings of size adjectives are licensed only when size adjectives appear in the specifier position of the nominal degree projection. It cannot appear in any other position.

³⁹ This POS_d morpheme is different from the POS morpheme that I suggested was covertly encoded in the MEAS^N morpheme. The purpose of the former is to guarantee that a big idiot is big on the bigness scale, and the purpose of the latter is to guarantee that a big idiot is necessarily an idiot.

⁴⁰ Morzycki used a novel type *o* to represent the conjunction of the individual type and the degree type, in an attempt to reflect that size adjectives can measure both individuals and degrees. In this chapter I do not use the conjunctive type, as doing so brings no obvious advantage for the discussion in this chapter.

(47)



With regard to the Bigness Generalization, there are two related aspects. The first one is why a positive size adjective can modify a gradable noun, and the second one is why a negative size adjective often cannot. To see how Morzycki’s analysis explains the first question, let us take the phrase “big idiot” for example. The semantic interpretation of the phrase is given in (48). It says that “big idiot” denotes a set of individuals x such that the degree of x ’s idiocy is at least as great as the smallest degree on the idiocy scale whose “bigness” size meets the contextual standard of being “big”, and at the same time x meets the standard of being an idiot. To simplify a bit, “big idiot” denotes the set of idiots who are not less idiotic than a standard-big idiot. There is no problem with this interpretation. Other similar combinations of positive size adjectives and gradable nouns receive a parallel analysis *mutatis mutandis*. Thus, the modification of gradable nouns by positive size adjectives consistently has well-defined semantics and is acceptable.

(48) $\llbracket [\text{POS}_d \text{ big}] \text{ MEAS}^N \text{ idiot} \rrbracket$

$$= \lambda x. \text{MIN} \{d: d \in \text{scale}(\mathbf{idiot}) \wedge \llbracket [\text{POS}_d \text{ big}] \rrbracket(d) \} \leq \mathbf{idiot}(x) \wedge \text{STND}(\mathbf{idiot}) \leq \mathbf{idiot}(x)$$

$$= \lambda x. \text{MIN} \{d: d \in \text{scale}(\mathbf{idiot}) \wedge \text{STND}(\mathbf{big}) \leq \mathbf{big}(d) \} \leq \mathbf{idiot}(x) \wedge \text{STND}(\mathbf{idiot}) \leq \mathbf{idiot}(x)$$

Moving on to “small idiot”, its semantics can be defined in a parallel fashion to “big idiot” (49). In the semantics, the chunk $\text{MIN}\{d:d \in \text{scale}(\mathbf{idiot}) \wedge \text{STND}(\mathbf{small}) \leq \mathbf{small}(d)\}$ corresponds to “not idiotic at all”. Because anyone who has any degree of idiocy is not less idiotic than someone who is not idiotic at all, $\text{MIN}\{d:d \in \text{scale}(\mathbf{idiot}) \wedge \text{STND}(\mathbf{small}) \leq \mathbf{small}(d)\} \leq \mathbf{idiot}(x)$ satisfies vacuously. Then the semantics of “small idiot” can be reduced to (50), which, in turn, is equivalent to the semantics of “idiot”. Therefore, it amounts to saying that “small idiot” is semantically identical to “idiot”. The size adjective “small” melts away and has no contribution to the semantics of the phrase in which it appears. Because there are alternative ways (size, age, significance, etc) to construe negative size adjectives such that they do have an effect on the semantic interpretation, negative size adjectives are always interpreted in these alternative ways. Morzycki suggested that this is why negative size adjectives cannot have degree readings. His analysis can be easily extended to other combinations of negative size adjectives and gradable nouns. In this way, the Bigness Generalization, as it was stated in Morzycki’s original paper, receives an explanation.

$$(49) \quad \llbracket [\text{POS}_d \text{small}] \text{MEAS}^N \text{idiot} \rrbracket$$

$$= \lambda x. \text{MIN}\{d:d \in \text{scale}(\mathbf{idiot}) \wedge \text{STND}(\mathbf{small}) \leq \mathbf{small}(d)\} \leq \mathbf{idiot}(x) \wedge \text{STND}(\mathbf{idiot}) \leq \mathbf{idiot}(x)$$

$$(50) \quad \llbracket [\text{POS}_d \text{small}] \text{MEAS}^N \text{idiot} \rrbracket$$

$$= \lambda x. \text{STND}(\mathbf{idiot}) \leq \mathbf{idiot}(x)$$

$$= \llbracket \text{POS idiot} \rrbracket$$

In summary, Morzycki’s analysis captures the Position Generalization, and it provides a seemingly appealing analysis to both aspects of the Bigness Generalization. However, a closer

scrutiny will reveal some problems with his analysis. Though his analogy of size adjectives as degree modifiers to AP-modifying MPs constitutes the right analytic intuition, there are several empirical and theoretical challenges to his proposal, especially his explanation of the Bigness Generalization. These challenges, to which I turn in the next section, undermine the explanatory adequacy of Morzycki's analysis.

3.4.2 Problems with Morzycki's Analysis

Morzycki's analysis is insightful in drawing a parallel between the degree use of size adjectives and AP-modifying MPs. In spite of this intuitive appeal, his actual implementation has serious flaws that invalidate his analysis. In his analysis of size adjectives as degree modifiers, two degrees play an essential role. One is the minimum degree on the scale determined by the gradable noun that equals or exceeds the contextual standard for the size adjective. The other is the degree to which the gradable noun holds of an individual.

According to Morzycki, the first (minimum) degree is introduced by a minimality operator. And the comparison relation between the minimum degree and the other degree is introduced by a " \leq " operator. The minimality operator and the " \leq " operator, in turn, are both introduced by the $MEAS^N$ degree morpheme. This morpheme is defined in a close analogy to $MEAS^A$, which involves the minimality operator and the \leq operator as well. The definition of $MEAS^A$ is based on the assumption that AP-modifying MPs in English have the "at least" interpretation, i.e. "6 feet tall" means "at least 6 feet tall". Though the assumption AP-modifying MPs has the "at least" interpretation is essential for his analysis to work, Morzycki simply took it for granted and provided no empirical or theoretical evidence in support of the assumption. But what if the assumption does not hold? I will show this is indeed the case.

Empirical evidence, theoretical argumentation as well as psycholinguistic and acquisition experiments all point to the conclusion that the semantics of AP-modifying MPs receives the “exactly” interpretation: “6 feet tall” means “exactly 6 feet tall” rather than “at least 6 feet tall”. The often-perceived “at least” interpretation of MPs arises via pragmatic considerations. Here is my scheme to argue for the position. An MP generally consists of a number word (e.g. “six”) and a measure word (e.g. “feet”). It is reasonable to assume that the measurement word in the MP does not contribute to the “at least” or “exactly” interpretation of the MP as a whole. What type of interpretation the MP receives (“at least” vs. “exactly”) correlates with the interpretation of the number word in it. If number words can be shown to have the “exactly” interpretation, then MPs should also have the “exactly” interpretation. This is indeed the case.

First, empirical data on downward scalar entailment (51) and upward compatibility (52) are most often claimed to provide support to the idea that number words are associated with the “at least” interpretation. However, such data only represent part of the picture. König (1991) observed that these empirical data consistently involve distributive readings of count phrases. For example, the sentence “Mary saw three men” can be paraphrased in the set talk as in (53). Because a non-empty set can have a proper subset and can be a proper subset of another set at the same time, the downward entailment and upward compatibility patterns associated with distributive readings of count phrases follow naturally. When Mary saw three individual men (at three different times), she necessarily saw two of them (at two different times).

(51) Mary saw three men. \rightarrow Mary saw two men. (König, 1991: (9))

(52) Mary saw three men, in fact four.

(53) Mary saw e , for each e in M , M a set of men of cardinality 3 exactly. (König, 1991: (10))

On the other hand, collective readings of count phrases cannot be similarly paraphrased in the set talk. They do not give rise to the same downward entailment and are not upward-compatible. For example, the verb “share” is a collective predicate. It does not allow distributive reading of its subject. The contrast between (51-52) on one hand and (54-55a) on the other hand illustrates the difference. If “three” has the “at least” interpretation, (55a) should be valid, even on the collective reading. This is evidenced from the improved grammaticality judgment for (55b), where “three” is modified by “at least”. König (1991) made theoretical significance out of this particular fact and argued that distributivity, rather than the semantics of number words, is the responsible factor for the “at least” interpretation of number words.

(54) Three boys shared a pan cake ??→ Two boys shared a pan cake.

(55) a. ??Three boys shared a pan cake, indeed four.

b. At least three boys shared a pan cake, indeed it was four.

(It is acceptable only if “indeed four” is used as after-thought.)

Second, the disparate behaviors of number words versus scalar items in downward entailing environment suggest that number words are not scalar and that they do not have the “at least” interpretation in the semantics. This is essentially an argument proposed by Breheny (2008). According to his idea, the existential quantifier “some” is clearly a scalar term situated on a scale with the universal quantifier “all”: “some” can be paraphrased as something like “ranging from one to all”. Mary’s utterance (with “some” focused) in (56a) suggests that Mary thinks John did not get all of the questions right. With the response in (56b)⁴², Bill is suggesting that John got all the questions right. This implication is not available for Bill’s response in (56b’),

⁴² I follow the convention to use capital letters to indicate special rising, contrastive intonation.

where the auxiliary verb “did” is contrastively focused. Rather this response constitutes a denial of the existential claim made by Mary in (56a). Compare these utterances to those in (57). They are minimally different in that the latter set of utterances all use the number word “four”. (57a) most naturally means that John got exactly four questions right. Bill’s responses in (57b) and (57b’) both deny the proposition that John got just four questions right. The number of questions that he got right could be three, could be five, or any other number except for “four”. In particular, (57b) does not deny any upper-bounding inference which would arise if “four” was understood to parallel “some” meaning “at least one” and have the scalar meaning “at least four”. This suggests that “four” differs from “some” in being not scalar. It follows that number words cannot have the “at least” interpretation.

(56) a. Mary: John got SOME_F of the questions right.

b. Bill: He didn’t get SOME_F of the questions right.

b’. Bill: He DIDn’t_F get some of the questions right. (Breheny, 2008: 12)

(57) a. Mary: John got FOUR_F of the questions right.

b. Bill: He didn’t get FOUR_F of the questions right.

b’. Bill: He DIDn’t_F get four of the questions right. (Breheny, 2008: 13)

Third, psycholinguistic and language acquisition experiments provide more evidence in favor of the “exactly” interpretation of number words (Huang et al, 2010; Papafragou and Musolino, 2003; inter alia). One core task for such experimental projects is to determine which interpretation(s) of number words arises from semantics and which (if any) through pragmatic inference. Huang et al (2010) tested adults and 2- to 3-year-olds using a cover box method that

can tease semantic aspects of interpretation apart from pragmatic aspects. They found that when scalar implicature get cancelled in an experiment task, adults and children alike give the “exactly” interpretation to number words. The results from their experiments provide psycholinguistic and acquisition evidence to the position that number words have the “exactly” interpretation as the semantic default and their “at least” reading arises from pragmatic implicatures. The interested reader can refer back to Breheny (2008) for discussion about factors of pragmatic inference in deriving the “at least” reading of number words.

Given that number words have the “exactly” interpretation, it is conceptually implausible that they would somehow transform to an “at least” interpretation when they modify measurement nouns. Thus, MPs have the “exactly” interpretation. This raises serious theoretical issues for Morzycki’s analysis of size adjectives as degree modifiers, which rests on the assumption that AP-modifying MPs have the “at least” interpretation. In Morzycki’s analysis, the MEAS^A morpheme, which mediates the interpretation of MPs, encodes the “ \leq ” relation to reflect the assumed “at least” interpretation. Obviously, though there are good reasons to propose such a degree morpheme, the exact definition that Morzycki (2009) proposed is not on the right track. The interpretation of size adjectives as degree modifiers for gradable nouns parallels that of AP-modifying MPs. The definition of the MEAS^N morpheme for size adjectives as degree modifiers is exactly molded after that of the MEAS^A morpheme and contains the “ \leq ” relation as well. It follows that MEAS^N should be redefined also. This is the first conceptual problem in Morzycki’s analysis of size adjectives used as degree modifiers for gradable nouns.

There is another challenge. According to Morzycki’s analysis, negative size adjectives make no semantic contribution to the degree reading of the phrases in which they appear. They have to be interpreted in alternative ways in order for them to contribute to the semantic

interpretation. This is why negative size adjectives cannot be degree modifiers. Extending his logic of reasoning, when all non-degree interpretations of a negative size adjective are explicitly blocked, the adjective will have to “accept the fate”, so to speak, of making no semantic contribution. It is reasonable to assume that this vacuous interpretation, as last resort, fares better than total unacceptability. The prediction is not borne out, however. In (58a), given the explicit linguistic context, the physical size reading, the young age reading and the insignificance reading of “small” are all ruled out, the next possible interpretation for “small” in the sentence is probably the (vacuous) degree one. Morzycki’s analysis would predict that (58a) to have the same interpretation as (58b), as if the word “small” did not exist in the former sentence at all. However, the prediction is not borne out. On the intuitive level, the former is not equivalent to the latter. Similarly, (59a) does not have the same interpretation as (59b).

(58) a. Michael Bloomberg, an old, tall media tycoon and mayor of NYC, is a %small idiot.

b. Michael Bloomberg, an old, tall media tycoon and mayor of NYC, is an idiot.

(59) a. The gigantic basketball player who enjoys worldwide fame is a %tiny smoker.

b. The gigantic basketball player who enjoys worldwide fame is a smoker.

The third problem with his analysis is an empirical one. Morzycki took the Bigness Generalization to be a categorical constraint on the use of size adjectives as degree modifiers for gradable nouns: positive size adjectives *always* can serve as degree modifiers, and negative size adjective are *absolutely* barred from being degree modifiers. His analysis reflects this assumption in that it is purely semantic in nature and leaves no room for pragmatic factors to come into play. Positive size adjectives are legitimate degree modifiers because they have perfect semantic

interpretation; and negative size adjective cannot serve as degree modifiers because they are vacuous on the degree reading. However, native speaker's intuition is not as clear-cut as Morzycki's description and analysis suggest. I agree with Morzycki that positive size adjectives can consistently modify gradable nouns. However, empirical data reveal that there are indeed cases in which negative size adjectives can serve as degree modifiers. This, of course, casts serious doubt on Morzycki's analysis of the "negative" aspect of the Bigness Generalization.

The first type of exceptional cases to the Bigness Generalization has to do with vagueness, a kind of uncertainty about what property or properties a linguistic expression ascribes to an entity or even about whether the expression can be applied to the entity to begin with (Kennedy, to appear). Adjectives often encode vagueness of one kind or another. For example, "big" can be vague with respect to what dimension on which it operates. Whether the sentence "China is bigger than Russia" is true depends on whether one is using "big" to talk about the population or the area of the two countries. "Tall" is vague because in a given context it is often not clear exactly how tall one should be to qualify as being "tall". It may be the case that, in a certain context, individuals who measures exactly six feet is neither definitely tall nor definitely not tall. That is to say, it is indeterminate with regard to whether such individuals fall in the extension of "tall" or not, and thus belong to what Klein (1980) called the "extension gap" for the adjective "tall". This type of "extension gap" is most likely to arise from the lack of definite knowledge of the contextual standard for a gradable adjective. For example, if all one knows is that the standard for being tall in a context is somewhere between 5'8" and 6'3" but does not know where the standard exactly falls, she does not know whether an individual of 6 feet can count as being tall or not.

There is another type of vagueness which is similar to, but not the same as, the extension gap associated with one single gradable adjective. This corresponds to the “grey area” that potentially exists between the standard for a positive gradable adjective and the standard for its negative counterpart. Many things in the world are not classified based on two opposite polarities. For instance, there are entities that are neither hot nor cold, but lukewarm; a backpack can be neither heavy nor light in a context; a partially new building may not qualify as being new, but not being old either. The “grey area” for a pair of gradable dimensional adjectival antonyms is different from the extension gap for one single gradable adjective in that the former normally does not arise from epistemic indeterminacy with regard to the contextual standards for the antonym pair. Even when there are clear-cut standards for such a pair, the “grey area” may still exist. For instance, in a context in which any book of more than 400 pages is considered thick and any book of less than 250 pages is considered thin, a book of 300 pages is neither thick nor thin. In this chapter, in order to avoid using the informal and vague term “grey area” between standards of a pair of size adjective antonyms, I will use the (slightly verbose) “extension gap for the standards of an antonym pair” to express the notion.

Obviously, the extension gap for the standards of an adjectival antonym pair does not exist in a context in which the contextual standards for the antonym pair are strictly complementary to each other. When there is no extension gap for the standards of “big” and “small”, everything that is not “big” is “small”, and vice versa.

Now let us come back to the discussion of size adjectives as degree modifiers. When there is no extension gap with respect to the standards of a pair of size adjective antonyms, the contextually relevant individuals are exhaustively dichotomized into two opposite polar groups with respect to the “size” of their degrees associated with the gradable noun. In such a situation,

the adjective can modify the gradable noun. For example, the sentence in (60) involves “whether”, a question word that encodes exhaustivity (see Guerzoni, 2007 for some related discussion). The *whether*-clause classifies the degree of liking of music fans exhaustively into two opposite categories (“big” vs. “small”). This rules out the existence of a “grey area” with respect to the size adjective antonym pair evaluated against the gradable noun they modify (“fan”), and thus the sentence is acceptable in the intended degree reading. Similar remarks apply to (61).

(60) Whether you are a big fan or a small fan, the Beatles music is familiar and classic.

(61) There are two types of cycling enthusiasts: big ones and small ones.

Some may suspect that the contrastive use of “big” and “small” in (60-61) is responsible for the acceptability of the two sentences. More specifically, according to this idea, “small idiot” and “small fan” are made acceptable via some process of analogy to “big idiot” and “big fan” respectively. The hypothesis cannot be right, however. The same process of analogy is involved in (62-63), but “a tiny fan” and “minuscule enthusiasts” in the two sentences are much less amenable to have a degree reading⁴⁴.

(62) ?%In the administration, Bush was a big fan of nuclear weapons, Cheney was a tiny fan.

(63) ?%Some club members are big enthusiasts, but most are just minuscule enthusiasts.

⁴⁴ My consultant reported that the sentences in (62-63) sound more like a word play. Though it is understandable, it is not grammatical.

With the potential possibility of analogy being ruled out, the two sentences in (60-61) clearly pose challenges to Morzycki's analysis, which predicts that "small idiots" and "small fan" cannot have degree reading at all, and that "small" in them has to be interpreted in an alternative, non-degree way. When all non-degree uses are blocked for "small" in (60), Morzycki's analysis predicts that the size adjective would have to "accept the fate" of being interpreted vacuously and the sentence would have the same meaning as (64). However, (64) is a pragmatically infelicitous sentence. The sentence in (60) does not suffer from the pragmatic infelicity.

(64) % Whether you are a big fan or a fan, the Beatles music is familiar and classic.

Degrees associated with the size adjective modifying a gradable noun are evaluated relative to the scale for the gradable noun. For the phrase "big idiot", the "size" characterized by "big" is necessarily one of the degree of an individual's idiocy, not of something else. The extension gap for the standards of a pair of size adjective antonyms corresponds to individuals the sizes of whose degrees on the scale of the relevant gradable noun fall between the standards for the antonym pair. When such an extension gap does not exist or is small in a context, the negative size adjective patterns with the positive counterpart in being able to degree-modify the gradable noun. On the other hand, when the extension gap is big enough, the negative size adjective cannot degree-modify the gradable noun, for reasons to be specified in the next section.

The second type of exceptional cases to the Bigness Generalization occur when the relevant gradable noun is specified to hold of the individual characterized by "negative size adjective + gradable noun" (65a-66a). The sentence in (65a) differs from (65b), in that the

former encodes the “background” information that the speaker is a fan of (of detective novels) in the first place. Similar remarks apply to (66a-b).

(65) a. I am a fan of detective novels, but just a small fan.

b. %I am a small fan of detective novels.

(66) a. They are all idiots, but some can congratulate themselves on being a small idiot.

b. %Some of them can congratulate themselves on being a small idiot.

Under Morzycki’s analysis, gradable nouns modified by negative size adjectives cannot have degree readings because negative size adjectives make no contribution to the intended degree reading. If “small” in (65a) and (66a) “melts away” in the intended degree reading, the sentences would be semantically equivalent to their counterpart without “small”. However, the prediction does not hold. For example, the second clause in (66a) says some of them should feel lucky that their degree of idiocy is small. Without “small”, the clause would mean something different -- that some of them should feel lucky for being an idiot.

The third type of exceptions to the Bigness Generalization occurs when a negative size adjective modifying a gradable noun receive some special contrastive focus intonation. Native speakers of English reported that focus intonation can make negative size adjectives an acceptable degree modifier for gradable nouns. For example, in (67) the size adjective “small” associates with the focus sensitive element “even”. The sentence fares better in the degree reading than its counterpart without “even” and focus intonation on “small”. In (68), “small” receives focus intonation, without associating with any overt focus sensitive element. The sentence can be used as an out-of-the-blue utterance. The negative size adjective also can have a

degree interpretation in the sentence. The sentence in (69) also involves a focus sensitive element. Though somewhat marginal, the word “small” modifies the degree of addiction to smoking. Such sentences pose problems to Morzycki’s analysis. Morzycki may dismiss such sentences by claiming that the extra focus intonation on negative size adjectives makes it impossible for them to melt away in the final semantic interpretation. Then he would have to specify an explicit mechanism for the purpose.⁴⁵

(67) You can't go wrong with this CD if you are even a [**small**]_F **fan** of the Monkees.

(68) The group was established to help [**small**]_F enthusiasts of gardening develop their skills.

(69) I'm only a small smoker, a very small smoker; I'm not in the habit of smoking two pipes one on top of the other⁴⁶.

To summarize for the moment, Morzycki’s analysis is built upon an unjustified assumption that measure phrases receive the “at least” interpretation. It wrongly predicts that a negative size adjective can degree-modify a gradable noun when all non-degree interpretations of the size adjective are contextually blocked. It cannot explain why negative size adjectives can degree-modify gradable nouns when there is no extension gap between the standards of the negative size adjective and its positive counterpart. It has nothing to offer regarding exceptional cases in which an individual is characterized by a gradable noun degree-modified by a negative

⁴⁵ Mats Rooth (p.c.) suggested that all three types of exceptions to the Bigness Generalization can be understood as involving some kind of focus on negative size adjectives. The suggestion is intuitively appealing, but at this stage I do not know how to categorize focus to the right extent to ‘umbrella’ the three types of exceptional cases and at the same time exclude other cases involving focus. Moreover, when discussing the first type of exceptional cases, I have mentioned some sentences in which contrastive focus cannot license negative size adjectives to have degree readings.

⁴⁶ This sentence was adapted from <http://englishliteratureblog.blogspot.com/2007/09/waiting-for-godot-act-1-by-samuel.html>. Acceptability judgment regarding the sentence shows cross-speaker variation. I have no idea regarding where the variation comes from.

size adjective when the gradable noun is explicitly specified to hold of the individual in the first place. In addition, it is not clear whether and how his analysis can explain the observation that focus intonation on negative size adjectives somehow can make the degree reading of negative size adjectives possible.

These theoretical and empirical problems suggest that Morzycki's analysis must be revised or even abandoned. I conjecture that revising the analysis is the right route to take because, in spite of the above challenges that it is faced with, it does make use of an appealing analytic intuition: the degree use of size adjectives parallels AP-modifying MPs. I will argue that it is Morzycki's use of the minimality operator and his definitions of the MEAS morphemes that lead to the problems. It is a natural move to redefine the morphemes.

The exceptions to the "Bigness Generalization" are of particular theoretical importance for an explanatorily sufficient analysis of size adjective degree-modifying gradable nouns. These exception cases suggest that the generalization is not a monolithic constraint as Morzycki (2009, 2005) assumed. The observation is particularly important that the presence or absence of an extension gap between the standards of a gradable adjectival antonym pair affects whether the negative polarity adjective in the pair can degree-modify a gradable noun. Such a "grey area" is pragmatic in nature. It suggests that whether the modification of a gradable noun by a negative size adjective is acceptable or not has to do with some pragmatic factors. Thus, the semantic-pragmatic interface may be a good place to seek a satisfactory account of the Bigness Generalization.

3.5. “Bigness Generalization” at the semantic-pragmatic interface

3.5.1 Redefining $MEAS$ morphemes

Morzycki’s essential analytic insight is that the degree reading of size adjectives parallels AP-modifying measure phrases in terms of the syntactic structure and semantic representation. Intuitively, they both predicate of a degree coming from an element that they modify. However, Morzycki’s actual implementation is at best “half-correct”. It correctly captures the Position Generalization, but falls short of the Bigness Generalization. The Position Generalization follows trivially from the syntactic representation of size adjectives degree-modifying gradable nouns. Morzycki’s explanation of the Bigness Generalization makes use of the scale structure of size adjectives and the semantics of degree measurement. His explanation does not leave any room for pragmatic violability of the Bigness Generalization. I will argue that pragmatic factors play an important role in analyzing (negative) size adjectives degree-modifying gradable nouns. My argument starts with revising the degree morpheme for MP-modifying MPs ($MEAS^A$) and then extending the new definition to the $MEAS^N$ morpheme. In particular, my analysis will take into consideration the relation between the standard of the size adjective and the standard of the gradable noun it modifies. This is where my proposal departs from Morzycki’s analysis, even though it shares the essential analytic intuition about the similarity between AP-modifying MPs and the degree use of size adjectives.

When discussing the conceptual challenges that Morzycki’s analysis is faced with, I cited evidence to show that AP-modifying MPs do not have the “at least” semantic interpretation. Rather, because number words have the “exactly” semantics and measurement nouns add no additional scalar information to the semantics of MPs, AP-modifying MPs should have the “exactly” semantics. I follow Morzycki (2009) in assuming that the interpretation of AP-modifying MPs involves a $MEAS^A$ morpheme as the degree head for the adjective phrase. To

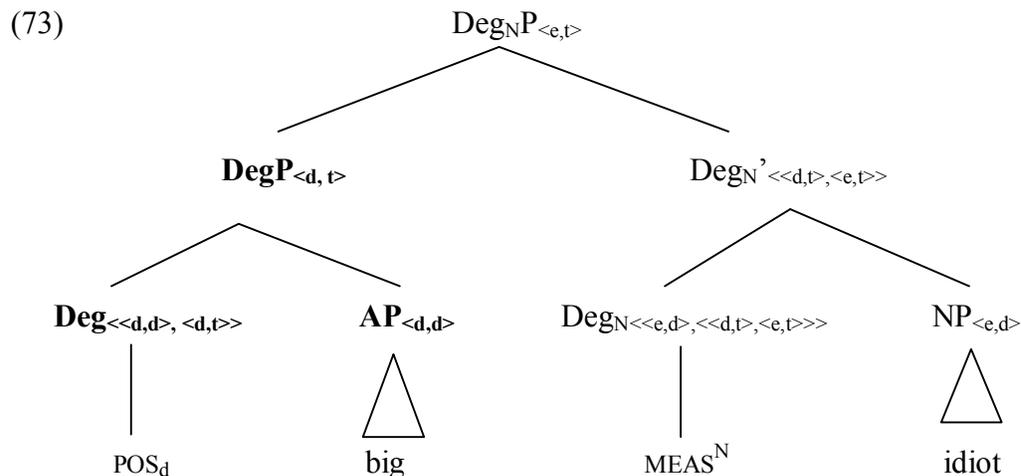
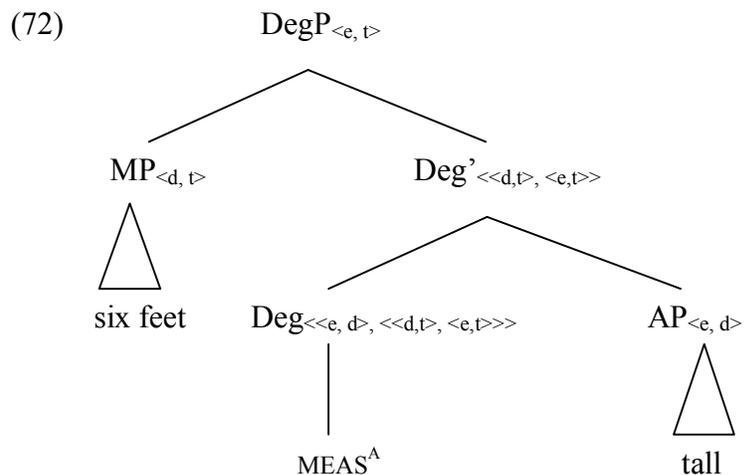
encode the fact that AP-modifying MPs have the “exactly” interpretation as the semantic default, my definition of the $MEAS^A$ morpheme involves the *identity* relation rather than the \leq relation. The morpheme (70) specifies that the degree of an individual x on the scale associated with the adjective equals the only degree denoted by the measure phrase. In the definition, $\exists!d[\phi]$ is an abbreviation for $\exists d[\phi \wedge \forall d' [d' \neq d \rightarrow \sim \phi_{[x/x']}]$. That is, $\exists!d$ stands for “there exists one and only one d ”. In the definition of the $MEAS^A$ morpheme, this d has to verify $m(d)$, where m is a measure phrase. The “exactly” interpretation of AP-modifying MPs is encoded in the morpheme. Take “six feet tall” (71) for example. The only degree d to verify the first conjunct **six feet**(d) has to be six feet exactly. There is no one particular degree greater than six feet that can privilege over other alternative degrees: all the degrees d' greater than six feet are non-distinguishable with regard to whether **six feet**(d') is true or false. Likewise, all degrees less than six feet have the same status, and no one degree can be picked over others to be the single degree making the first conjunct true. The second conjunct $d = \mathbf{tall}(x)$ requires that the height of an individual equals this single degree that verifies the first conjunct. Therefore, “six feet tall” denotes the set of individuals that are *exactly* six feet tall, rather than those who are *at least* six feet tall.

$$(70) \llbracket MEAS^A \rrbracket = \lambda g_{\langle e, d \rangle} \lambda m_{\langle d, t \rangle} \lambda x. \exists!d [m(d) \wedge d = g(x)]$$

$$(71) \llbracket \text{six feet } MEAS^A \text{ tall} \rrbracket = \lambda x. \exists!d [\mathbf{six\ feet}(d) \wedge d = \mathbf{tall}(x)]$$

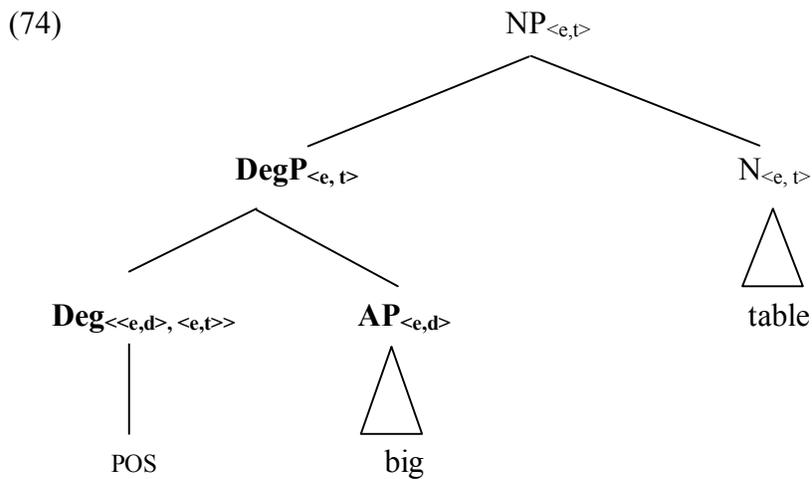
Given the afore-mentioned intuitive similarity between the degree reading of size adjectives and AP-modifying MPs, the $MEAS^N$ morpheme for gradable nouns can be defined in a fashion similar to $MEAS^A$. For convenience of reference, I repeat the LF representations associated with the two morphemes below. In the new definition, the $MEAS^N$ morpheme is similar

to $MEAS^A$ and does not involve a minimality operator or a comparative relation (i.e. “ \leq ”). Rather, it establishes an identity relation between two degrees. This is the essential similarity between the two MEAS morphemes.



There are an important difference between $MEAS^A$ and $MEAS^N$, however. Though an MP denotes just a singleton set of degree, their counterpart in size adjectives degree-modifying gradable nouns -- size adjectives headed by the pos_d morpheme -- denotes a non-singleton set of degrees. In order to see this, let us draw a further parallel between the “regular” use of a size

adjective and its degree use. Take “big table” for example. The LF for this phrase (74) is very similar to that of “big idiot”. The size adjective “big” (in its regular size use) headed by the pos_e morpheme denotes a set of individuals. It is obvious that the key difference between size adjectives as “regular” non-degree modifiers and as degree modifiers is in the semantic types of the DegP projection (bold-faced in (73) and (74)). All instances of the individual type e in the DegP projection in (74) are replaced with the degree type d in (73). The DegP in (74) denotes a set of individuals, so it is natural to conclude that the DegP in (73) denotes a set of degrees.



The claim that the degree use of size adjectives, via combining with a POS morpheme, denotes a set of degrees also makes intuitive sense. When a non-maximum degree d_1 on a certain scale is considered big in a context, any degree bigger than d_1 should also be considered big. The definition of MEAS^N does not require the $\exists!$ operator that is present in the definition of MEAS^A. Rather, it involves the \exists operator, which picks up a random degree from the set of degrees.

The revised definition of the MEAS^N morpheme is given in (75). It requires that an individual x satisfy the gradable predicate to a degree that (i) is identical to *some* degree that

satisfies the size adjective on the relevant scale associated with the modified gradable noun, and (ii) is at least as great as the contextual standard for the gradable noun.

$$(75) \llbracket \text{MEAS}^N \rrbracket = \lambda g_{\langle e, d \rangle} \lambda m_{\langle d, t \rangle} \lambda x. \exists d \in \{d' : d' \in \text{scale}(g) \wedge m(d')\} \wedge d = g(x) \wedge \text{STND}(g) \leq g(x)$$

My analysis assumes the same general LF for size adjectives degree-modifying gradable nouns as in Morzycki's. This is represented in (73). Recall that the Position Generalization roots from the syntactic configuration of size adjectives as degree modifiers. Thus, my explanation of the Position Generalization is the same as in Morzycki's analysis. The remaining task is to explain how the Bigness Generalization and the exceptional cases to the generalization arise.

3.5.2 Positive size adjectives as degree modifiers

It has been argued above that the Bigness Generalization is a violable constraint. There are three aspects related to the generalization that need to be addressed. The first is why positive size adjectives can act as degree modifiers for gradable nouns. The second is why negative size adjectives often cannot. The third is how to explain the exceptional cases to the generalization. To explain the first aspect, I will again use the phrase "big idiot" as a representative of positive size adjective degree-modifying gradable nouns. The semantic derivation of the phrase is given in (77). It denotes a set of individuals x such that the degree of x 's idiocy equals to some degree which falls on the scale of idiocy and which is at least as great as the standard of being big, and at the same time x meets the standard of being an idiot.

$$(76) \llbracket \text{POS}_d \rrbracket = \lambda g_{\langle d, d \rangle} \lambda r_d. \text{STND}(g) \leq g(r) \quad (\text{repeated from (44)})$$

$$(77) \text{ a. } \llbracket \text{POS}_d \text{ big} \rrbracket = [\lambda g_{\langle d, d \rangle} \lambda r_d. \text{STND}(g) \leq g(r)] (\text{big}) = \lambda r. \text{STND}(\mathbf{big}) \leq \mathbf{big}(r)$$

$$\begin{aligned}
& \text{b. } \llbracket \text{MEAS}^N \text{ idiot} \rrbracket \\
& = [\lambda g_{\langle e, d \rangle} \lambda m_{\langle d, t \rangle} \lambda x. \exists d \in \{d' : d' \in \text{scale}(g) \wedge m(d')\} \wedge d = g(x) \wedge \text{STND}(g) \leq g(x)] (\mathbf{idiot}) \\
& = \lambda m_{\langle d, t \rangle} \lambda x. \exists d \in \{d' : d' \in \text{scale}(\mathbf{idiot}) \wedge m(d')\} \wedge d = \mathbf{idiot}(x) \wedge \text{STND}(\mathbf{idiot}) \leq \mathbf{idiot}(x) \\
& \text{c. } \llbracket \text{big idiot} \rrbracket = \llbracket \text{MEAS}^N \text{ idiot} \rrbracket (\llbracket \text{POS}_d \text{ big} \rrbracket) \\
& = \lambda x. \exists d \in \{d' : d' \in \text{scale}(\mathbf{idiot}) \wedge \text{STND}(\mathbf{big}) \leq \mathbf{big}(d')\} \wedge d = \mathbf{idiot}(x) \wedge \\
& \quad \text{STND}(\mathbf{idiot}) \leq \mathbf{idiot}(x)
\end{aligned}$$

The semantics of “big idiot” involves degrees on two different scales, i.e. the scale associated with “big” and the scale associated with “idiot”. In spite of the intuition that the two scales are separate and cannot be identified with each other, when evaluating “big idiot” the scale of “big” is relativized to that of “idiot”. Suppose the degree use of “big” constitutes a scale that stands independently of any restriction from the scale associated with the gradable noun it modifies. Then the bigness of two degrees on different scales (say “idiocy” and “enthusiasm”) will both be degrees on an abstract bigness scale not restricted by any other scale. It would follow that the bigness of an idiocy degree and the bigness of an enthusiasm degree can be compared, and no cross-scalar comparison is involved to lead to anomaly (“incommensurability”). However, such a comparison is impossible, as suggested by the infelicity of the sentence (78). It is natural to hypothesize that for “big idiot”, the scale for “big” does not exist independently of the scale for “idiot”. Rather, the former scale stands relative to the latter scale.

(78) */?? His idiocy is bigger than his brother’s enthusiasm for computer games.

Out of this consideration, I posit that for the phrase “big idiot”, the idiocy scale is “measured” from the scalar perspective determined by “big”. Degrees on the idiocy scale can be measured via many means (e.g. IQ numbers, scores on some complicated test). One measurement is their “size”⁴⁹. Every degree on the idiocy scale corresponds to some “size” on the bigness scale.

It is reasonable to assume that in the case of “big idiot”, the scale associated with “big” and the scale associated with “idiot” are isomorphic. They have exactly the same ordering of degrees. The size adjective simply provides a perspective to measure degrees on the scale associated with the gradable noun. Nevertheless, for simplicity of illustration I will treat the two scales like they are separate.

In particular, the standard for being an idiot $STND(idiot)$ and the standard for being big $STND(big)$ can enter into an ordering relation. The latter standard corresponds to individuals who are a “standard-big” idiot, meaning that his or her idiocy degree is just the standard of having a big degree of idiocy. Moreover, “big” and “idiot” are both positive gradable predicates, and thus their scales have the same, positive polarity. In this chapter, I use “ \rightarrow ” to represent the positive polarity, and “ \leftarrow ” to represent the negative polarity. With all the considerations, the relation between the idiocy scale and the bigness scale can be schematized as in Figure 2. $STND_{big}$ has to be located to the right of $STND_{idiot}$, because a big idiot is necessary an idiot. With the ontological formalization of degrees as intervals (see Kennedy, 1999, 2001; Schwarzschild and Wilkinson, 2002), $STND_{big}$ can be seen as a superset of $STND_{idiot}$.

⁴⁹ The ‘size’ of degrees on the scale associated with a gradable noun must be different from the ‘abstract size’ as illustrated in such phrases as ‘a small problem’ and ‘an enormous disaster’. The latter use appears to make reference to size along an abstract scale of severity or gravity. By contrast, the degree use of size adjectives makes reference to degrees along the scale determined by the modified gradable noun itself.

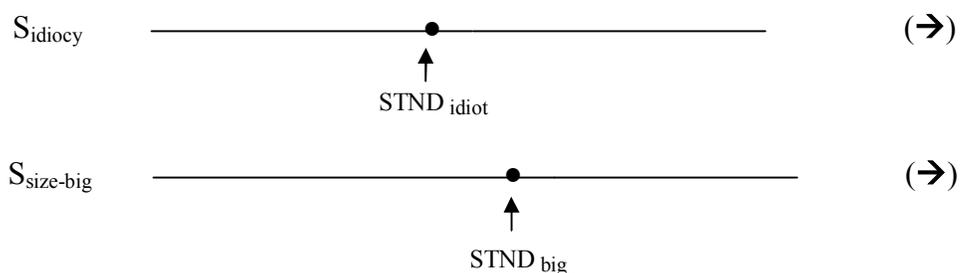


Figure 2: relation between the idiocy scale and the bigness scale

I take that the degree use of size adjectives is remotely related to its original size use. This is why I use “size” in the subscript for the scale associated with “big”. I also distinguish the scale for a negative polarity adjective from that of its positive counterpart, by using arrows to represent the polarity of scales. The scales of an antonym pair of gradable predicates differ (only) in the ordering imposed on the dimension that they share in common (von Stechow, 1984; Kennedy, 1999).

Now we can draw on the relation between the idiocy scale and the bigness scale to see why the phrase “big idiot” is consistently acceptable. According to the semantic interpretation in (77c), for an individual to qualify as a big idiot, her idiocy degree needs to be a degree on the S_{idiocy} scale whose correspondent on the bigness scale falls on, or to the right of, $STND_{\text{big}}$, and at the same time his idiocy exceeds $STND_{\text{idiot}}$. Because an idiocy degree whose bigness exceeds $STND_{\text{big}}$ necessarily exceeds $STND_{\text{idiot}}$, a big idiot is an individual the size of whose idiocy exceeds $STND_{\text{big}}$. It corresponds to some point in the region on the bigness scale that falls on, or to the right of, $STND_{\text{big}}$. Because this region is not empty, the phrase “big idiot” has a non-empty denotation and is always acceptable in its degree interpretation.

the two standards stand in a strictly complementary relation. It has already been established that, in a context of talking about the abstract size of idiocy degrees, $STND_{big}$ is necessarily located to the right of $STND_{idiot}$. Thus, when there is no extension gap between $STND_{big}$ and $STND_{small}$, $STND_{big}$ also should appear to the right of $STND_{idiot}$ ⁵⁰.

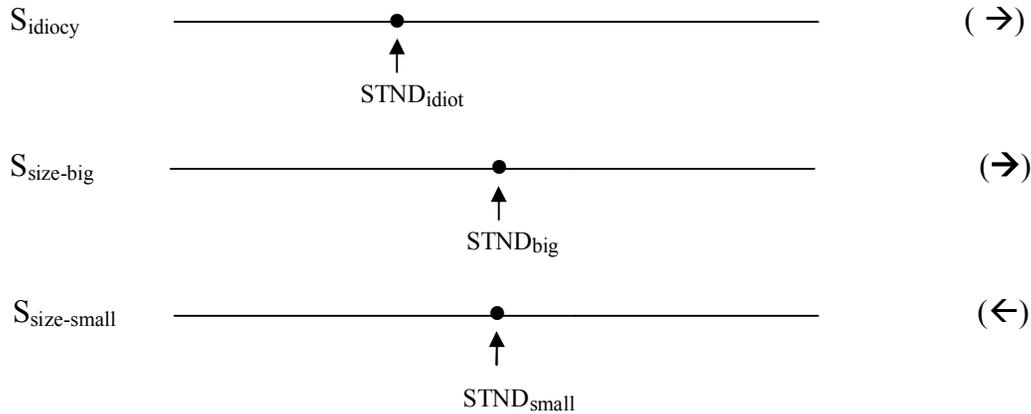


Figure 4: situations without extension gap

The semantic interpretation of “small idiot” can be defined in a fashion parallel to “big idiot”, as in (79). An individual x is a small idiot if the smallness of x ’s idiocy degree exceeds the standard of being small on the idiocy scale and at the same time x is an idiot. This requires that x ’s idiocy degree fall between $STND_{small}$ and $STND_{idiot}$. In cases that can be represented by Figure 4, because a non-empty region exists between the two standards, “small idiot” denotes a non-empty set and has a sensible semantics.

⁵⁰ Mats Rooth (p.c.) pointed out that the gradable noun ‘idiot’ is also associated with an extension gap: some people may have a dubious status with regard to whether they are considered an idiot or not. As discussed above, this type of extension gap generally results from epistemic indeterminacy of the speaker who does not know where the standard of being an idiot falls on the idiocy scale. This is different from the more objectively-oriented extension gap for the standards of an antonym pair. In this chapter, I do not consider extension gap arising from epistemic indeterminacy, in order not to complicate the discussion.

$$(79) \llbracket \text{small idiot} \rrbracket = \llbracket \text{MEAS}^N \text{ idiot} \rrbracket (\llbracket \text{POS}_d \text{ small} \rrbracket)$$

$$= \lambda x. \exists d \in \{d' : d' \in \text{scale}(\mathbf{idiot}) \wedge \text{STND}(\mathbf{small}) \leq \mathbf{small}(d')\} \wedge d = \mathbf{idiot}(x) \wedge$$

$$\text{STND}(\mathbf{idiot}) \leq \mathbf{idiot}(x)$$

Xiao Li (p.c.) suggested to me that “small idiot” should be outright ungrammatical given the polarity opposition between “small” and “idiot”. Along the lines of her idea, “small idiot” should be treated as being parallel to such ungrammatical phrases as “6 meters short”, because both appear to involve a gradable element of one polarity modifies another gradable element of the opposite polarity. The phrase “6 meters short” imposes an ordering relation between a negative-polarity degree (i.e. $\text{short}(x)$) and on a positive-polarity degree (i.e. “6 meters”) (80). Because the two degrees do not have the same polarity, the ordering relation cannot be evaluated and thus is not defined (Kennedy, 1999, 2001). Xiao Li suggested extending this reasoning and hypothesized that negative size adjectives should be incompatible with gradable nouns at all, because the ordering relation between the negative-polarity smallness degree of an individual’s degree of idiocy and his degree of idiocy cannot be evaluated due to polarity opposition.

$$(80) \lambda x. \text{short}(x) = 6 \text{ meters}$$

However, it is clear from the semantic interpretation of “small idiot” in (79) that the phrase establishes no ordering relation between a smallness degree and an idiocy degree. Thus “small idiot” should not be considered comparable to “six feet short”. More specifically, $\mathbf{small}(d')$ compares to $\text{STND}(\mathbf{small})$, both of which are degrees on the smallness scale. Both “ $d = \mathbf{idiot}(x)$ ” and “ $\text{STND}(\mathbf{idiot}) \leq \mathbf{idiot}(x)$ ” compare degrees on the idiocy scale. Thus, though “small”

and “idiot” are opposite in scale polarity, the incompatibility that underlies the ungrammaticality of phrases such as “six meter short” does not apply to “small idiot”.

There are cases which contains an extension gap that corresponds to individuals the size of whose idiocy degree is neither big enough to qualify as a big idiot nor small enough to qualify as an idiot to a small degree. The gap exists within the maximum point of the standard of being “big” and the maximum point of the standard of “small”. How large the extension gap is depends on the choice of comparison class, a subset of the discourse domain relevant to the conversation context. It is possible that the extension gap is small and $STND_{small}$ still falls to the right of $STND_{idiot}$. This type of situations can be schematized in Figure 5.

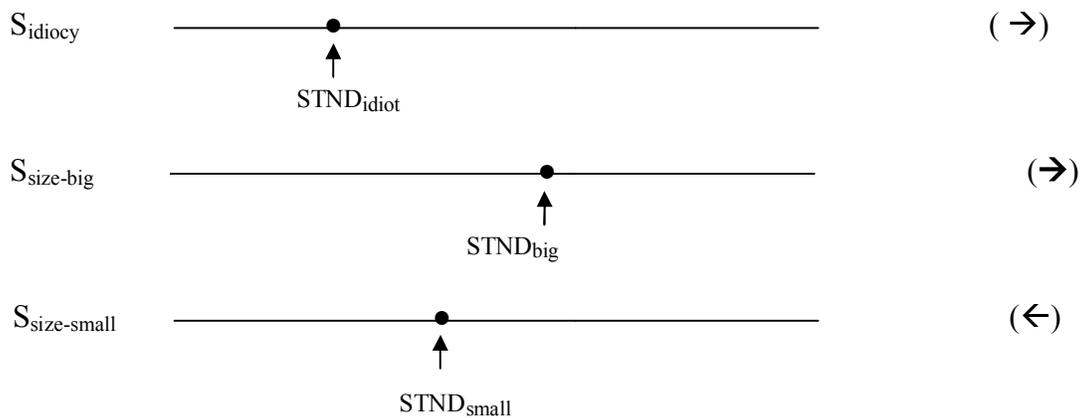


Figure 5: situations with a small extension gap

With regard to whether such contexts allow a meaningful interpretation for “small idiot”, they behave the same as contexts in which $STND_{small}$ and $STND_{big}$ stand in a strictly complementary relation. In both types of contexts $STND_{small}$ falls on, or to the right of, $STND_{idiot}$. It is clear from Figure 5 that there do exist degrees of idiocy that correspond to individuals whose

degree of idiocy is small enough but at the same time exceeds the contextual standard of being an idiot. In such scenarios “small idiot” denotes a non-empty set and is acceptable.

Figure 4 and Figure 5 represent situations in which the extension gap between the standards of a negative size adjective and of its positive counterpart is zero or contextually small. In these situations, the negative size adjective can degree-modify a gradable noun. However, there may well be a relatively large subgroup of individuals in the comparison class whose idiocy degrees are neither big nor small. The difference among their idiocy degrees may span over a long interval on the idiocy scale. In such cases, it is likely that $STND_{big}$ and $STND_{small}$ fall onto opposite sides of $STND_{idiot}$. In the schematization in Figure 6, the relevant extension gap for the antonym pair “small” and “big” is the region between the two vertical dotted lines.

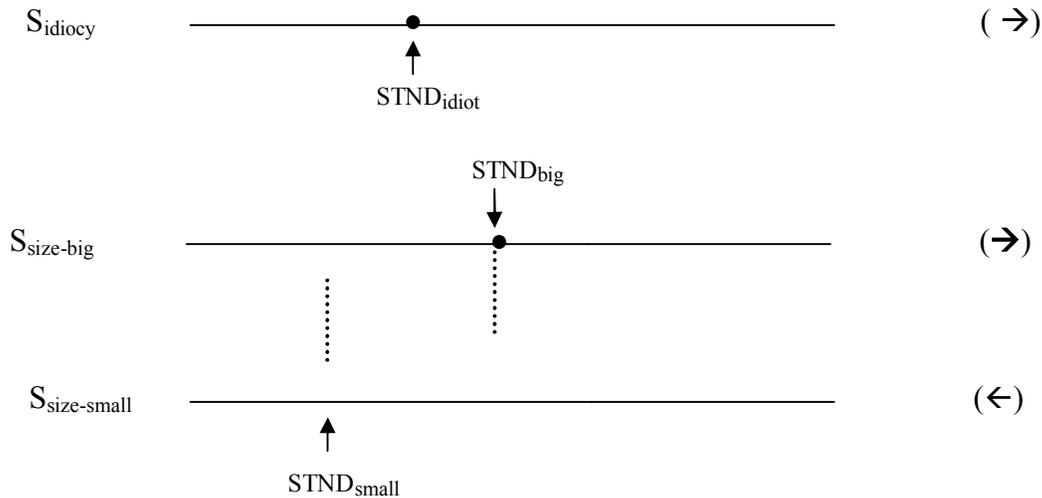


Figure 6: situations with a big extension gap

Because $STND_{small}$ falls to the left of $STND_{idiot}$, there is no idiocy degree which exceeds $STND_{idiot}$ and whose smallness degree exceeds $STND_{small}$ at the same time. Thus, given the interpretation in (79), “small idiot” denotes an empty set and has no interpretation. More

specifically, the semantics for “small idiot” as defined in (79) contains “ $d' \in \text{scale}(\mathbf{idiot}) \wedge \text{STND}(\mathbf{small}) \leq \mathbf{small}(d')$ ”, which establishes the requirement that the smallness of an individual x 's idiocy degree be at least as great as $\text{STND}_{\mathbf{small}}$. The ordering of degrees is sensitive to the polarity of the scale(s) associated with the degrees. The scales for “small” and “idiot” have opposite polarity. The bigger the smallness degree of an idiocy degree is, the smaller the idiocy degree is. Therefore, when the requirement is met, the corresponding degree of x on the idiocy scale has to be a proper subset of $\text{STND}_{\mathbf{idiot}}$. In such cases as represented in Figure 6, when an individual x 's degree of idiocy satisfies “ $d' \in \text{scale}(\mathbf{idiot}) \wedge \text{STND}(\mathbf{small}) \leq \mathbf{small}(d') \wedge d = \mathbf{idiot}(x)$ ”, x 's idiocy degree falls below $\text{STND}_{\mathbf{idiot}}$ (“ $\mathbf{idiot}(x) < \text{STND}(\mathbf{idiot})$ ”). This contradicts the last chunk in the semantic representation of “small idiot”, “ $\text{STND}(\mathbf{idiot}) \leq \mathbf{idiot}(x)$ ”.

Thus, when the extension gap for the standards of “big” and “small” is large enough to the extent that $\text{STND}_{\mathbf{small}}$ falls below $\text{STND}_{\mathbf{idiot}}$, the semantics of “small idiot” denotes an empty set. There are other alternative ways to interpret “small” such that “small idiot” does not denote an empty set. For example, “small” can mean “slender” or “young”. In order for the phrase to have a sensible semantic interpretation, “small” has to be interpreted in these alternative ways.

My reasoning here is similar to Morzycki's explanation of the general unacceptability of “small idiot” in the intended degree reading. Both analyses take the unacceptability as resulting from the lack of a sensible degree interpretation for negative size adjectives. However, my analysis differs from Morzycki's with regard to how the lack of sensible interpretation arises. In Morzycki's analysis, on the intended degree reading of “small idiot”, “small” contributes nothing to the interpretation. Alternative ways to construe the adjective should be sought. When all potential alternative ways are blocked, it is reasonable to assume that “small” will “accept the fate” of having the vacuous degree interpretation. However, such is not the case, as evident in the

ungrammaticality of (58-59). In my analysis, “small idiot” denotes an empty set only when the extension gap between the standards of “big” and “small” is contextually large enough. Denoting an empty set means there is no interpretation, so alternative interpretations have to be sought for to make the relevant phrase meaningful. When none of the potential alternative interpretations is available, the negative size adjective will have no interpretation whatsoever.

To summarize the discussion based on “big”, “small” and “idiot”, “big idiot” is invariably acceptable, because $STND_{big}$ consistently falls on, or to the right of, $STND_{idiot}$. Whether “small idiot” has an acceptable degree interpretation or not depends on the ordering relation between $STND_{idiot}$ and $STND_{small}$, which is affected by the size of the extension gap between $STND_{big}$ and $STND_{small}$. When there is no such extension gap or the extension gap is contextually small so that $STND_{small}$ falls to the right of $STND_{idiot}$, “small idiot” can have the degree interpretation. On the other hand, when the extension gap is large enough such that $STND_{small}$ stands to the left of $STND_{idiot}$, “small idiot” denotes an empty set, and it has to be interpreted in an alternative, non-degree way.

Therefore, my analysis predicts that only when $STND_{small}$ is contextually big enough will “small” be not able to degree-modify the gradable noun “idiot”. In other types of cases, “small idiot” should have the intended degree interpretation. A natural question to ask is why “small idiot” is perceived to be unacceptable in most natural situations, given that my analysis holds that ungrammaticality should be restricted to only one of many cases. I believe that the answer has to do with the proportionally uneven distribution of the different types of cases.

More specifically, the evaluation of the standard of being an idiot appears to be less contextually-oriented than, for example, for the standard of being tall. An individual can qualify as being tall in one group but not tall in another group. Evaluating whether an individual is tall is

highly sensitive to what the comparison class is like. This is evident in the numerous *for*-phrases that “tall” can take to specify the comparison class: *tall for a first grader*, *tall for her age*, *tall for an Asian woman*, *tall for a Hollywood movie star*. Each of the *for*-phrase provides a domain of individuals for calculating the standard of being tall. By contrast, “idiot” is not as sensitive to the comparison class and is not as free to take such a wide range of *for*-phrases. The most natural comparison class for “idiot” is a large population available to the speaker to evaluate idiocy on. Furthermore, the large comparison class most probably has a normal distribution in terms of idiocy, so that there are many members in the class who idiocy is neither big nor small. This means the extension gap for $STND_{big}$ and $STND_{small}$ with respect to idiocy is big in most naturally-occurring scenarios. More often than not $STND_{small}$ is lower than $STND_{idiot}$. I take this consideration to be the reason why “small idiot” usually cannot have the intended degree interpretation⁵¹, especially when it is used out of a context.

The above discussion based on “big”, “small” and “idiot” can be readily extended to other combinations of size adjectives and gradable nouns. My analysis draws on the scale structures of size adjectives and gradable nouns, the complementation relation between the standards of a pair of adjectival antonyms, the ordering relation between the standards of size adjectives and of the modified gradable nouns, and the notion of “extension gap for the standards of an antonym pair”. Because both “standard” and “extension gap” are functions of the utterance context, my analysis is more pragmatic than Morzycki’s analysis and duly leaves room for contextual manipulation such that negative size adjectives can serve as degree modifiers, a point to which I turn next.

⁵¹ The discussion in this paragraph is obviously very informal and discursive. I believe that carefully-designed psycholinguistic experiments can (dis)confirm my hypothesis. However, this task falls outside of the scope of the chapter.

3.5.4 Exceptional cases explained

In this subsection I will show how my analysis avoids the problems that Morzycki's proposal is faced with. Firstly, in section 3 I pointed out that Morzycki's analysis is based on the wrong assumption that MPs have the "at least" interpretation. The assumption is reflected in the definition of the MEAS^A morpheme, which involves the minimality operator and the \leq relation. Morzycki (2009) defined the MEAS^N morpheme in a parallel fashion. His semantics of size adjectives modifying gradable nouns based on the definition makes wrong predictions. In my analysis, I adopted the well-argued position that MPs have the "exactly" interpretation as the semantic default, and encoded the interpretation in the MEAS^A morpheme. By extension, MEAS^N involves an identity relation between two degrees. My semantics of size adjectives modifying gradable nouns builds on this new definition and allows for contextual manipulation which permits negative size adjectives to be degree modifiers in some contexts.

Second, Morzycki's analysis wrongly predicts, or at least is compatible with, that when all non-degree interpretations of a negative size adjective modifying a gradable noun are blocked, the phrase would, as last resort, receive a (vacuous) degree reading. According to Morzycki, (81a) (repeated from (58a)) would have the same meaning as (81b). My analysis does not make such a prediction. Rather, under my analysis (81a) cannot have a degree interpretation unless the extension gap between the standards of "big" and "small" with respect to idiocy is non-existent or sufficiently small. As no linguistic context specifies the extension gap to be zero or small, the sentence is perceived not to have the degree reading.

- (81) a. Michael Bloomberg, an old, tall media tycoon and mayor of NYC, is a %/?small idiot.
b. Michael Bloomberg, an old, tall media tycoon and mayor of NYC, is an idiot.

Thirdly, Morzycki's analysis of the Bigness Generalization is purely semantic in nature and leaves no room for exceptional cases to the generalization. I have shown that there indeed exist empirical exceptions to the generalization: negative size adjectives can act as degree modifiers in some restricted contexts. The first type of exceptions occur when no extension gap exists between the standard for a negative size adjective and that of its positive counterpart, as evident in the acceptability of the sentence in (82). The word "whether" has an exhaustivity component in its semantics (Guerzoni, 2007). Music fans are exhaustively classified into two categories: big fans and small fans. There is no fan whose liking of music is neither big nor small. In other words, there exists no extension gap between the standards for "big" and "small" evaluated against "fan". $STND_{small}$ falls to the right of the standard for "fan" (see Figure 4). It is clear that my analysis can capture this type of exception cases.

(82) Whether you are a big fan or a small one, the Beatles music is familiar and classic.

The same consideration also holds when the extension gap is contextually small (see Figure 5). However, because there is no linguistic device to measure the "size" of extension gap, the prediction is hard to test from a purely linguistic perspective.

There is an even more direct way to make the denotation not empty, which corresponds to the second type of exceptional cases to the Bigness Generalization that I discussed in section 3. The linguistic context can explicitly specify that the characterization of an individual by a gradable noun modified by a negative size adjective exceeds the standard associated with the gradable noun. This is exactly what happens in (65a) and (66a). Take for example the sentence in (66a), repeated below as (83). The first clause specifies that the degree of idiocy for each

individual in the group referred to by “they” exceeds the standard of being an idiot. The second clause specifies that, for some members of the group, the degrees of idiocy are small. However, the first clause already guarantees that the sizes of these members’ idiocy degrees are not small to the extent of disqualifying them being an idiot. The denotation of “a small idiot” in the sentence is not an empty set; an alternative interpretation of “small” does not need to be sought.

(83) They are all idiots, but some can congratulate themselves on being a small idiot.

The third type of exceptional cases to the Bigness Generalization corresponds to still another means to guarantee that the gradable noun holds of an individual characterized by the gradable noun modified by a negative size adjective. This is done through putting special focus intonation on the modifying negative size adjective. The interpretation of focus makes use of alternative sets, and alternative sets can trigger presupposition in the local context (Abusch, 2010). For the sentence in (84), the focus on “small” in the *if*-clause triggers the alternative set whose elements are of the form *you are a _ idiot*, where the _ symbol is filled by a size adjective. The alternative set, in turn, triggers the presupposition that you are a fan of the Monkees. This is very similar to the second type of cases discussed just above. Because the speaker presupposes that the hearer is a fan of the band, the speaker takes the size of the hearer’s degree of liking the band to be not smaller than the size of the contextual standard degree of liking the band. The denotation of “a small fan” is not an empty set, and “small” does not have to be interpreted in an alternative way.

(84) You can't go wrong with this CD if you are even a [**small**]_F fan of the Monkees.

3.6. Final remarks

This chapter dealt with the special case of size adjectives used as degree modifiers for gradable nouns. Not all nouns are gradable, and not all gradable nouns behave alike in terms of degree modification. In this chapter I divided gradable nouns into two separate classes. One type of gradable nouns have scale structures similar to gradable adjectives. Their scale structures consist of one simple categorization criterion or a set of such criteria integrated together via Boolean operations. For the other type of gradable nouns, their scale structures cluster together multiple dimensions that are integrated through weighted-mean operations. Only members of the first type are subject to degree-modification by size adjectives.

There are two generalizations that constrain the degree modification of gradable nouns by size adjectives: the Position Generalization and Bigness Generalization. The existing analysis of the two generalizations, by Morzycki (2005, 2009), builds on the analytic insight that the structure for degree modification of gradable nouns by size adjectives mirrors the structure for measure phrases that modify adjective phrases. The Position Generalization can be easily derived from the syntactic configuration proposed by Morzycki. However, Morzycki's actual explanation of Bigness Generalization crucially rests on an unjustified assumption and makes wrong predictions. In particular, Morzycki wrongly took the Bigness Generalization to be an absolute constraint. Empirical data show that negative size adjectives indeed can serve as degree modifiers, though they are not as productive as positive size adjectives. In this chapter I proposed an alternative analysis that lies at the interface between the semantics and pragmatics of nominal gradability. A negative size adjective cannot serve as a degree modifier only when the extension gap between the standards for the negative size adjective and for its positive counterpart is large enough so that the standard of the negative adjective falls to the left of the standard for the

gradable noun it modifies. My analysis is more pragmatic in nature. It correctly allows more room for contextual variation in negative size adjectives used as degree modifiers.

There are some questions that are left open in this chapter. The most eminent one concerns the comparative and superlative forms of negative size adjectives as degree modifiers. According to my analysis, a negative size adjective can act as degree modifiers when the extension gap between the standards for the negative size adjective and for its positive counterpart is small or even non-existent. For the comparative and superlative forms of negative size adjectives intended as degree modifiers, the notion of “extension gap” is not relevant. Thus, my analysis, as it is, would predict that the comparative and superlative forms of negative size adjectives consistently can degree-modify gradable nouns. The prediction appears to be not borne out, however. Though there do exist cases in which the comparative or superlative form of a negative size adjective serves as a degree modifier for a gradable noun (85-86), there are many other instances in which such modification is unacceptable (87).

(85) There’s no such a thing as a worse enthusiast, but a smaller enthusiast.

(86) (After talking about what an idiot Lee Corso is, the speaker continues,) but he does deserve credit for being the smallest idiot at that moment.

(87) a. %George is a smaller idiot than Dick is.

b. %George is the smallest idiot in the room. (Morzycki, 2009: ex. 93(b-c))

At this point I do not yet have a good explanation for the mixed behavior of the comparative and superlative forms of negative size adjectives as degree modifiers. I suspect that whether the comparative or superlative form of a negative size adjective is used evaluatively

plays an essential role in determining the (un)acceptability of the degree use of the negative size adjective. With this tentative hypothesis, I will leave the question for future research.

Another question not addressed in this chapter is crosslinguistic variation observed with size adjectives used as degree modifiers. As noted in Xie (2010), the Bigness Generalization also has a gradient status in Chinese. However, negative size adjectives in the language appear to be more lenient to serve as degree modifiers for gradable nouns. If the analysis proposed in this chapter is to be extended to Chinese, one potential conclusion to draw is that there exist differences between English and Chinese in terms of extension gaps related to antonym pairs of size adjectives. I am leaving for future research the question of how plausible the conclusion is.

Chapter 4

The Interpretation of Weak Generic Sentences

4.1 Introduction

4.1.1 Quantificational flavors of bare plurals

It has been widely accepted that the generic interpretation of bare plurals (BPs) comes in a variety of flavors⁵². In certain contexts, they behave like a universal quantifier: the sentence in (1) expresses a true proposition because *all* dogs are mammals. In some other contexts, they can be most naturally paraphrased as “most”. The sentence in (2) is true on the fact that most (but not all) dogs bark. The Basenji species, for instance, does not make any noise similar to barking, and the New Guinea Singing Dog sings. Sometimes, they are paraphrasable as “roughly half”. The sentence in (3) is generally held true in spite of the fact that only male lions wear manes. Still in some other contexts they can be paraphrased as “less than half”. For the sentence in (4), only healthy and fertilized female birds lay eggs. In spite of the intuitive differences in terms of quantificational strength of the BPs, the sentences in (1-4) share a core similarity: all of them appear to express a quite strong generalization.

(1) Dogs are mammals.

(2) Dogs bark.

(3) Lions have manes.

(4) Birds lay eggs.

⁵² The claim is intended to apply on the intuitive level only. In discussing the sentences in (1-4), I will only concern myself with the question of what percentage of the population denoted by the subject satisfy the predicate. On the analytical level, it is possible that the qualificational force is not as different if some implicit restriction is imposed on the domain of qualification.

There is another class of generic sentences that involve a BP subject but have a weaker interpretation than those in (1-4). The property expressed by the predicate in such generic sentences holds of proportionally rather few of those individuals denoted by the BP subject. Because of the rather weak interpretation they have, in this chapter I will call them weak generic sentences, or sometimes weak generics for short. The sentences in (5-8) are all generic sentences of this kind. For (5), most Dutchmen do not know how to sail, let alone being good sailors, but the sentence is still held true, or at least so when the Netherlands was one of the major seafaring powers in the 17th century. In the literature the sentence has been commonly referred to as the Port Royal Puzzle. Similarly, (6-7) are true in spite of the fact that most Brazilians do not play soccer and the fact that most Bostonians take advantage of public transportation and do not drive in the first place. The sentence in (7) is perhaps also consistent with most driving Bostonians being careful drivers. There are just enough “bad apples” to make the driving situation really bad in the city.⁵³ The sentences in (8-9) are also true, though the relevant properties in the two sentences hold only of a tiny proportion of Frenchmen and anopheles mosquitoes respectively.

(5) Dutchmen are good sailors.

(6) Brazilians are skillful soccer players.

(7) Bostonians are careless drivers.

(8) Frenchmen eat horsemeat.

(9) Anopheles mosquitoes carry malaria.

⁵³ Mats Rooth (p.c.) observed that the following sentence does not have a weak generic interpretation, in contrast to the minimal pair in (7). Though the judgment is crispy, the sentence appears to require that a significant percentage of the Swedish population to be careful in driving. In this chapter I will not address the question why there exists such a discrepancy.

(i) Swedes are careful drivers.

The interpretation of weak generics is qualitatively different from that of “regular” generic sentences with BP subjects as represented in (1-4) (Krifka *et al*, 1995; Cohen, 2001; Nickel, 2009). According to Krifka *et al* (1995: p83), the sentences in (5-9) seem to “express a property that distinguishes the subject referent from other entities that might belong to the same category”. They characterize a distinguishing property of the referent of the subject. For example, the sentence in (5) says that the Dutch set themselves apart from alternative nations in the relevant context in that they have good sailors among themselves. None of the sentences in (1-4), by contrast, is interpreted with reference to an alternative population or expresses a property that distinguishes the referent of the subject from other comparable groups of entities.

4.1.2 Research questions defined

The exact semantic interpretation of weak generics is pretty elusive and remains to be specified. This is the task that this chapter is to undertake. The objective is even more modest than addressing the whole range of weak generics. Even among weak generics, the exact mechanisms of interpreting them are not uniform. Nickel (2009, 2010a) suggested that weak generics of the form *Ks are Q* as in (5-7) are interpreted distinctively from weak generics whose predicate is a “regular” verb phrase such as those in (8-9). According to his idea, while the interpretation of the former involves the interaction of the semantics of generics and the semantics of gradability, the interpretation of the latter is subject to a modality-based analysis. This chapter acknowledges the interpretational distinction between the two types of weak generics, and only deals with the question of how to interpret the former subset of weak generics. For convenience of reference, except for where distinctions between the two subsets are relevant for discussion, I will simply use the broad term “weak generics” to refer to the first subset.

To make the discussion more concrete, in this chapter I use the Port Royal Puzzle (PRP) sentence in (5) as a representative of all weak generics of the form *Ks are Q*. There are one puzzle and one challenge regarding the interpretation of the PRP sentence. The one puzzle has to do with explaining the fact that the sentence does not entail the proposition *Dutchmen are sailors*. The former sentence is generally held to be a true generic sentence, while the latter is clearly false. My take at this puzzle essentially will be a lexical one. The one challenge, on the other hand, is to answer the question of why weak generics as represented by the PRP sentence can be true, given that more often than not generic sentences have rather strong truth conditions. In order to provide a solution to this challenge, I will put under the microscope the two main surface constituents in the PRP sentence, i.e. “Dutchmen” and “good sailors”. They correspond to the two following questions that this chapter aims to address. Answering the two questions will specify the exact interpretation of the PRP sentence.

Question 1: Which sub-group of Dutchmen is relevant for the evaluation of the PRP

Question 2: How good at sailing should the sub-group of Dutchmen be to verify the

The gist of the proposal to be developed in this chapter is that the PRP sentence is true if and only if among those Dutchmen whose sailing skills are considered good relative to all Dutchmen who have any level of sailing skills, there are generic-many whose sailing skills exceed the contextual standard of having good sailing skills relative to those people of the contextually-relevant alternative nationalities who have any level of sailing skills, and at the same time the Dutch-internal standard of having good sailing skills should be higher than its

counterpart for the alternative nations. To see how the interpretation works more concretely, suppose there are only two nations in the relevant context: Holland and Germany. Within the Dutchmen population who can sail, there is a standard of having good sailing skills. Some Dutchmen are as skilled as or more skilled than this standard, and the others fall below the standard. Among the German people, there is another standard of having good sailing skills. The Dutch-internal standard may be higher or lower than the German-internal standard. For the PRP sentence to be true, among all the Dutchmen whose sailing skills exceed the Dutch-internal standard of having good sailing skills, there are generic-many who sail better than the Dutch-external (i.e. German-internal in this particular context) standard of having good sailing skills, and the former standard exceeds the latter one.

Here is how the chapter is organized. The analysis that I will develop regarding the interpretation of weak generics makes reference to the *GEN*(eric) operator⁵⁴. In the literature weak generics have been taken to provide crucial evidence against a (strong) quantificational analysis of generic sentences in general. If this is indeed the case, the use of the *GEN* operator in analyzing the semantics of weak generic would be problematic. In the next section I will show that the most crucial entailment pattern used in the literature (most notably Carlson (1977)) to argue against the quantificational analysis of weak generics can receive an alternative explanation and thus does not really argue against an analysis that makes reference to the *GEN* operator. The entailment puzzle with the PRP sentence actually arises from a lexical ambiguity with the noun “sailor”. In section 3 I will review several recent analyses of (weak) generics, especially ones by Cohen (1999, 2001) and Nickel (2009). I will show that they both make wrong predictions. On the other hand, each of them makes use of insightful analytic intuition,

⁵⁴ As most of the literature on generic sentences does, I will not address the question of what exactly the *GEN* operator means.

which, when combined, provides a promising direction to analyzing weak generics. In section 4, I combine Cohen's and Nickel's analyses to provide a new analysis of weak generics, and then I show how the new proposal avoids the problems that are faced with their analyses. In section 5 I will briefly discuss some further issues and conclude the chapter.

4.2 Entailment and the generic quantifier

4.2.1 The prima facie lack of entailment

The analysis of weak generics to be spelled out in section 4 makes crucial reference to the *GEN* quantifier. However, it has been argued by some linguists, most notably by Carlson (1977), that the generic use of BPs cannot be given a quantificational analysis and that generic sentences are not associated with a tripartite, sentence-level generic quantifier. One piece of crucial evidence that Carlson cited in support of his argument has to do with one type of prima facie lack of entailment for weak generic sentences. It is worthwhile to devote some space to show that the entailment pattern that Carlson discussed can receive an alternative explanation and does not guarantee the conclusion that he desired to draw.

Carlson (1977) cited precisely the PRP sentence to argue against the quantificational analysis of generic sentences. According to his idea, if the sentence involves a covert quantificational operator *GEN*, its LF should be something along the lines of (10). This LF parallels (11), which involves overt quantifiers and corresponds to the sentences in (12). Carlson held that (12) entails (13). If the PRP sentence does involve a quantification operator as represented in (10), Carlson argued, by analogy to (12) and (13), the PRP sentence should entail (14). However, the entailment relation clearly does not go through: the PRP sentence expresses a true proposition but (14) expresses a false proposition. This lack of entailment has long remained a puzzle in analyzing weak generics. Carlson (1977) took this lack of entailment relation as one

piece of crucial evidence for his claim that generic sentences, weak generics included, cannot be subject to a quantificational analysis.

(10) *GEN* [x: x is a Dutchmen] (x is a good sailor)

(11) *ALL/MOST/SOME*[x: x is a Dutchmen] (x is a good sailor)

(12) All/Most/Some Dutchmen are good sailors.

(13) All/Most/Some Dutchmen are sailors.

(14) Dutchmen are sailors.

4.2.2 An alternative analysis

Carlson's argument crucially relies on an assumption which seems intuitively right on first blush but careful scrutiny suggests that it actually does not hold water. For Carlson, the sentences in (12) mean that all/most/some Dutchmen are sailors and their sailing skills are good. Only as such can the sentences entail the sentences in (13). However, the entailment relation does not necessarily go through. This is best illustrated by the lack of entailment between (15) and (16) (Menendez-Benito, 2007, citing Karina Wilkinson via Roger Higgins). The former may be understood to mean the majority of chisels can function as good screwdrivers, and the sentence is true in this sense. However, it is definitely not the case that most chisels are indeed screwdrivers. Hence (16) cannot be true. It then follows that (15) cannot entail (16). The relation between (12) and (13) appears to parallel the relation between (16) and (17). As will become clearer shortly, it is indeed possible that (12) does not entail (13). Thus, the assumption about entailment that Carlson's analysis crucially rests on does not hold.

(15) Most chisels are good screwdrivers.

(16) Most chisels are screwdrivers.

What is responsible for the lack of entailment between (15) and (16) is that two different senses of the same word are used (Larson, 1998). In the most natural reading of (15), the word “screwdriver” is used intensionally and denotes the functions or characteristics of a screwdriver, for example, as a hand tool for turning screws. On the other hand, the same word in (16) denotes the physical hand tool which happens to be called screwdrivers. The former does not entail the latter, because something that has the functions of a screwdriver is not necessarily a screwdriver. The use of a noun to refer to essential properties associated with the physical denotation of the noun is nothing rare in English. For example, the noun “teacher” in (17) makes reference to the properties that make a (good) teacher, not to the set of individuals who actually take a teaching job. Carlson (1977) did not consider this possibility.

(17) Everyone in the medical field is a born teacher, so just keep your ears and mind open.

The word “sailor” in (12) can likewise be understood to denote individuals who possess (good) sailing skills but not necessarily is a member of the sailing profession. This reading of the word is available in some other contexts as well. For instance, the word “sailor” in (18) means individuals who have good aptitude for sailing. By contrast, the same word in (13) can be understood to denote individuals who make a living from sailing.

(18) Some people are natural sailors, even before they hit the water.⁵⁵

⁵⁵ <http://www.lyc.catsailor.org/photos/lycregatta/image15.htm>

Likewise, the PRP sentence should entail (14), when the meaning of the word “sailor” in the two sentences is held consistent. I believe that the prediction holds in theory, but the actual situation is more complex. Most naturally, the word “sailor” in the PRP sentence makes reference to the skills, qualities, etc. that make a person good at sailing. If this sense of the word is unequivocally ruled out, it is less clear whether the resulting sentence can have a weak generic reading. For instance, the word “sailor” in (19) means a person of the sailing profession, and the sentence seems not to have a weak generic interpretation. Nevertheless, because the word “sailor” in the sentence has the same meaning as the word “sailor” in (20), the former entails the latter. On the other hand, for reasons unclear to me, the word “hunter” in (21) seems to be more prone to have the quality reading, and the sentence can be understood to have a weak generic reading. At the same time, the same word can receive a quality reading in (22), which has a weak generic reading as well. The latter sentence seems to entail the former sentence. Similarly, the sentences in (24) and (25) can be understood to involve no profession-denoting nouns and can be controlled for a weak generic reading. When they are under the weak generic reading, the first sentence entails the second one.⁵⁶

(19) Dutchmen are good sailors by profession.

(20) Dutchmen are sailors by profession.

(21) Texans are hunters.

(22) Texans are good hunters.

(23) Dutchmen are good and careful at sailing.

(24) Dutchmen are careful at sailing.

⁵⁶ Thanks to Mats Rooth for bringing the sentences in (23) and (24) to my attention.

The discussion in this section points to the conclusion that the lack of entailment between the PRP sentence and (14) is not a valid telling argument against a quantificational analysis of weak generics. This conclusion is important in two aspects. First, the analysis of weak generic to be developed later in this chapter will make crucial reference to the *GEN* operator. As far as entailment is concerned, proposing a *GEN* operator does not cause any theoretical or empirical problems. In fact, many works subsequent to Carlson (1977) adopted the *GEN* operator in representing the meaning of generic sentence in general (Wilkinson, 1991; Chierchia, 1995; von Stechow, 1997). Second, in the introduction I mentioned that the lack of entailment between the PRP sentence and (14) has been a long-standing puzzle that has drawn considerable attention in the literature on generic sentences. By attributing the phenomenon to a lexical ambiguity, a formal semantic analysis of weak generics does not have to take it in its grip. I believe this is the right thing to do. Assuming that the entailment puzzle has been tackled, I will focus on addressing the two questions instantiating the challenges for the semantic interpretation of weak generic sentences.

I should point out at this point, though, that I am only suggesting that the PRP sentence may involve a different sense of the word “sailor” than generally thought in the literature. I am definitely NOT saying that the weak generic reading of the sentence is illusory. The sentence is true, even though just a small percentage of Dutchmen possess the skills to sail well, and only a proportion of this small percentage of Dutchmen happen to be professional sailors. Moreover, the sentence represents a broad phenomenon, as many predicates can appear in weak generics. In addition to the sentences in (5-7), here are some more example sentences that can have a weak generic interpretation.

(25) Italians are good skiers.

(26) Europeans are tall.

(27) Tacos purchased at NYC food stands are filthy

4.3 Previous analyses

There have been several proposals about the exact semantic meaning of weak generics. These proposals were developed within different theoretical frameworks. In this section, I will review three of them: Carlson (1977), Cohen (1999, 2001), and Nickel (2009, 2010a). For each analysis, I will provide a brief summary and point out problems with it.

4.3.1 Carlson (1977)

In his analysis of the interpretation of bare plurals, Carlson (1977) took a formal semantic approach to generic sentences in general. He proposed that a BP functions grammatically as the name of a kind of things. The different interpretations that BPs can receive are determined in large part by the kind of predicates they combine with. Predicates can be classified into three categories: individual-level predicates (e.g. “intelligent” and “a man”), stage-level predicates (e.g. “drunk” and “available”), and predicates that select kinds (e.g. “extinct” and “be/have atomic number 16”). When a BP takes an individual-level predicate or a kind-selecting predicate, the resulting sentence can have a generic interpretation. Carlson’s proposal was intended to apply to all kinds of generic sentences, including weak generics. Because the predicate “good sailors” is an individual-level predicate, the PRP sentence has the generic interpretation. The relatively weak truth conditions for the sentence stand in an obvious contrast to generic sentences that have stronger truth conditions and that even can be paraphrased with quantifiers like “all” and “most”.

Carlson's semantic analysis treats generic sentences as simple predications, without specifying what is needed for a generic sentence to be true. To cope with the difference in qualification force among generic sentences, Carlson argued that the actual interoperation of a generic sentence makes recourse not only to the property of the predicate of the sentence, but also to the worldly affairs of how the referent of the subject stands with respect to the predication (i.e. Carlson's "extra-grammatical processes"). The question is what pragmatic considerations are relevant for determining how strong the interpretation of a particular generic sentence. Carlson did not provide an explicit solution. Obviously, the answer cannot be something too broad or inclusive, like "what (ever) the world is like with regard to what is expressed by the generic sentence."

More specifically, Carlson's analysis of generic sentences, as it is, does not capture the finer interpretation distinctions between weak generics and other generic sentences with stronger truth conditions (as well as distinctions among different types of generic sentences within the latter group). Take the PRP sentence for example. What percentage of the Dutchmen who know how to sail have to satisfy the predicate in order to the PRP sentence to be true? How do "extra-grammatical processes" make the lineation? This is essentially the challenge that needs to be addressed. An analysis of weak generic sentences that makes less or even no reference to "extra-grammatical processes" would be more preferable.

4.3.2 Cohen's probability-based analysis

Cohen (1999, 2001) took a mathematical probabilistic approach to generic sentences in general. He divided generic sentences into two mutually-exclusive categories: absolute and relative generic sentences. Absolute generic sentences are those generics that satisfy the definition in (28). Some examples of this type of generic sentences include the sentences in (1-4). For the

generic sentence *Dogs bark* to be true, the probability that a random dog which makes any noise (by barking, singing, etc) bark is greater than half. Because this conforms to what the world is like, the sentence is held to express a true proposition.

(28) *Ks are Q* is an absolute generic sentence iff its truth requires that the probability that an arbitrary K that satisfies some predicate alternative to Q satisfies Q is greater than 0.5.⁵⁷

The definition of absolute generic sentences is suggestive of how they are interpreted. Their interpretation requires computing the set of alternatives to the predicate Q (ALT(Q)), in which the property denoted by Q itself is included. For example, the alternative set for “(are) mammals’ consists of animal classes: {arthropods, amphibians, birds, fish, mammal, ...}. The semantics of absolute generic sentences can be defined as in (29) (Cohen, 1999: 37). In the definition, P(A|B) means the conditional probability of A given B, and “ $\vee A$ ” stands for the disjunction of all members in the alternative set ALT(Q). P(Q|K \wedge $\vee A$) is the probability of being Q given K intersecting with any member in ALT(Q).

(29) $\text{gen}_x[K(x)][Q(x)]$ is true iff $P(Q|K \wedge \vee A) > 0.5$, where $A = \text{ALT}(Q)$.

To see this more clearly, let us take two sentences for example. For the sentence in (30a), the alternative set to the predicate *fly* is, say, {*fly*, *swim*}. For the sentence to be true, of all birds that can move by flying or swimming, the probability of a bird being able to fly should be greater than .5. Because the actual situation in the world verifies this, the sentence is true. For the

⁵⁷ The alternative set to the predicate Q includes Q itself.

sentence in (31a), suppose *bear-live-young* is a member of the alternative set which contains means of producing offsprings $A=\{bear-live-young, lay-eggs, undergo-mitosis\}$. Though (supposedly) less than half of all mammals give birth to live young, if a mammal reproduces through any means, it is more likely that it gives birth to live young than it reproduces through laying eggs or undergoing mitosis.

(30)a. Birds fly.

b. $ALT(fly) = \{fly, walk, swim\}$

(31) a. Mammals bear live young.

b. $ALT(bear-live-young) = \{bear-live-young, lay-eggs, undergo-mitosis\}$

Cohen's notion of "relative generic sentences" roughly corresponds to "weak generics" used in this chapter. The semantic definition given in (29) cannot account for the truth conditions of relative generic sentences. For instance, the PRP sentence is true, but the truth does not require that more than 50% of those Dutchmen who have any level of sailing skills⁵⁸ are good at sailing. Therefore, relative generic sentences should have more restrictive interpretation than do absolute generic sentences.

According to Cohen, in addition to $ALT(Q)$, the interpretation of relative generic sentences (of the form *Ks are Q*) requires computing the set of alternatives to *Ks* ($ALT(K)$). For the PRP sentence, the alternative set to the subject "Dutchmen" contains all people from those nations (Holland included) relevant in the context, e.g. {Dutchmen, Englishmen, Germans, Italians, Spaniards ...}.

⁵⁸ Those Dutchmen are members of the alternative set {good at sailing, middling at sailing, poor at sailing}. In the rest of the chapter, I will refer to this subset of Dutchmen as the Dutch sailing-knowing population

According to Cohen's idea, a relative generic sentence is true if and only if the probability that a randomly chosen member in the denotation of K that satisfies at least one of the properties in $ALT(Q)$ has the property Q is greater than the probability that a randomly chosen member from the alternative set $ALT(K)$ that satisfies at least one of the properties in $ALT(Q)$ has the property Q . More formally, the semantics of relative generic sentences can be defined as in (32):

(32) $gen_x[K(x)][Q(x)]$ is true iff $P(Q|K \wedge \bigvee A) > P(Q|\bigvee A)$, where $A = \{K' \wedge Q' \mid K' \in ALT(K) \text{ and } Q' \in ALT(Q)\}$.

Under Cohen's interpretation mechanism of relative generic sentences, the PRP sentence is true if and only if the probability of a randomly chosen Dutchman who has any level of sailing skills being good at sailing is greater than the probability of an arbitrary person of an alternative nationality in the context who has any level of sailing skills being good at sailing. If there are only two countries in the context: Germany and Holland, then the sentence is true if and only if a randomly selected individual from the Dutch sailing-knowing population is more likely to sail well than a randomly selected individual from the sailing-knowing population in the two countries combined.

4.3.3 Problems with Cohen's analysis

In spite of its merits to be discussed later, Cohen's analysis makes too permissive predictions. First, Cohen's analysis requires a clear understanding of what group of people are "good sailors", both for the Dutchmen and for those people in the alternative nations. There has to be a standard for "good sailors" to make this evaluation possible. Cohen's discussion seemed to suggest that

the standard for evaluating who are “good sailors” among the Dutch sailing-knowing population is the same as the standard for evaluating who are “good sailors” among the sailing-knowing population of the alternative nationalities. According to his analysis, as far as the proportion of Dutchmen who have good sailing skills out of all the Dutch sailing-knowing population exceeds the corresponding proportion for the population of the contextually relevant alternative countries, the PRP sentence is true. He did not consider the level of sailing skills for those Dutchmen who can sail but whose sailing skills fall below the contextual standard of being a “good sailor”. A potential problem could arise from this particular lack of consideration. The distribution of the sailing skills of those non-good sailors in the Dutch population and in the international population can have an effect on how well the former sail relative to the latter.

A scenario to illustrate this effect can be schematically represented by Figure 7. Suppose 30% of the Dutch sailing-knowing population exceed the common contextual standard of having good sailing skills, and the rest of the Dutch sailing-knowing population are doing just badly in sailing. Somehow there are no Dutchmen who have middling sailing skills which fall between “good” and “bad”. On the other hand, 15% of the sailing-knowing population in the alternative nations exceed the same contextual standard of having good sailing skills, and the rest of them are either middling or bad (with respect to the same standards as for Dutchmen). Can this scenario verify the PRP sentence? The answer appears to depend on how the sailing skills of those people with middling or bad sailing skills are distributed in terms of their sailing skills. Because nobody among the Dutch population has middling sailing skills, all middling sailors are from non-Holland countries. If most of the non-good sailors from the non-Holland countries belong to the middling category, the PRP sentence is most likely false, because the non-Holland countries, overall, may have better sailing skills. If most of them belong to the “bad” category,

the sentence is most likely to be true. However, what matters for Cohen’s analysis is the percentage of Dutchmen who are considered “good at sailing” within the Dutch sailing-knowing population in relation to the corresponding percentage for the alternative nations. Those who are not considered good at sailing are irrelevant in Cohen analysis. Therefore Cohen’s analysis would predict the PRP sentence to be necessarily true in the scenario represented in Figure 7. The prediction does not conform to intuition.

Dutch sailors	30% good	70% bad
Alternative sailors	15% good	85% middling or bad

Figure 7: lack of distinction among “non-good sailors”

Second, Cohen’s proposal may predict two contradictory weak generics to have the same truth value at the same time, which is another undesirable situation that an adequate analysis of weak generics should avoid. Let us consider a scenario in which Cohen’s analysis would treat both “Dutchmen are good sailors” and “Dutchmen are bad sailors” to be true. It would occur when both the probability of a randomly chosen Dutchman with any level of sailing skills exceeding the contextual standard of having good sailing skills and the probability of a randomly chosen Dutchmen with any level of sailing skills sailing worse than the contextual standard of having bad sailing skills each exceed the corresponding probability for the population of the alternative nationalities. Imagine 30% of the Dutch population who have some level of sailing skills are good at sailing, 40% are middling, and 30% are bad. Among those people of the alternative nationalities who have any sailing skills, the figures are 20%, 60%, and 20%

respectively. This is represented in Figure 8. Notice the symmetry between the numbers of people who have good sailing skills and the numbers of people who have bad sailing skills, Under Cohen’s analysis, because a randomly chosen Dutchman who knows how to sail is more likely to be a good sailor than a randomly chosen person from the alternative nations who knows how to sail, so “Dutchmen are good sailors” is true. Likewise, “Dutchmen are bad sailors” should also be true in the same scenario. But the two sentences are contradictory and cannot be true at the same time.

Dutch sailors	30% good	40% middling	30% bad
Alternative sailors	20% good	60% middling	20% bad

Figure 8: symmetric distribution of “good sailors” vs. “bad sailors”

The above two problems with Cohen’s analysis have to do with his using probability in defining the semantics for generic sentences and using the same standard of having good sailing skills for both the Dutch population and the alternative nations. There is a third problem which is different in nature and which has to do with how different types of predicates fare with weak generics. Weak generics are systematically available for relative gradable predicates (such as *good*, *expensive*, *fat*). This claim is supported by the sentences in (33), whose truth conditions only require Americans or Europeans more tend to be fat or tall than people in other relevant countries (Nickel, 2009). Minimum standard absolute gradable predicates like “dirty” and “wet” also *can* serve as predicates for weak generics (contra Nickel, 2009). For example, though supposedly most football players (both professional and non-professional players included) have

their shoes clean after a game, the generic sentence in (34a) is still true. In addition, even for a gradable predicate that has a conceptually fixed standard that does not correspond to the minimum or maximum degree on the relevant scale, it can license a weak generic. The word “lemon” is one such predicate. The claim that the word has a fixed standard gradable predicates can be seen from the infelicity of using “pick the lemon one” in a case where two cars are mechanically non-functioning to significantly different degrees (Kennedy, 2007a, Syrett et al, 2010). The sentence in (34b) has a weak generic reading. The by-far majority of Chevys are not lemons at all, but the sentence can still be used a weak generic from a personal perspective.

(33)a. Americans are fat.

b. Europeans are tall.

(34) a. Shoes worn by football players are dirty after a game.

b. Chevy cars are lemons.

By contrast, weak generics are unavailable for maximum standard absolute gradable like “full” and “transparent”⁵⁹. Though many New York City subways are packed in rush hours, the sentence in (35a), which is adapted from Nickel (2009: 20c), does not have a weak generic reading. In addition, non-gradable predicates such as “locked” and “6-feet tall” cannot act as predicates for weak generics either. A considerable percentage of the American population have a height between 6’ and 6’5’’, probably comparable to the percentage of good sailors accounting for the Dutch population. However, the sentence in (35b) does not express a weak generic meaning.

⁵⁹ There exist variations of speaker judgment regarding whether maximum standard absolute gradable nouns can be predicates for weak generics. I will leave this cross-speaker variation for future research.

- (35) a. New York City subways are full of passengers in rush hours.
b. Americans are 6' to 6'5'' tall.

Cohen's probability-based analysis makes no reference to the scale structure of the predicate of a weak generic sentence. As such, it cannot explain why some gradable predicates can appear in weak generics, but some others cannot. It does not make any prediction regarding what type of predicates can appear in weak generics.

Thus far the careful reader may notice that my criticism of Cohen's analysis is primarily restricted to his employment of probability in the semantics, not about his use of alternative sets. Reference to alternative sets is one essential merit of Cohen's proposal that a more adequate analysis can or even should adopt. Krifka et al (1995) suggested that the PRP sentence involves comparing Dutchmen to other relevant nations and characterizes some distinguishing property of the Dutch people. The suggestion corroborated that the semantic interpretation of weak generic sentences should make reference to alternative sets.

4.3.4 Nickel (2009, 2010a)

Nickel's analysis of weak generic sentences was partially motivated by two observations that I have already touched upon when discussing Cohen's proposal. The first one is Cohen's lack of considerations of those Dutchmen whose sailing skills are not good enough to qualify as "good sailors". According to Nickel (2009), the truth conditions of the PRP sentence are "sensitive not only to facts about the sailors that exceed the contextually salient standard required for the evaluation of a sentence of the form *x is a good sailor* (where *x* is replaced by a name for a particular person), but also the sailors that fall below that standard." (pg.17). The other observation has to do with the behavior of different types of gradable predicates in weak generic

sentences. His observation is similar to, but not the same as, the third problem that I noted with Cohen’s analysis. He argued that the interpretation of weak generics parallels the distributive reading of such simple degree sentences as (36a). In its distributive reading, the sentence does not require every member of John’s family to be taller than one single common contextual standard of being tall. Rather, the sentence can be true when every member of John’s family is tall with respect to the standard for the comparison class that he/she belongs to (adult man for the father, adult women for the mother, teenagers for the teen sons and daughters, etc.). The idea is formally represented in (36b). The subscript i indicates the comparison class that an individual belongs to. “ $\text{Deg}_{\text{height}}$ ” is a function from individuals to their degree on the dimension of height.

(36) a. Everyone in John’s family is tall.

b. $\forall x_i. [\text{Member-of-John’s-Family}(x_i)](\text{Deg}_{\text{height}}(x) > \text{STND}(x_i))$

According to Nickel’s idea, weak generics are interpreted by way of a very similar distributive mechanism. The evaluation of the PRP sentence requires considering how each and every sub-group of the Dutch sailing-knowing population partitioned on the basis of their levels of sailing skills do in comparison with some contextual standard of sailing skills appropriate for the particular sub-group. In order for the sentence to be true, for each partition of the Dutch sailing-knowing population, the sailing skills of the members in the partition exceed a contextual standard appropriate for the partition to which they belong. The formal semantic representation of the sentence, as given in (37) is very similar to that of the sentence in (36a). The standard with respect to which “good sailor” is interpreted is bound by the *GEN* operator, which Nickel took to be a special distributive operator. The subscript i indicates the partition that the individual x

belongs to. The shorthand “Dutch sailor” stands for “Dutchmen who have any sailing skills”. The interpretation can be schematically represented as in Figure 9.

$$(37) \text{ GEN}_i(x). [\text{Dutch.sailor}(x)] (\text{deg}_{\text{good.sailor}}(x) > \text{STND}_i(x))$$

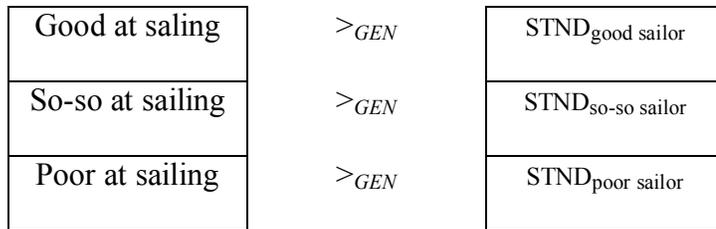


Figure 9: illustration of Nickel’s analysis

4.3.5 Problems with Nickel’s analysis

In section 3.2, I pointed out that Cohen’s analysis makes predictions that are too permissive. Nickel’s proposal avoids some of the challenges that Cohen’s is faced with. For instance, when the percentage of Dutchmen who are good at sailing within the Dutch sailing-knowing population is higher than the corresponding percentage in the alternative nations, Nickel’s idea correctly predicts that the PRP sentence is not necessarily true, because further considerations should be given to other partitions of the Dutch sailing-knowing population. In addition, Nickel insightfully included gradability (via the use of degree function and standard in the formal representation) in the semantic interpretation of weak generic sentences. This potentially offers a way of explaining why only some gradable predicates can appear in weak generic sentences.

But Nickel’s analysis has its own problems. Overall, the truth conditions he proposed are sufficient but not necessary. First, his analysis requires evaluating each partition of the Dutch

sailing-knowing population with respect to an appropriate contextual standard associated with the partition. The PRP sentence is true “so long as within each subdivision according to skill, the Dutch sailors in that subdivision reach a skill level that exceeds the standard appropriate for that subdivision.” I will argue that the requirement is too strong. Let us take the more contemporary sentence in (6) (repeated below) for example, of which I find the intuition to be somehow clearer for this particular purpose of discussion. Playing soccer is a popular sport in Brazil, so presumably many Brazilians play soccer. It is likely that though, say, the top seven partitions (out of eight partitions in total) of the Brazilians soccer-playing population have better soccer-playing skills than their respective counterpart from other relevant nationalities, those Brazilians whose soccer-playing skills fall in the very bottom partition somehow underperform their foreign counterparts. Nickel’s analysis would predict (6) to be necessarily false in this scenario, because not all partitions of the Brazilian soccer-playing population exceed the corresponding standards. However, many native speakers of English that I have consulted reported the sentence to be true (or at least not necessarily false for some other native speakers), especially when the bottom partition does not account for a big proportion of the Brazilian soccer-playing population. I think that the truth of the sentence only requires that a sufficient number of Brazilians who play soccer have better soccer-playing skills than the contextual standard⁶⁰. The question is how to determine what this “sufficient number of Brazilians” amounts to.

(6) Brazilians are skillful soccer players.

⁶⁰ The weak generic reading of the sentence in (7) should be carefully distinguished from the case where the top soccer players in Brazil are taken to be representative of all the soccer players in the country as a whole. For the weak generic reading, it is necessary but not sufficient that the best Brazilian soccer players are among the best in the whole world (Nickel 2009, p21-22).

Second, Nickel's analysis does not specify any explicit way of partitioning the Dutch sailing-knowing population with respect to their sailing skills. His analysis allows the partitioning to be extremely coarse or extremely fine-grained. Normally this causes no problem. However, when there is a big variation in terms of sailing skills within some coarse partition, it is possible that a coarse partitioning of Dutchmen who have any sailing skills verifies the PRP sentence, while a finer partitioning that makes the variation relevant falsifies it. This amounts to saying that weak generics do not have consistent truth conditions. Of course this is an undesirable conclusion that an adequate analysis should avoid. Nickel's analysis cannot avoid this problem by simply claiming that the Dutch sailing-knowing population can only be bipartitely partitioned in accordance with the contextual standard of having good vs. not good sailing skills. Doing so would be equivalent to requiring those sailing-knowing Dutchmen who have good sailing skills and those sailing-knowing Dutchmen who do not have as good sailing skills to both sail better than their corresponding standard. This is too strong and brings us back to the previous problem.

The third problem has to do with the prediction that Nickel's analysis makes regarding what type of gradable predicates can appear in weak generics. Absolute gradable predicates are associated with a maximum standard (e.g. for 'full' and 'clean') or a minimum standard (e.g. for "empty" and "dirty"), which does not vary from context to context. In addition, non-gradable predicates are not interpreted with respect to a standard at all. Thus, neither type of predicates has contextual standards that can co-vary with a higher binding *GEN* operator. Nickel's analysis would, as he actually did in his 2009 paper, predict that generics with non-gradable and absolute gradable predicates cannot be used as predicates in weak generics. The prediction can also be extended to predicates with a non-endpoint standard that does not vary contextually (such as for

“lemon” and “suicidal”). Unfortunately, this prediction overshoots, because non-maximum standard absolute gradable predicates indeed can appear in weak generic sentences. This claim is confirmed by the observation that weak generic readings are available for such sentences as in (38) (repeated from (34)).

- (38)a. Shoes worn by football players are dirty after a game
b. Chevys are lemons.

I suggested that the interpretation of a weak generic should make reference to an alternative set to the denotation of the subject BP. This is an essential merit of Cohen’s analysis. Though the co-varying standard in Nickel’s semantic interpretation of the PRP sentence may be calculated by considering a comparison class that contains some partition of the Dutch sailing-knowing population and the corresponding partition in the contextual relevant alternative nations, Nickel did not explicitly say so in his paper. As far as I can see, nothing in his analysis can guarantee such alternative sets to be relevant. This is another problem with Nickel’s analysis.

To summarize, in this section I discussed three proposals regarding the interpretation of weak generic sentences. Carlson’s analysis (1977) does not fully consider the difference in qualification strength among different types of generic sentences. As such, it does not satisfactorily explain why weak generic sentences have a rather weak interpretation. Cohen’s proposal (1999, 2001) is too permissive. On the one hand, it predicts some scenarios where weak generics are intuitively false to be licensing environments. On the other hand, it predicts generic sentences that do not have weak readings to have such readings. Nickel’s analysis, on the other hand, is in some sense too restrictive. It makes reference to partitioning the *whole* population

denoted by the BP subject in a weak generic sentence who have the property denoted by the predicate to any degree. His analysis does not specify an explicit way of partitioning the population denoted by the BP subject and as such allows a sentence to have contradictory truth values in some cases. In addition, the prediction Nickel's analysis makes regarding what gradable predicates can appear in weak generic sentences is too strong.

4.4 A Dual-Standard Analysis

4.4.1 The gist of the proposal

In section 3 I primarily focused on the challenges that Cohen's and Nickel's analyses each are faced with. Now let us shift gears to focus on two particular merits of the proposals, one for each. The merits suggest a promising direction to tackle the question of how to interpret weak generic sentences. Cohen's analysis (along the lines of Krifka et al, 1995) makes reference to the population alternative to the denotation of the BP subject. The truth conditions of the PRP sentence are determined in relation to how well people in other contextually relevant countries sail. In addition, Cohen's analysis makes reference to the set alternative to the predicate "good sailor". Within the Dutch sailing-knowing population, there are people who sail well, as well as people whose sailing skills are of varied distances from being "good". The same remark applies to the population of contextually relevant non-Dutch countries. I believe that an adequate semantic analysis of weak generics should incorporate the "meritful" alternative sets.

Nickel's analysis, on the other hand, resorts to the intuition that the interpretation of weak generics parallels the distributive reading of simple degree sentences. The sailing skills of each partition of the population denoted by the BP subject are compared to an appropriate co-varying contextual standard. What a more adequate analysis can learn from Nickel's proposal is the use of comparison of degrees. More specifically, the semantic interpretation of weak generics

involves comparison between the denotation of the BP subject and other alternative entities in the context. Degree comparison is conceptually the most likely candidate for such comparison to make sense. Thus, I hypothesize that another component of an adequate semantic analysis of weak generics should be degree comparison.

My proposal exactly combines alternative sets with degree comparison. The definition of the alternative sets used in my analysis is similar to the definition given in Cohen's analysis. For convenience of reference, I will repeat the informal definitions of the alternative sets. The first alternative set, $ALT(K)$ for the weak generic sentence *Ks are Q*, is the contextually relevant population alternative to the denotation of the BP subject *Ks*. For the PRP sentence, this alternative set contains all people from Holland and from other countries relevant in the context. The second alternative set, $ALT(Q)$, is the set of properties that are alternative to the predicate in a weak generic sentence, including the property expressed by the predicate itself. For the PRP sentence, this second alternative set is {excellent sailors, good sailors, middling sailors ...}. People who do not know how to sail at all are excluded from the alternative set, otherwise, as it will become evident, the alternative set would lose the restriction intended for it.

The disjunction of members in the second alternative set can conjoin with the denotation of the BP subject (i.e. $K \wedge \vee ALT(Q)$) to yield a subset of the population denoted by the BP subject who have at least one property in $ALT(Q)$. For the PRP sentence, this set contains Dutchmen who have any non-zero level of sailing skills. When deciding whether a Dutchman or a group of Dutchmen is/are (a) good sailor(s) among his/their compatriots, it is wrong to use the Dutch population as a whole to be the comparison class. Who counts as a "good sailor" within the Dutch population is determined with respect to the sailing-knowing population in the country. Likewise, the disjunction of members in $ALT(K)$ can conjoin with the disjunction of

members in $ALT(Q)$ (i.e. $\forall ALT(K) \wedge \forall ALT(Q)$) to yield the set of individuals that have at least one property from $ALT(K)$ and at least one property from $ALT(Q)$. For the PRP sentence, the set contains all individuals of any contextually relevant nationality who have a non-zero level of sailing skills. Who counts as a “good sailor” within all the contextual relevant individuals of all nationalities is determined with respect to the sailing-knowing population in all the countries combined, but not the general population of all the countries including people without any sailing skills at all.

The use of alternative sets, however, serves a different purpose in my analysis than does in Cohen’s analysis. In my analysis they are not used to calculate conditional probability. They contribute to determining standards associated with the gradable predicate in a weak generic sentence. For instance, whether a Dutchman has good sailing skills is evaluated not with respect to the general Dutch population, but with respect to the Dutch sailing-knowing population. Moreover, the standard of having good sailing skills within the Dutch sailing-knowing population is generally different from the standard of being a “good sailor” within the sailing-knowing population in the alternative nations. A Dutchman who is considered to have good sailing skills within his own country may well fall under the standard of having good sailing skills for the alternative sailing-knowing population, or vice versa.

Following Nickel (2009, 2010a) and Krifka et al (1995), my analysis will incorporate gradability via degree comparison. In the spirit of Nickel’s proposal, for the PRP sentence to be true, there needs to be *some number* of sailing-knowing Dutchmen whose sailing skills exceed a *certain standard*. Two issues have to be spelled out before the previous sentence can constitute an informative interpretation of the PRP sentence. One is what this “certain standard” amounts to, and the other one is the exact definition of “some number”.

The PRP sentence, due to the presence of the evaluative “good”, involves comparison to a standard of having good sailing skills. The comparison cannot be restricted within the Dutch sailing-knowing population. If this was the case, the sentence would be true no matter how well or bad Dutchmen sail with respect to other nations. Unless those Dutchmen who know how to sail are few and considered outliers in the Dutch population, there always exist generically many Dutchmen whose sailing skills can be considered good with respect to the Dutch-internal standard of having good sailing skills. Given this consideration, the standard against which to compare the sailing skills of the relevant sailing-knowing fraction of the Dutch population cannot be Dutch-internal. Rather, it has to be some external standard that is calculated based on the sailing skills of (the relevant sailing-knowing fraction of) the alternative population.

The set $\forall\text{ALT}(\text{Dutchmen}) \wedge \forall\text{ALT}(\text{good sailors})$ provides a natural comparison class against which to determine the Dutch-external standard of having good sailing skills for the sailing-knowing population among all the contextually relevant nations. The Dutch-external standard of having good sailing skills is sensitive to how individuals in the set do in terms of sailing. If a big fraction of those individuals have excellent sailing skills, then the Dutch-external standard is high. In this case, the Dutch sailing-knowing population relevant for evaluating the sentence will have a higher standard to exceed than when the Dutch-external standard is low.

Another question needs to be addressed before the semantics of the PRP sentence can be defined is what fraction of the Dutch sailing-knowing population is relevant for determining the truth conditions for the PRP sentence. It cannot be the whole Dutch population or the whole Dutch sailing-knowing population, because doing so would treat weak generics on a par with generic sentence with stronger truth conditions.

Here are some reasons for the above claim. The discussions above have already suggested that the actual predicate at the LF level for the PRP sentence involves comparing a subset of Dutchmen's levels of sailing skills to the Dutch-external standard of having good sailing skills. This comparison itself does not contribute the "weak reading" with the sentence (cf. Nickel 2010a). This is evident from the fact that the sentence in (39) involves a comparative predicate but clearly lacks a weak generic interpretation. In addition, the sentence in (40) may well involve a comparison predicate in the LF, but it makes a stronger claim than the PRP sentence. With (40) "we can more or less expect that a random Dutchman we pick out will turn out to be a good sailor" (Krifka et al, 1995: p82). From the evidence, it is reasonable to conclude that the LF predicate of a weak generic should not be held responsible for the weak interpretation. Now the question becomes what other element accounts for the "weak reading".

(39) Lions are bigger than wolves.

(40) A Dutchman is a good sailor.

In this chapter I assume that the interpretation of weak generics, just like "regular" generic sentences, makes use of the general tripartite interpretation scheme with recourse to the *GEN*-operator (Carlson, 1989; Krifka et al, 1995). The general interpretation pattern is illustrated in (41). It involves the *GEN* operator, a restrictor specifying the domain for the operator to quantify over, and a matrix specifying the property for the individuals in the domain filtered by the *GEN* operator. Because the matrix contains the predicate, the above discussion is equivalent to saying that the matrix does not contribute the "weak reading" in a weak generic sentence.

(41) $GEN(x_1, x_2, \dots x_n)$ [restrictor] (matrix)

We cannot place the burden on the *GEN* operator by assuming there is a weak *GEN* operator and a “regular” *GEN* operator. Doing so would invite many conceptual and empirical problems. For example, what factors determine whether the *GEN* operator in a particular sentence is strong or weak? What is the relationship between the two operators?

There is virtually just one option left regarding where the “weak reading” comes from: the restrictor. Furthermore, unless we assume that the “weak reading” arises purely from some covert element in restrictor, there is practically only one constituent in the sentence that can make this contribution, and that is the BP subject.

At this point, it is helpful to compare a BP subject in a weak generic with a BP subject in a “regular” generic sentence (42a). The interpretation for (42a) is given in (42b). The *GEN* operator quantifies over a domain that includes all (normal) potatoes. Given that the restrictor is responsible for the “weak reading”, the *GEN* operator in the interpretation of weak generic cannot quantify over a domain that contain all (normal) members in the denotation of the subject. Otherwise, the interpretation of weak generics would be non-distinguishable from that of a “regular” generic sentence.

(42) a. Potatoes contain vitamin C.

b. $GEN(x)$ [potato(x)] (contain-vitamin C (x))

Then, a natural move to get the “weak reading” is to restrict the domain over which the *GEN* operator quantifies over. If the domain is specified to be a fragment of the Dutch sailing-

knowing population to begin with, further restriction from the *GEN* operator would probably yield a smaller fragment that consists of those Dutchmen whose sailing skills exceed the Dutch-external standard of having good sailing skills. When those Dutchmen are seen within the whole Dutchmen population (including those Dutchmen who cannot sail at all), they account for an even smaller proportion. Figuratively speaking, this is just like first restricting the definition domain to be the set of natural numbers when specifying the concept of odd numbers and later switching to the domain of all real numbers. This domain-widening makes the relative proportion of odd numbers significantly smaller. I hypothesize that the interpretation of the PRP sentence involves evaluating “good (Dutch) sailors” within some restricted domain. The “weakness” observed in the interpretation of the sentence is due to widening from this restricted domain to a larger domain, i.e. the Dutch population as a whole.

The whole Dutch sailing-knowing population (i.e. $\text{Dutchmen} \wedge \forall \text{ALT}(\text{good sailors})$) cannot be this restricted domain referenced above. Otherwise we would expect the generic interpretation of the sentence in (43) (at least) *can* have an interpretation as weak as that of the PRP sentence. I do not think that (43) can be verified by a scenario where only a small percentage of the Dutchmen who know how to sail are good sailors relative to some Dutch-external standard. Rather the truth of the sentence more or less requires a randomly picked sailing-knowing Dutchman to have sailing skills that exceed the Dutch-external standard of having good sailing skills.

(43) Dutchmen who know how to sail are good sailors.

Therefore, the relevant restricted domain should be a still smaller domain than the whole Dutch sailing-knowing population. In the meantime, it has been demonstrated that Dutchmen who know nothing about sailing is irrelevant for the evaluation of the PRP sentence. Combining the two claims together, it follows that the restricted domain is a proper subset of the whole Dutch sailing-knowing population.

The set containing sailing-knowing Dutchmen is defined on the sole criterion of whether a Dutchman possesses some level of sailing skills. A most natural way to extract from this set a subset to serve as the restricted domain is to divide the sailing-knowing population based on the levels of their sailing skills. Conceptually the linguistic context in the PRP sentence only specifies one coherent and prominent means to make this division, that is, based on the standard of having good sailing skills. This standard of having good sailing skills is the Dutch-internal standard against which to determine whether a Dutchman has good sailing skills with respect to other members of the Dutch sailing-knowing population. I take the restricted domain that the *GEN* operator quantifies over to be the subset of Dutchmen whose sailing skills exceed the Dutch-internal standard of having good sailing skills.

My analysis of weak generic sentences involves three essential components: the usual *GEN* quantifier, a standard restricting the domain of individuals quantified over, and a predicate involving degree comparison. Recall that I assume the general tripartite interpretation pattern for weak generic sentences (41). The main components are the restrictor and matrix. The restrictor provides a domain for the *GEN* operator to quantify over. It is clear by now that for the PRP sentence the restricting domain contains just those Dutchmen whose sailing skills are considered good with respect to the Dutch sailing-knowing population. Slightly more formally, the restrictor can be spelled out as in (44). For the sake of simplicity, here I use “Dutch sailor” to stand for a

Dutchman who has any level of sailing skills. The shorthand “ $\text{deg}_{\text{good sailor}}$ ” stands for the function from individuals to their levels of sailing skills (how far they can sail in an hour, how many sailing tricks they can successfully perform, etc). The level of an individual’s sailing skills is objective and not relative to anything. Lastly, “i-STND (good Dutch sailor)” stands for the Dutch-internal standard of having good sailing skills. This is distinguished from “e-STND (good alternative sailor)” that I will use to refer to the standard of having good sailing skills among the sailing-knowing population in the alternative countries.

$$(44) \text{Dutch sailor}(x) \wedge \text{deg}_{\text{good sailor}}(x) > i\text{-STND}(\text{good Dutch sailor})]$$

I have also argued that the matrix in the tripartite interpretation of the sentence involves degree comparison. Given the discussion above, the comparison takes place between the sailing skills of the Dutchmen in the restricting domain and the Dutch-external standard of having good sailing skills (i.e. $e\text{-STND}(\text{good alternative sailor})$). The matrix can be spelled out as in (45). Assembling the restrictor, matrix and *GEN*-operator together gives the (almost final) semantic representation of the PRP sentence (46).

$$(45) \text{deg}_{\text{good sailor}}(x) > e\text{-STND}(\text{good alternative sailor})$$

$$(46) \text{GEN}(x) [\text{Dutch sailor}(x) \wedge \text{deg}_{\text{good sailor}}(x) > i\text{-STND}(\text{good Dutch sailor})] (\text{deg}_{\text{good sailor}}(x) > e\text{-STND}(\text{good alternative sailor}))$$

However, the interpretation in (46) still overshoots. Suppose the Dutch-internal standard of having good sailing skills is slightly lower than the Dutch-external counterpart. In this

scenario, the PRP sentence appears to be false. However, if the majority of Dutchmen whose sailing skills exceed the Dutch-internal standard are still above the Dutch-external standard, there are generic-many Dutchmen who satisfy (46). The interpretation would be wrongly predicted to be true in this scenario.

To avoid this issue, I will simply add a presuppositional component to the representation in (46). The component requires the Dutch-internal standard of having good sailing skills exceed its Dutch-external counterpart (i.e. i -STND (good Dutch sailor) $>$ e -STND (good alternative sailor)). Thus, (46) can be revised as (47). The PRP sentence is true if and only if within the group of Dutchmen who have good sailing skills relative to the Dutch-internal standard, there are generic-many people whose sailing skills exceed the Dutch-external standard of having good sailing skills, and the former standard exceeds the latter standard.

(47) $GEN(x)$ [$Dutch\ sailor(x) \wedge deg_{good\ sailor}(x) > i$ -STND (good Dutch sailor)] ($deg_{good\ sailor}(x) > e$ -STND (good alternative sailor) $\wedge i$ -STND (good Dutch sailor) $>$ e -STND (good alternative sailor))

At this point some may wonder whether the PRP sentence simply means that the Dutch-internal standard of having good sailing skills is higher than the Dutch-external counterpart. This cannot be right, for at least two reasons. First, if the interpretation only involves comparison of standards, then in what sense is the sentence generic, let alone weakly generic? Second, imagine that only a tiny proportion of Dutchmen can sail, but most of those Dutchmen sail wonderfully. In this case, the Dutch-internal standard of having good sailing skills is high. The other contextually relevant countries have a large number of people who can sail, and not many of

them sail as well as the top sailors in Holland. As a result, the Dutch-external standard of having good sailing skills is not as high as the Dutch-internal standard. Under such a scenario, although the Dutch-internal standard is higher than the Dutch-external standard, the sentence may still be false, because there may be not enough Dutchmen who sail better than the Dutch-internal standard in the first place.

The semantic interpretation in (47) can be easily generalized to all weak generics of the form *Ks are Q*. “Dutch sailor” in (47) corresponds to “ $K \wedge \text{ALT}(Q)$ ”, the subscript “good sailor” to Q , “good Dutch sailor” to “ $K \wedge Q$ ”, “good alternative sailor” to “ $\text{ALT}(K) \wedge Q$ ”. Abstracting away from the concrete terms, (48) specifies the interpretation of weak generic sentences.

$$(48) \text{GEN}(x) [\{K \wedge \text{ALT}(Q)\}(x) \wedge \text{deg}_Q(x) > i\text{-STND}(K \wedge Q)] (\text{deg}_Q(x) > e\text{-STND}(\text{ALT}(K) \wedge Q)) \\ \wedge i\text{-STND}(K \wedge Q) > e\text{-STND}(\text{ALT}(K) \wedge Q)$$

4.4.2 Theoretical advantages

In this subsection, I will show how the dual-standard analysis developed in the previous subsection avoids the problems that Cohen’s and Nickel’s proposals are faced with. At the same time, as far as I know, my proposal invites no other problems. As such it is more explanatorily adequate than the competing analyses.

First, recall that Cohen’s analysis compares the percentage of those Dutchmen who sail well accounting for the whole Dutch sailing-knowing population to the corresponding percentage for the alternative nations. He seemed to evaluate whether a Dutchman is a “good sailor” against the same standard of having good sailing skills as the standard used to evaluate whether an individual from the alternative nations is a “good sailor”. Moreover, he did not consider how the sailing skills of those individuals who fall below the standard of being a “good sailor” are

distributed. According to his analysis, what matters most for the truth or falsity of the PRP sentence is whether there are proportionally more “good sailors” among the Dutch sailing-knowing population than among the sailing-knowing population in the alternative countries. This could cause a problem, when the “non-good sailors” in the alternative countries sail much better than those “non-good sailors” among the Dutch population. This scenario is depicted in Figure 7 (repeated below). On the intuitive level, whether the PRP sentence is true in the scenario depends on how the sailing skills of those “non-good sailors” are distributed.

Dutch sailors	30% good	70% bad
Alternative sailors	15% good	85% middling or bad

Figure 7: lack of distinction among “non-good sailors”

My analysis does not face the same problem, primarily because my analysis makes recourse to two standards of having good sailing skills, a Dutch-internal one and a Dutch-external one. More specifically, “good” is a context-sensitive gradable adjective. The standard of being good at something is sensitive to how each individual in the comparison class performs. For example, in a class full of gifted students, a student who gets more than 90 out of 100 in his/her quiz can be considered good. In a class whose students are less talented, a student who gets 75 out of 100 in the same quiz may be considered good. But a student in the first class with the same 75 out of 100 grade cannot be considered good in his/her own class. Along these lines, when Dutchmen who sail badly account for a big proportion of Dutchmen who have any level of

sailing skills, the Dutch-internal standard of having good sailing skills is “dragged” low. In this case, Dutchmen who are considered good at sailing among their fellow countrymen do not necessarily exceed the external standard of having good sailing skills. When the number of such people is contextually great, there will be no generic-many Dutchmen whose sailing skills are good relative to the external standard of having good sailing skills. In this scenario the PRP sentence is false.

Thus, different from Cohen’s analysis, my proposal does not predict the PRP to be necessarily true in the scenario depicted in Figure 7. Whether it is true or not depends on how the distribution of sailing skills of the Dutch sailing-knowing population compares to the distribution of sailing skills of the sailing-knowing population in the alternative nations. If those people of the alternative nationalities whose sailing skills are middling account for only a small percentage (say 15%) of the sailing-knowing population in these countries, the Dutch-internal standard of having good sailing skills is most likely higher than the Dutch-external counterpart. If this is indeed the case and at the same time there are generic-many Dutchmen exceeding the Dutch-external standard of having good sailing skills, then the PRP sentence is true. This scenario is illustrated in Figure 10, where “med.” stands for “middling”.

Dutch sailors	30% good		70% bad	
Alternative sailors	15% good	15% med.	70% bad	

Figure 10: overwhelming “bad sailors” within the alternative nations

On the other hand, if people of alternative nationalities who have middling sailing skills account for a big percentage (say 75%) of the sailing-knowing population in the alternative countries, such that the Dutch-external standard of having good sailing skills is elevated beyond the Dutch-internal standard and/or few Dutchmen exceed the Dutch-external standard of having good sailing skills, then the PRP sentence is false. This scenario is illustrated in Figure 11.

Dutch sailors	30% good	70% bad	
Alternative sailors	15% good	75% middling	10% bad

Figure 11: overwhelming “middling sailors” within the alternative nations

Second, my semantic representation of weak generics makes reference to the *GEN* operator. In this respect, my proposal differs from Cohen’s probability-based analysis. According to von Fintel (1997: p33), the *GEN* operator “is lexically specified to trigger a Homogeneity Presupposition.” That is, the use of *GEN* signals the presupposition that individuals in the restricting domain behaves uniformly with regard to the property specified in the matrix. Von Fintel further argued that generic bare plural sentences obey the principle of the Excluded Middle (49) (adapted from von Fintel’s (76)).

$$(49) \text{ GEN } [p](q) \text{ iff } \sim \text{GEN } [p](\sim q).$$

With this independently proposed theorem, my proposal is able to explain why the sentence “Dutchmen are bad sailors” cannot be true when the PRP sentence is true. Clearly,

“Dutchmen are bad sailors” entails that “Dutchmen are not good sailors”. By the principle of the Excluded Middle, the latter sentence further entails that it is not the case that Dutchmen are good sailors. This second entailment contradicts the assumption that the PRP sentence is true. Then “Dutchmen are bad sentences” must be false. Therefore, the mere employment of the *GEN* operator in my proposal will avoid the second problem I discussed for Cohen’s analysis.

One potential criticism against the use of the *GEN* operator in the interpretation of weak generic sentences comes from the lack of weak generic reading for sentences like the one in (50). The sentence is minimally different from the PRP sentence in that it involves the overt adverb of quantification “generally”. Adopting the assumption that “generally” is an overt equivalent of the *GEN* operator, some may suspect that the sentence in (50) should have a weak generic reading as well. However, it is very hard, though not impossible, to ascribe a weak generic reading to it.

(50) Dutchmen are generally good sailors.

Is this a real challenge to my analysis? The answer is negative. The essential difference between (50) in its most natural reading and the PRP sentence lies in their domains of quantification. The restrictor in the tripartite representation for (50) is *Dutchman* (*x*) (Lewis, 1975). The domain of quantification for the sentence is the whole Dutch population. By contrast, the domain of quantification for the PRP sentence is those Dutchmen whose sailing skills exceed the Dutch-internal standard of having good sailing skills. The domain of quantification for the PRP sentence is presumably much smaller than that of (50). The “weak reading” for the PRP sentence arises because the domain of quantification is widened to the whole Dutch population when evaluating the sentence. On the other hand, when evaluating the sentence in (50), there is

no widening the domain of quantification, which is already the whole Dutch population in the first place. The sentence is true if and only if most Dutchmen are good sailors. The truth conditions are strong.

(51) Generally (x) [Dutchman (x)] (good sailor(x))

Earlier I pointed out three problems faced with Nickel's analysis. First, according to Nickel, the truth of the PRP sentence requires that there be generic-many individuals among each partition of the Dutch sailing-knowing population such that their sailing skills exceed a contextual standard for the partition to which the individuals belong. I have shown that the truth conditions are too strong, precisely because it unnecessarily requires evaluating each partition among the Dutch sailing-knowing population. In my analysis, only those Dutchmen who exceed the Dutch-internal standard of having good sailing skills are relevant for evaluating the sentence. It does not require comparing the sailing skills of each subgroup of the sailing-knowing Dutch population to some standard.

Secondly, Nickel's analysis does not specify how to partition the sailing-knowing Dutch population. As discussed earlier, when there is a big variation of sailing skills among the sailing-knowing Dutch population, whether the PRP sentence is true could depend on how fine or coarse the partitioning is. My analysis does not face this problem. It divides the Dutch population based on the Dutch-internal standard of having good sailing skills. Because there is a clear standard for making the division, my analysis allows no arbitrary partitioning of the Dutch population.

Thirdly, Nickel's analysis involves standards co-varying with partitions of the Dutch sailing-knowing population. It predicts that the predicate of a weak generic sentence must be one

that is associated with a variable standard. Therefore, it cannot be a non-gradable predicate (like “6-feet (tall)” and “married”) or an absolute gradable predicate (like “wet”, “dry”, “clean” and “dirty”). Non-gradable predicates are not associated with a standard, and absolute gradable predicates involve a fixed standard. Both types of predicates do not involve a standard that can co-vary with the higher binding *GEN* operator. I have shown that non-maximum standard absolute gradable predicates such as “dirty” and “wet” can indeed appear as predicates for weak generic sentences.

My analysis does not involve a standard co-varying with a higher operator. Rather what matters is the $>$ relation between the sailing skills of those Dutchmen whose skills exceed the Dutch-internal standard of having good sailing skills and Dutch-external standard of having good sailing skills. Weak generics should be available for any predicate whose semantics involves or is compatible with the $>$ relation. Because non-maximum standard absolute gradable predicates involve the $>$ relation (Kennedy, 2007a), it is not surprising that generic sentences containing them allow weak generic readings.

Lastly, Nickel (2010b) observed that the weak generic reading is also available for comparative constructions that involve a bare plural subject, as exemplified in (52). His analysis of such sentences is very similar to his analysis of weak generic sentences, and hence suffers from the same criticism I discussed. My analysis can be readily extended to such sentences. The only difference between (52) and the PRP sentence is that the former explicitly specifies the alternative population (i.e. grade school boys). The determination of the external standard associated with the predicate is less contextual.

(52) Girls do better than boys in grade school.

In addition, my discussion so far is limited to weak generic sentences of the form *Ks are Q*. Some other generic sentences appear to have weak truth conditions as well, but are not subject to the same interpretation mechanism (53). In this chapter I do not have anything definite to say regarding the difference between the sentences in (53) and the PRP sentence in terms of their interpretation. For now, I will adopt Nickel's (2010b) idea that the semantic interpretation of weak generic sentences like (53) involves modality and is different from the interpretation of such weak generic sentences as the PRP sentence.

(53) a. Sharks attack bathers.

b. Seeds germinate.

Intuitively, weak generic sentences like (53) predicate of a potentiality/ability associated with the referent of the subject. A viable paraphrase of (53b), for example, is that a “normal” seed germinates in some possible world or another. Factoring out this extra layer of modality, the semantic interpretation of (53) is the same as that of “regular” generic sentences like those in (1-4). The “weak reading” probably comes from pragmatic consideration of how things really are in the actual world.

4.5 Final Remarks

Weak generic sentences of the form *Ks are Q* have received considerable theoretical attention in the semantics and philosophy of language literature. In this chapter I reviewed two of the major previous proposals: Cohen (1999, 2001) and Nickel (2009). They both face empirical challenges and theoretical flaws. My analysis employs the *GEN* quantifier, restricts the domain of generic quantification, and incorporates degree comparison in the underlying predicate. In the

interpretation, I make use of two alternative sets, $ALT(K)$ and $ALT(Q)$, which play an essential role in determining two standards. One of the two standards, the “internal” one, specifies the threshold for those individuals in the denotation of $K \wedge ALT(Q)$ to meet in order for them to qualify as being Q evaluated within the population denoted by Ks . The other standard, the “external” one, specifies the threshold for those individuals in the denotation of $ALT(K) \wedge ALT(Q)$ to meet in order for them to qualify as being Q evaluated within the population denoted by $ALT(K)$. The restriction on the quantification domain makes reference to the “internal” standard, and the degree comparison in the underlying predicate makes reference to the “external” standard.

During the discussion, I primarily focused on the famous Port Royal Puzzle sentence. The semantics of the sentence requires that there be generic-many Dutchmen whose sailing skills are good relative to their fellow countrymen exceed the Dutch-external standard of having good sailing skills, and at the same time the Dutch-internal standard of having good sailing skills exceeds the Dutch-external counterpart. My analysis successfully avoids the problems noted for Cohen’s and Nickel’s analyses.

I should stress that this chapter only gives the precise meaning of weak generic sentences. It is not my intention to use this subset of generic sentences as a probe to the semantic interpretation of generic sentences in general. Thus whether the analysis can be extended to “regular” generic sentences is irrelevant for my purpose. In fact, the answer is most likely negative. This is nothing surprising or undermining, because it has widely acknowledged that weak generic sentences have unique properties that set them apart from “regular” generics.

In addition, in this chapter I only discussed what should be satisfied in order for a weak generic sentence to be true. I did not address how to derive the truth conditions from the syntactic structure of such a sentence. This is a topic that I leave for future research.

Chapter 5

Summary

The dissertation set out with the general objective to explore how the linguistic notion of gradability interacts with other language phenomena. Such interactions provide an insightful perspective for studying the empirical linguistic properties of these particular phenomena. More importantly, studying them is conducive to understanding theoretical issues behind the phenomena. The dissertation has fulfilled the overall objective through investigating three topics instantiating such interactions. The first one was what I call the possessive equative construction, in which possessive verbs take a *prima facie* degree expression in the object position to express equative meanings. The second one was the use of size adjectives as degree modifiers for a certain type of gradable nouns. The third one was weak generic sentences best represented by the Port Royal Puzzle sentence “Dutchmen are good sailors”.

Each of the main chapters discussed one of the three topics. For every topic, I offered a detailed review and evaluation of major previous proposals dealing with it. The reviews served to lay foundations on which my own analyses were based. When laying out my proposals I discussed some essential motivating observations, which provided bases to evaluate the proposals. In addition, I discussed predictions made by my proposals. Where relevant, I also pointed out the broad theoretical implications of my analyses.

Chapter 2 addressed the phenomenon in which possessive verbs take a degree expression. In particular I focused on the syntax and semantics of the Chinese verb *you* appearing in the construction “X + *you* + Y + (*zheme* ‘this’ or *name* ‘that’) + G”, where the G element expresses a gradable notion. Because the construction shows similar (though not identical) patterns to the

“as...as” equative construction, I called it the “possessive equative construction”. I argued that, in the degree use *you* functions as an abstractor over a variable in its complement, which bears an index that eventually comes from the subject. The possessive equative construction involves a subset/subinterval relation between X’s and Y’s degrees on the relevant dimension specified G. This relation is “forced out” in large part by the absence of comparative subdeletion in Chinese. My analysis suggests that the degree use of *you* has the same semantic function as its other uses such as possession and existence. The various uses of *you* are not as different as many traditional descriptive works have claimed. The possessive degree construction lends strong support to the small clause-based analysis of possessive verbs.

Chapter 3 focused on a peculiar, violable constraint on size adjectives used as degree modifiers for a certain class of gradable nouns. This Bigness Generalization says that positive size adjectives like “big” and “enormous” can characterize the degree to which a gradable noun holds of an individual, but negative size adjectives like “small” and “tiny” cannot. I showed that the generalization is not categorical as previously assumed. Negative size adjectives can serve as degree modifiers in some contexts. In addition, the previous analysis of the generalization, by Morzycki (2005, 2009), rests on the unjustified assumption that measure phrases receive the “at least” interpretation. Though Morzycki was right in assuming the basic analytic intuition that the degree use of size adjectives is analogous to measure phrases that modify adjective phrases, his actual purely semantic implementation of the intuition was on the wrong track. Different from Morzycki’s, my proposal draws on the scale structures of size adjectives and gradable nouns, the (non-strict) complementation relation between the standards of antonymous adjective pairs, the ordering relation between the standards of size adjectives and the modified gradable nouns, and the semantic-pragmatic notion of “extension gap”. Because

“standard” and “extension gap” are both contextual notions, my analysis is more pragmatic and allows more room for contextual variation in negative size adjectives used as degree modifiers. It can explain the violable nature of the Bigness Generalization. More broadly, my analysis relies on, and thus illustrates the relevance of, the interval-based ontology of degrees to the realm of degree modification of nominal gradability.

In Chapter 4 I addressed the question of how to interpret weak generic sentences of the form *Ks are Q*. The exact semantics of these sentences is elusive compared to generic sentences with stronger truth conditions. During the discussion I used the famous Port Royal Puzzle sentence “Dutchmen are good sailors” as a representative of weak generic sentences. The proposal that I pursued was inspired by considering the advantages and problems in Cohen’s (1999, 2001) probabilistic analysis and in Nickel’s (2009, 2010a) distributive analysis. The former correctly makes reference to alternative sets to the subject “Dutchmen” and to the predicate “good sailors”, and the latter rightly incorporates gradability into analyzing weak generic sentences. The advantages of one proposal, to a certain extent, can “offset” the problems of the other. Therefore, my analysis combines alternative sets and gradability together. Under my analysis, the semantics of the Port Royal Puzzle sentence requires that there are generic-many Dutchmen whose sailing skills are good relative to their fellow countrymen who possess any level of sailing skills exceed the standard of having good sailing skills relative to all people from the contextually relevant alternative nations who possess any level of sailing skills, and at the same time the Dutch-internal standard of having good sailings exceeds the Dutch-external counterpart. My analysis successfully avoids challenges faced with previous analyses.

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