

## ABSTRACT

Title of dissertation: **THE SEMANTICS OF PROPER NAMES  
AND OTHER BARE NOMINALS**

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This research proposes a unified approach to the semantics of the so-called bare nominals, which include proper names (e.g., *Mary*), mass and plural terms (e.g., *water*, *cats*), and articleless noun phrases in Japanese. I argue that bare nominals themselves are monadic predicates applicable to more than one particular, but they can constitute complex referential phrases when located within an appropriate linguistic environment. Bare nominals used as the subjects or objects of sentences are some or other variant of definite descriptions, which are analyzed as non-quantificational, referential expressions. The overarching thesis is that the semantic properties of bare nominal expressions such as rigidity are not inherent in the words themselves, but derived from the basic features of complex nominal phrases.

The Semantics of Proper Names and other Bare Nominals

by

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# Chapter 1

## Introduction

An undeniable distinction exists between a sign we use for a particular thing and a sign for a multitude of things. The sound ‘mamma’ made by a child seems to be related to nothing but the child’s mother like a photograph of her, whereas a pedestrian crossing road sign seems to be about a repeatable road event.<sup>1</sup>

Some but not all occurrences of proper names are signs of the former kind. We singularly use a name such as *Immanuel Kant* to talk about a particular individual, not a multitude of individuals. I will discuss in what follows how it is possible. In my view, proper names themselves are, despite their appearance, general terms applicable to a multitude of things, but they make up passing, context-dependent singular terms.

This dissertation is mainly concerned with the semantics of proper names. I will present a semantic theory that adequately describes the propositional contributions of proper names in various constructions of both English and Japanese. I will argue that

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<sup>1</sup>I suggest that the distinction is at least pre-theoretically intuitive. John Locke says:

There is nothing more evident than that the ideas of the persons children converse with ... are, like the persons themselves, only particular. The ideas of the nurse and the mother are well framed in their minds; and, like pictures of them there, represent only those individuals. The names they first gave to them are confined to these individuals; and the names of ‘nurse’ and ‘mamma’, the child uses, determine themselves to those persons. Afterwards, when ... [children] observe that there are a great many other things in the world, that ... resemble their father and mother, they frame an idea, which they find those many particulars do partake in; and to that they give ... the name ‘man’, ... And thus they come to have a general name, and a general idea.

(Locke, 1964, Book III, iii, 7.)

proper names used as arguments of sentences are complex phrases that are essentially equivalent to definite descriptions, which are analyzed as non-quantificational referring expressions. A number of semantic properties we observe in the uses of proper names and definite descriptions (e.g., rigidity, the *de re/dicto* distinction, etc.) are derived from the general features of complex nominal phrases. Other bare nominal expressions such as bare plurals and mass terms are also analyzed in an analogous fashion: they are a variant of definite descriptions, which results in a unified approach to all bare nominals in English and Japanese.

I will begin, first, by introducing the basic notions and assumptions that I will presuppose throughout the dissertation (1.1). I will then present three competing accounts of proper names (1.2). I will conclude this introductory chapter by describing the overview of the dissertation (1.3).

## 1.1 Basic Notions

### 1.1.1 Names

This section discusses important terms such as ‘proper name’ and ‘semantics’ while introducing my assumptions. To begin with, I delineate what counts as a proper name. I borrow the terminology and examples from (Huddleston and Pullum, 2002, 515-523). Proper names are what speakers of natural languages regularly use to talk about particular objects in past, present and future, whether they are real or fictional. By a ‘particular object’ or ‘individual’, I intend to mean a non-repeatable and non-multirealizable thing that we can intuitively identify and distinguish from others in the world, such as a television



and a tree. Names apply to a wide range of particular objects including persons (*John, Clinton*), places (*Lake Michigan, the United States of America*), institutions (*Oxford University, the Knesset*), historical events (*the Second World War, the Plague*), etc.

I distinguish ‘proper name’, which is a pre-theoretical label for a piece of our linguistic act, from ‘proper noun’, which forms a narrower class in a linguistic theory. Proper nouns are simple word-level units that belong to the noun category (e.g., *Italy, Machiavelli*), along with common nouns (e.g., *cat, key*). English allows any proper noun on its own to appear as a proper name. For instance, *Saul* and *Kripke* each can be independently used as a proper name of someone or something. I consider names such as *Saul Kripke* and *The Holy Roman Empire* to be compounds of proper nouns and/or other expressions, not simple proper nouns. Proper names take a wide range of forms: some of them are simple (*Mary, Pollock*); some are simple but take definite articles (*the Guggenheim, the Economist*); some are complex and consist of proper nouns and other expressions such as adjectives or common nouns (*New York, University of Manchester, Virginia Woolf, Who’s Afraid of Virginia Woolf*).

The pattern is exactly the same in Japanese except for the nonexistence of articles:

- (1) a. Osaka (PLACE OR PERSON ‘Osaka’)
- b. Osaka-Taro (PERSON ‘Taro Osaka’)
- c. Osaka-Daigaku  
        Osaka-University (‘Osaka University’)
- d. Osaka-Daigaku-Biseibutubyo-Kenkyusho  
        Osaka-University-Microbial.Disease-Research.Institute

(‘Research Institute for Microbial Diseases at Osaka University’)

e. Tokaido-Chu-Hiza-Kurige

Tokaido-On-Knee-Chestnut.colored.Horse

(Sometimes translated as ‘Shank’s Mare’, the name of a Japanese comic novel in the early 18th century)

Now I turn to the uses of proper names. In English, there are mainly three types of sentences in which proper names appear. First, a proper name may appear on its own with no modifier as the subject or object of a sentence.

- (2) a. Aristotle is the last great philosopher of antiquity.
- b. Russell sent Kennedy a telegram.

I call this use of a proper name the ‘singular, non-modified use’ of a proper name (‘the singular use’ in short). Many instances of the singular use seem to be rigid designators in the sense discussed by Saul Kripke (1980), according to which an expression is a rigid designator just in case it denotes the same object in all counterfactual circumstances. In other words, when we counterfactually evaluate a use of a sentence that contains a proper name, we consider nothing but the actual referent of the name intended by the speaker; we do not consider anyone else who could be referred to with another use of the name. My theory explains why occurrences of names can be rigid designators without making them inherently singular referring.

Second, a name in English can be modified by an article, quantifier, number word, or demonstrative. Consider the sentences in (3), adopted from Tyler Burge’s article on proper names (Burge, 1973). I call such an occurrence of a name as in (3) the ‘modified

use' of a proper name.

- (3) a. Every Tyler I know studied in Princeton.  
b. A Tyler joined the club today.  
c. George Wallace is a Napoleon.  
d. The Tyler who joined the club today studied in Princeton.  
e. Some Tylers are smart; some are not.  
f. There are two Tylers in the department.  
g. I know every Tyler in the department.  
h. That Tyler is different from this one. (a-g after Burge, 1973)

I will argue that the modified use is possible because a proper name is constituted by one or more proper nouns and a proper noun is a general term, semantically on a par with common nouns.<sup>2</sup>

Third, the interpretation of a proper name can co-vary with that of some preceding expression. In (4a), the name *Bambi* in the consequence clause seems to stand for whoever the phrase *a child* in the antecedent picks out. I call this type of use the 'bound use' or 'co-varying use' of a proper name because such an occurrence of a name appears to be bound by a previous expression.

- (4) a. If a child is christened 'Bambi', then Disney will sue Bambi's parents.

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<sup>2</sup>Although Burge (1973) seems to treat (3a-h) uniformly, (3c) requires an independent discussion because *Napoleon* therein invokes a somewhat richer connotation in comparison with the uses of *Tyler* in the other sentences. We can consider it to be an independent, derived expression from the name of Napoléon Bonaparte. The *OED* includes an independent entry for *Napoleon* as a noun, which explicates its meaning as 'a person regarded as resembling Napoleon I, esp. in having gained supremacy in his or her sphere through (ruthless) ambition'. Then the question I face is, 'What is wrong with treating the modified occurrences of *Tyler* as independent expressions different from proper nouns?'. One might posit a productive rule that transforms a proper noun to a common one. I will return to this issue later in Chapter 2.

(Geurts, 1997, 321)

- b. Every time John goes to see a performance of Hamlet, he falls in love with Ophelia. (That is, he falls in love with ‘the actress who plays the part of Ophelia at that play’.)

(Geurts, 1997, 322)

- c. Every woman who has a husband called John and a lover called Gerontius takes only Gerontius to the Rare Names Convention. (Elbourne, 2005, 181)

We can observe all three uses of proper names in Japanese. The following examples (5), (6), and (7) represent the singular, modified, and bound uses of proper names respectively.

- (5) a. Aristotle-wa kodai saigono sugureta tetugakusha da.  
Aristotle-TOP antiquity last excellent philosopher be  
‘Aristotle is the last great philosopher of antiquity.’
- b. Russell-ga Kennedy-ni denpo-o okutta.  
Russell-NOM Kennedy-DAT telegram-ACC sent  
‘Russell sent Kennedy a telegram.’
- (6) a. Watasi-ga siru subeteno Tyler-wa Princeton-de mananda  
I-NOM know every Tyler-TOP Princeton-at studied  
‘Every Tyler I know studied in Princeton.’
- b. Ano Tyler-wa to kono Tyler wa chigau.  
That Tyler-TOP and this Tyler TOP different  
‘That Tyler and this one are different.’
- c. Boku-wa futa.ri.no **Tyler**-ni atta.  
I-TOP two.CL.no **Tyler**-DAT met  
‘I met two Tylers.’<sup>3</sup>

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<sup>3</sup>The morpheme *no* is usually considered to be a genitive or possessive case, although its semantic role

- (7) a. Mosi kodomo-ni Bambi to nazuketa ra, Disney-ga Bambi-no ryosin-o  
 If child-DAT Bambi as named Disney-TOP Bambi-'s parent-ACC  
 uttaeru daro.  
 sue will  
 'If a child is named 'Bambi', then Disney will sue Bambi's parents.'<sup>4</sup>
- b. Hamlet-no butai-o miniiku tabi ni, John-wa Ophelia-ni  
 Hamlet-'s performance-ACC go.see time in, John-TOP Ophelia-DAT  
 koi-o suru.  
 love-ACC do  
 'Every time he goes to see a performance of Hamlet, John falls in love with  
 Ophelia.'

Three points are worth noting concerning the presented Japanese sentences, which will be discussed more in Chapters 3 and 5. First, Japanese nouns, whether proper or common, count or mass, require no marking for number unlike English count nouns, as shown in (8).

- (8) Mary-wa itumo ichi/sandai-no **keitaidenwa**-o mochiaruku.  
 Mary-TOP always one/three.CL-*no* mobile.phone-ACC hold.walk  
 'Mary always carries around one/three cellphone(s).'

As emphasized in (6c), proper nouns in the basic form can play the role of pluralized nouns in English. Whether it is singularly used to refer to a particular object, the proper noun *Tyler* does not change its form.<sup>5</sup>

Second, not only proper names, but also other nominals can be preceded by modifiers multiple times. (9) is an example of demonstratives, and (10) involves a first-person

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is unclear as is the case in (6c). That is, *no* sometimes clearly corresponds to *of* in English, but not always. It is controversial whether a unified analysis of *no* is plausible (Watanabe, 2010). I will not always specify the role of *no* in the gloss.

<sup>4</sup>In Japanese two words *mosi* and *-ra* sandwich a clause to make a supposition.

<sup>5</sup>Japanese has associative plural constructions, which are explicitly concerned with more than one thing (Dryer and Haspelmath, 2011, Ch. 36). Associative plural suffixes in Japanese (e.g., *-tati*) are, however, usually not analyzed as pluralizing the extension of the head noun (Nakanishi and Tomioka, 2004). The suffix *-tati* is somewhat similar to *etcetera*.

pronoun.

- (9) a. ko-no hon  
this-GEN book  
'this book'
- b. John-no ko-no hon  
John-GEN this-GEN book  
'This John's book'
- c. akai John-no ko-no hon  
red John-GEN this-GEN book  
'This John's red book' (after Fukui, 1986, 202)
- (10) a. a-no watasi  
that-GEN I
- b. kinou-no a-no watasi  
yesterday-GEN that-GEN I  
Lit. 'yesterday's that I'
- c. anata-ni deau mae-no kinou-no a-no watasi  
you-DAT meet before-GEN yesterday-GEN that I  
Lit. 'yesterday's that I before meeting you'

Third, Japanese allows a proper name to be directly modified by an adjective or (non)restrictive relative clause, both of which appear preminally as follows:

- (11) a. yubenna Obama  
eloquent Obama
- b. [kino Chicago kara kaetta] Obama  
[yesterday Chicago from returned] Obama  
'Obama, who returned from Chicago yesterday'
- c. [Tabako-o sutteiru] Masayasu-wa kigen-ga warui kara  
[tobacco-ACC smoking] Masayasu-TOP mood-NOM bad because

syaberikake-nai hogaii  
speak-not better

‘You better not speak to Masayasu when he’s smoking because he’s in a bad mood.’; ‘You don’t want to talk to the smoking Masayasu because he is in a bad mood.’

Both in Japanese and English there are also vocative and exclamatory uses of proper names.

- (12) a. Dear John, visit my house.
- b. John san, uchi ni kitekudasai (Japanese)  
John HONORIFIC, home DAT come.please  
‘John, please come to my house’
- c. Damn you, John.
- d. John kono yaro  
John this bastard

The task of my dissertation is to theoretically account for all of these uses of proper names in a non-*ad hoc* manner.

### 1.1.2 Thought, proposition, logical form

Now I want to introduce several assumptions that prepare us to theoretically characterize the sentences above, proper names therein, and their uses by speakers. An important but benign assumption I want to make first is the following:

- (13) Speakers of natural languages can have ‘propositional thoughts’ that are ‘truth-evaluable’ and exhibiting ‘logical form’.

By ‘truth-evaluable’ I do not intend the logical positivist notion ‘truth-verifiable’—a thought can be *proven* to be true or false based on experience—instead I merely mean that a thought can be *judged* or *taken* to be true or false, given background knowledge of the world. For example, given the actual history of philosophy, I might judge that Aristotle is the last great philosopher of antiquity. I might also take it to be the case that a cat went up to that oak tree based on my actual observation. And I might disagree that ‘Excavation’ is de Kooning’s most important work. I would say, ‘that’s not true’. In such circumstances, I have some thought that I consider true or false. For something to be truth-evaluable, it need not be true *simpliciter* or false *simpliciter*. With respect to the actual world or a counterfactual circumstance, a thought that is truth-evaluable can be judged true or false.

By ‘logical form’ I mean a structural pattern shared by many different thoughts that characterizes logical reasoning or inference. We can think of logical form at the level of arguments (e.g., *modus tollens*) and at the level of individual statements (e.g., negated statements). Two distinct thoughts sometimes share a single logical form. For example, my thoughts that every glass is empty and that every bottle is full share the same logical form, which can be made perspicuous in a regimented language, e.g., ‘ $\forall x(Fx \rightarrow Gx)$ ’.

A thought is ‘propositional’ when it is truth-evaluable and has logical form.<sup>6</sup> No matter how we define a proposition, I take it to be truth-evaluable and exhibiting logical form because propositions would be the minimum unit in truth-preserving arguments.

Regardless of one’s view about propositions, there are some reasons to accept (13). Many philosophers and cognitive scientists are realists about thoughts and other mental

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<sup>6</sup>There might as well be non-propositional thoughts.



states, which figure in the explanation of human actions. For example, various speech acts are understood in terms of thoughts. I can ‘assert’, ‘say’ or ‘claim’ that my dinner is ready by uttering *my dinner is ready* or some other sentence. One of the preconditions of my assertion seems to be the fact that I think that my dinner is ready. In asserting or saying so I also want the interlocutor to think that my dinner is ready. If propositional thoughts do not exist, it would be hard to make sense of our speech acts. Furthermore, a thought can stand in an inferential relation to another. If I think that A. J. Ayer quarreled with Austin and he also quarreled with Mike Tyson, then I think that Ayer quarreled with Mike Tyson. The inference seems truth-preserving. It is also the case that two different thoughts can share the same logical pattern. My thought that Ayer quarreled with Austin is structurally analogous to my thought that Ayer quarreled with Mike Tyson. Therefore, I assume that there are some thoughts that are truth-evaluable and exhibit logical form.

The assumption (13) is important because I need some tractable medium of communication. I assume that propositional thought is the target that a speaker attempts to express by means of language use. A speaker often succeeds in expressing a thought by uttering a sentence. Natural language has enough structure suitable to specify novel and complex thoughts, which enables speakers to influence the mental states of others and their own. As a theorist I will discuss what properties proper names possess, and how the sentences containing proper names can and cannot be used to express a certain class of thoughts.

### 1.1.3 Semantics

Now I turn to the notion of semantic theory.<sup>7</sup> There are two questions concerning the notion of semantics: What is semantic theory a theory of?; What form should a semantic theory of a natural language take? In order to answer the first question and to illuminate the objects of semantic theory, I adopt a Chomskyan cognitive or knowledge-based conception of semantics, semantics being a part of generative grammar or generative linguistics.

According to Noam Chomsky, the subject-matter of generative grammar is the linguistic capacities of particular speakers (Chomsky, 1965, 1966, 1986, 2000). The human mind includes a component devoted to linguistic activities, the faculty of language. The language faculty of an infant begins with an initial state, the theory of which is ‘Universal Grammar’, and it attains a stable, mature state in the normal course of development, which is called an ‘I-language’.<sup>8</sup> I-languages are generative procedures that associate form and meaning, on the basis of which individuals speak to others and understand others’ speech. Generative grammar takes I-languages to be its object of inquiry.<sup>9</sup>

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<sup>7</sup>I will use ‘semantics’ and ‘semantic theory’ interchangeably. Semantic theory is semantic because it attempts to theorize the meaning of natural language. However, a semantic theory is different from a ‘theory of meaning’, which I consider to be a systematic attempt to elucidate the problem of intentionality or Brentano’s problem. The dissertation is not directly concerned with Brentano’s problem, although I will discuss some of its aspects as metasemantic questions.

<sup>8</sup>‘Grammar’ is used in two different senses among linguists: one of them indicates the initial state of the language faculty itself, and the other means a *theory* of such states. I use the term in the latter sense.

<sup>9</sup>Since we ordinarily say that one ‘knows’ or ‘knows how to speak’ a natural language such as French and Finnish, generative grammar can also be seen as the study of linguistic knowledge of speakers, where the term ‘knowledge’ is proxy for the internal state of an idealized individual speaker. Semantics as a branch of generative grammar is the study of linguistic knowledge pertaining to meaning. The knowledge conception is defended in (Larson and Segal, 1995). In what follows I sometimes say that a speaker ‘knows’ a lexical meaning, composition rule, etc. The term ‘knowledge’, however, should not be understood in an epistemological sense. I do not suggest that an idealized speaker goes through a justificatory step to verify a certain set of propositions, which may be seen as the rules of a language. Speakers are also not aware of their linguistic knowledge. The speaker’s knowledge of language is the state of the speaker’s mind specialized to her language use, not a justified true belief. See (Collins, 2004).

Now I turn to the second question about the notion of semantics, ‘What form should a semantic theory of a natural language take?’. Since semantics is a theory of I-languages that connect form and meaning, we want to specify the notion of meaning in natural language in order to fully answer the second question. However, it is difficult to define the notion of linguistic meaning. Following Robert Stalnaker (1997, 166), I use the term ‘semantic value’ as a neutral term for whatever it is that a semantic theory assigns to natural language expressions. A statement in a semantic theory for a certain I-language specifies the way in which a competent speaker of that language associates a semantic value with an expression. As usual, a semantic theory also specifies the composition rules by means of which the semantic value of a complex expression is determined by those of its constituents. I also presuppose that semantics deals with only some aspects of what we ordinarily associate with the term ‘meaning’. Understanding how a sentential semantic value is put in use requires independent consideration, which we call ‘pragmatics’.

There are different semantic frameworks that are based on different understandings of linguistic meaning. I believe, however, that my analysis of proper names and other bare nominals can be reinterpreted and deployed within any such semantic framework. In this dissertation I adopt an externalist understanding of linguistic meaning, although the subject matter of semantic theory is an internal mental state.

What competent speakers know about meaning are rules that involve external objects. For example, a speaker knows the rule for the meaning of *dog*, which might be represented as follows:

- (14) For any object  $x$ ,  $\text{Val}(x, \text{dog})$  if and only if  $x$  is a dog

where ‘Val...’ reads ‘the semantic value of *dog* is  $x$ ’, where  $x$  ranges over external objects. I prefer this externalist conception of linguistic meaning for the following reason. As I noted earlier I assume that speakers express truth-evaluable thoughts. The externalist notion of meaning straightforwardly allows theorists to use speakers’ thoughts or truth-conditional judgments about sentences to evaluate a given theory of meaning. We first provide a subject an external circumstance where objects are arranged in a certain way, and then invite the subject to judge whether the circumstance supports a given sentence. There the subject understands the meaning of the sentence, and also forms a judgment that reflects the external objects and their arrangement. Now, on the externalist conception of linguistic meaning, for any given sentence, the rules of the subject’s I-language conspire to produce a representation that involves external objects and their arrangements, so the speaker’s understanding of the sentence involves external objects and their arrangements. This picture explains why a speaker, who understands a sentence, can reliably report if the sentence is ‘okay’ or ‘not-okay’ with respect to a particular circumstance. We theorists can then exploit such reports to evaluate a theoretical description of the rules for linguistic understanding, assuming that we all grasp external circumstances equally well or badly.

Let me add at once that the externalist conception of linguistic meaning does not entail that the rules of natural language always determine complete propositions or truth-conditions. For example, it is possible that semantic rules produce representations whose variables range over external objects, but remain free. Then the outputs of a semantic theory would not be truth-conditional. I presuppose neither isomorphic nor one-to-one relation between natural language and propositional thought. I will come back to this issue concerning the semantics-pragmatics interface in Chapter 5.

My use of an externalist notion of linguistic meaning is not supported by any *a priori* argument. Semanticists might discard the externalist notion of meaning in future research. In other words, external objects do not necessarily have to figure in the description of an I-language (Collins, 2007a). As of today, however, when we specify the semantic value of some natural language expression, it is almost always inevitable to refer to external objects. Natural language is used to communicate about medium sized dry goods, and we theorists start from them. Although in a near future we might be able to leave behind the ordinary categories of external objects and truth-evaluable thoughts thereof, and directly characterize the interface between natural language and the conceptual-intentional (CI) systems, I currently have no clear idea about the format and the structure of the CI systems. Thus, I bypass any issues concerning the language-CI interface, while I do not rule out the possibility that the overall structure of my semantic theory will cast some light on the nature of the interface.

One could adopt an internalist notion of meaning in constructing a semantic theory of a natural language. Within an internalist semantic framework, the semantic values of natural language expressions would not be external objects, but internal mental entities. For example, Paul Pietroski has been putting forward an internalist conception of natural language semantics (2000; 2005b; 2006a; 2006b; 2007; 2008, *ming*), according to which linguistic meaning must be understood in terms of concepts of some sort or instructions to the CI systems. The biologically implemented human faculty of language in a competent speaker of, say, English is in a certain state that can be said to represent an algorithm that generates instructions to build concepts. Expressions or words such as *kick* in English are associated with a special class of lexicalized concepts, '*i*-concepts', on which the I-

language operates to build more complex concepts by combining them in certain ways. Each *i*-concept is an instruction to the CI systems; generated complex concepts are complex instructions to the CI-systems. These concepts are probably not fully propositional. Yet they eventually lead to truth-evaluable judgments, which are possible only together with other cognitive systems beside the language faculty.

The externalist and internalist notions of linguistic meaning present two distinct ways to cash out the semantic values of natural language expressions. I adopt the former notion in this dissertation. However, the discrepancy between the two notions might not indicate that they belong to two completely irreconcilable projects.

Pietroski et al. (2009) point out that David Marr's (1982) multi-layered levels of explanation invoked to understand vision analogously applies to our understanding of a language faculty. We do not have to expect that a single level of explanation completes our study of meaning. Marr (1982) claims that there are three different levels of theorization, at which the task 'seeing' must be understood before we claim to have understood it completely. The top level (Level One) is for an abstract computational theory that describes a mapping from one kind of information to another, whose properties should be appropriate and adequate for the task at hand. Level One asks *what* computation the device for vision carries out. The middle level (Level Two) involves choosing an algorithm that implements the computation. Level Two asks *how* the device carries out the abstract computation. The bottom level (Level Three) is about hardware implementation of algorithm. The discoveries and progress at each level would constraint the analyses at the other two levels. However, we can pursue a theory at each level rather independently of the others.

Marr's methodological distinction, broadly construed, applies to two different semantic strategies based on two different notions of linguistic meaning. The externalist semantic theories can be seen as operating at Level One in describing abstract mappings between linguistic objects and external objects. They characterize how uses of sentences can relate to speakers' truth-value judgments. The internalist theories address Level Two questions, specifying how such mappings are possibly carried out by the interactions between the language faculty and other cognitive systems.

The theory of proper names I will present in this dissertation remains at Level One because I adopt the externalist conception of linguistic meaning and for the most part abstract away from the interaction between the language faculty and other cognitive systems. However, since I adopt the mentalist conception of semantics, my theory has to be constrained by any relevant Level Two or Three considerations and findings.

Last but not least, I want to note that by 'referring' I mean an action of an individual. An individual 'refers to' an object with some device, which may or may not be linguistic. The 'referent' is the object to which an individual refers to with something. So an act of referring does not have to be linguistic. An index finger, eye gaze, lips, etc might be sufficient for performing a referring action. The notion of semantic value is clearly different from the notion of referent. They could sometimes coincide, but they are usually different. I refer to nothing with a token of *although*, whereas my knowledge of English assigns some semantic value to it. An expression itself never refers to anything. An expression is used to refer to an object, and it can be derivatively *seen as* referring to an object. By the theoretical term 'singular referring expression' I mean an expression that is used to refer to a single object in virtue of linguistic knowledge. I also sometimes

loosely write a thing such as ‘this utterance expresses this proposition’, but it should not be understood in the literal sense. Instead it means that semantic knowledge associates the utterance with the proposition. I will also sometimes use ‘denotation’ as synonymous with ‘semantic value’.

## 1.2 Three Semantic Theses about Proper Names

This section provides a brief overview of three different semantic theses about proper names. Semantic theses must not be confused with metasemantic theses. David Kaplan (1989) and also Stalnaker (1997) distinguish two kinds of questions that can be addressed in semantic inquiry. On the one hand, ‘semantic’ (Kaplan) or ‘descriptive semantic’ (Stalnaker) questions concern the specification of the content or the semantic value of a natural language expression. First-order or descriptive semantics studies how complex expressions obtain their contents on the basis of the contents of their constituents. On the other hand, ‘metasemantic’ (Kaplan) or ‘foundational semantic’ (Stalnaker) questions ask in virtue of what fact the expression has the content it has. Metasemantic questions are closely related to the problem of intentionality. It is the first-order semantics that I will be primarily discussing in this dissertation. However, after I present each semantic thesis, I also discuss some of its metasemantic implications.

Suppose that I utter the sentence (15) to report that Bertrand Russell was Hegelian.

(15) Russell was Hegelian.

How should we theoretically characterize the expression *Russell* in (15)? We can distinguish three semantic theses about the roles of proper names.



Descriptivism or the descriptivist thesis claims that proper names are quantificational definite descriptions in disguise, whose basic logical and semantic properties are understood in terms of Russell's theory of descriptions (1905). The superficial appearance of the sentence (15) is misleading: its underlying structure is analogous to that of a sentence containing a definite description in Russell's sense. A proper name is a quantificational expression of the form [ the  $x$ :  $Fx$  ] where  $F$  is usually considered to be a conjunction of the predicates that can be used to uniquely identify the referent of the name. The origin of the descriptivist thesis is often associated with Gottlob Frege and Russell, and subsequently many different versions of it have been explored.

Descriptivism has an application in metasemantics, which explains why proper names can be related to particular objects. The descriptivist thesis in semantics is in harmony with a Russellian empiricist theory of thought: for a subject to think about something, the subject must be empirically familiar with the object with some appropriate definition of empirical familiarity. Under the constraint of such Russellian empiricism, it is not clear if I would ever be able to entertain the thought that Russell was Hegelian, if the thought has the form of  $Fa$ , where  $a$  is an individual constant that stands for Russell, because it is not clear if I could ever be familiar enough with Russell on the chosen empiricist criterion. However, if the thought has the form of [ the  $x$ :  $Fx$  ]( $Gx$ )—the possibility is opened up by the descriptivist thesis—then it seems easier to meet the empiricist criterion for thought because I would not have to be familiar with Russell himself, but only with whatever  $F$  and  $G$  stand for.

So-called Millianism about proper names denies the quantificational status attributed to a name by the descriptivist. Instead Millianism claims that proper names are analogous

to individual constants in quantificational logic. The occurrence of *Russell* in (15) is equivalent to an individual constant, while the rest of the sentence corresponds to a predicate; the overall structure of the sentence can be expressed as  $Fa$ . Thus, the Millian view of names can be appropriately called the ‘constant thesis’ about proper names. The constant thesis provides a straightforward account for the rigidity of proper names. Individual constants model the behaviors of proper names very well especially when embedded within modal constructions. By contrast, the descriptivist thesis needs some complication to account for rigidity.<sup>10</sup>

The constant thesis in semantics is usually supplemented with a metasemantic claim about proper names: the causal picture of naming, according to which a causal-historical chain of human linguistic activities relates a proper name and its referent. The causal picture of naming supersedes the descriptivist-empiricist picture of a use of a proper name. On the causal picture of naming, I can successfully talk about an individual such as Bertrand Russell because I stand in an appropriate causal relation to the referent of the name *Bertrand Russell*. Perhaps, I know the following rule, whose origin is the naming event in which Russell himself involved:

- (16) For any  $x$ ,  $\text{Val}(x, \text{Russell})$  if and only if  $x$  is identical to  $r$  (where  $r$  is a constant that refers to Russell)

Even if I am not acquainted with Russell, in virtue of knowing the rule that involves Russell himself, I might be able to stand in an appropriate relation to Russell, which makes a thought about him possible.

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<sup>10</sup>As the main proponents of the constant thesis I have in mind such figures as Nathan Salmon and Scott Soames. Kripke in *Naming and Necessity* (1980) provides no positive semantic thesis about proper names.

I also classify the position that treats proper names as pronominal or variable expressions as an extension of Millianism because the position considers proper names to be simple expressions just as Millianism.<sup>11</sup>

I will argue in Chapter 2 that the constant thesis, including the names-as-variables view, fails to provide an adequate account of various uses of proper names. The constant thesis is an essentially limited position because it treats proper names to form a special and unique category, and fails to see the connections proper names have to other nominal expressions. I alternatively defend the predicate thesis, put forward in theoretical terms first by Burge (1973), according to which proper names themselves are monadic predicates. They are neither individual constants, individual variables, nor quantificational phrases, but semantically on a par with other nouns. There is nothing special about proper names to the extent that they are nominal predicates, which we employ to form complex phrases of various kinds just as other common nouns (e.g., *the chair*, *that chair*, *a chair*).

Putting differently, the predicate thesis claims that proper nouns correspond to sortal concepts, if an expression corresponds to a concept at all. The sortal concept TIGER, if it exists, distinguishes tigers from those that are not. Likewise, the sortal concept ARISTOTLE divides the domain of discourse into two groups: everything in one group is an Aristotle; everything else belongs to the other. So the predicate thesis on its own does not account for the three uses of proper names presented above. But the predicate thesis interacts with other aspects of natural language, namely, our capacities to form referring expressions, and correlatedly with our capacities to have demonstrative thought.

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<sup>11</sup>Such a view has been expressed by various theorists at various points, e.g., Charles S. Peirce, Takashi Yagisawa, François Recanati, and Sam Cumming.

In addition to the predicate thesis, I will argue that proper names used as arguments of sentences are complex phrases that are essentially equivalent to definite descriptions. The singular occurrence of *Russell* in (15) will be syntactically analyzed as follows, where  $\emptyset_i$  is a phonologically empty expression that is semantically virtually identical to the definite article *the*, and  $s_i$  is a situation argument, which accounts for the context dependency of complex phrases.



I will develop a situation semantic system that treats the structure (17) to be an object-denoting expression, whose semantic value is the individual named ‘Russell’ in the relevant situation. Syntactically represented situation arguments also account for the interpretive interaction of a proper name with the rest of the sentence in the bound use of a proper name.

### 1.3 Overview of the Dissertation

Chapter 2 will be an examination of the constant thesis of proper names or Millianism, as well as the view that treats names as individual variables. It will be argued that the predicate thesis has clear advantages over the competing accounts given the wide range of facts about proper names.

Chapter 3 will first present a syntactic analysis of a variety of uses of proper names. We will examine evidence that proper names used as arguments of sentences are complex noun phrases. The second half of Chapter 3 will discuss and defend the metalinguistic theory of a proper name as an analysis of the lexical meaning of a proper noun.

Chapter 4 will be devoted to developing a situation-based semantic analysis of definite descriptions and proper names. A situation-based semantic theory is an empirically plausible account of definite and other complex nominal phrases. The predicate thesis of names developed in Chapter 3 will be integrated into the situation semantic analysis of complex nominal phrases. Syntactically represented variables over situations play a crucial role in deriving the semantic properties of complex nominals, which in turn account for various uses of proper names and definite descriptions. For example, the *de re/dicto* distinction, which we associate with definite descriptions, can be accounted for in terms of the binding relation between a modal expression and a situation variable within a definite description. The situation semantic analysis explains why proper names can be rigid designators and how they produce the bound or co-varying interpretations.

Chapter 5 will turn to other sorts of bare nominals including bare plurals (e.g., *dogs*), mass terms (e.g., *water*), and Japanese noun phrases. The analysis of proper names and definite descriptions developed in Chapter 4 will be shown to extend to other bare nominals as well. Occurrences of plural and mass terms themselves are predicative expressions, and constitute definite descriptions when used as the subjects or objects of sentences. The predicate thesis holds not only for proper names, but also for other bare nominals. The predicate thesis in fact provides a unified approach to the semantics of bare nominal expressions in general, which reinforces the conclusion of Chapter 2. At the end of the chapter is the discussion of some further philosophical implications of the proposed account of bare nominals. I will present an argument for the view that the mapping from syntax to logical form varies between English and Japanese.

## Chapter 2

### Millianism and Variabilism

The purpose of this chapter is to examine Millianism or the constant thesis about proper names and another competing thesis, variabilism, which takes proper names to be analogous to individual variables rather than individual constants. I will discuss the two views together in this chapter because they share two basic characteristics, which also create major differences between the predicate thesis and Millianism/variabilism.

In the first place, both Millianism and variabilism consider proper names to be structureless, simple expressions that are inherently argumental. This characteristic forces the Millian and variable theorists to separate the modified uses of proper names from the other uses of names. They are bound to fail to provide a unified analysis of all three uses of proper names.

In the second place, both Millianism and variabilism associate nothing but referents with proper names as their semantic significance. Any other potentially specifiable component of natural language semantics, such as a 'mode of presentation' and 'Sinn', has nothing to do with the semantics of proper names. On the one hand, according to Millianism, the referents of proper names exhaust our semantic knowledge of proper names. On the other hand, variabilism claims that, although the referent of a proper name varies from time to time, nothing but a certain object in the domain is the significance of a name, which is given by a variable assignment.

In what follows I will discuss why these two characteristics are the limitations of Millianism and variabilism.

## 2.1 Variabilism

Let me first explicate what variabilism is because it has not yet been widely discussed. I focus on the version of variabilism presented in (Cumming, 2008).<sup>1</sup> A use of a sentence containing a proper name such as (1a) is first translated into what he calls a ‘semantic representation’, which is the object for which the semantics of English delivers an interpretation.<sup>2</sup> Each use of a proper name is translated as a variable that bears an index. For example (1a) is represented as (1b):

- (1) a. Socrates fell.  
b. *fell*  $x_2$

A use of *Socrates* in this particular occasion introduces the variable  $x_2$ . Another use of *Socrates* can introduced a different variable that bears a different index. Unlike Millianism it is not a single individual constant that is associated with a use of a proper name. A single name can be used to talk about different individuals even in the same context. One and the same expression *Socrates* can be used to introduce two different variables to talk about two different Socrateses. A sentence or discourse as a whole can contain more than one occurrence of the same name. Disambiguation takes place when a use of a sentence is translated into a semantic representation.

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<sup>1</sup>As mentioned above, Yagisawa (1984) once proposed the variable analysis of proper names, which he seems to no longer hold.

<sup>2</sup>I take a semantic representation to be equivalent to an ‘LF representation’: a syntactic representation that explicitly marks semantically relevant distinctions such as scopes. See Chapter 3 for more discussion on natural language syntax.

Variables are assignment-sensitive in the sense that their interpretations are provided by variable assignments, not by models. A variable assignment  $g$  is a function that corresponds to a sequence of objects  $\langle o_1, o_2, \dots, o_n \rangle$  (where ‘ $o_i$ ’ is an object) and maps a variable bearing the index  $i$  onto the  $i$ th object of the sequence. (1b) itself does not determine a truth-evaluable proposition even after we have fixed a model or which language we are studying. (1b) determines an ‘open’ proposition: a function that maps a variable assignment onto a proposition (‘closed’ proposition) that is a function from possible worlds to truth-values. With respect to an assignment  $g$  that assigns  $x_2$  the philosopher Socrates, (1b) yields the proposition that Socrates fell. The proposition is true in a possible world if and only if the philosopher Socrates fell in that possible world.<sup>3</sup>

This variable analysis achieves two important things. First, for the singular use of a proper name (when a name is used to talk about a particular object), the semantic contribution of a use of a proper name to the proposition expressed is nondescriptive. The  $n$ th element in a sequence is nothing but a single object (not a mode of presentation). As a result, the interpretation of a use of a proper name with respect to an assignment is invariable for circumstances of evaluation. The analysis predicts that some uses of proper names are rigid designators in Kripke’s (1980) sense because the assigned value of a use of a name remains the same across all worlds. Any adequate analysis of proper names must explain the nondescriptive uses of proper names, and why they can be rigid designators, as some extant analyses indeed do so.<sup>4</sup>

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<sup>3</sup>It is worth noting that, for Alfred Tarski, individual constants are variables whose values do not vary across sequences. In this sense variabilism can be seen as an extension of Millianism.

<sup>4</sup>For example, see (Burge, 1973; Recanati, 1997; Geurts, 1999; Elbourne, 2005). I also follow the spirit of Burge and Elbourne and analyze the singular use of a proper name as a singular referring expression, though it is a complex phrase, rather than a primitive expression as the Millian and variable theorists claim.



Second, the variable analysis has wider empirical coverage than the Millian analysis of proper names. Uses of proper names are now bindable by other expressions because they introduce variables rather than constants. It is also possible to conceive of an expression or linguistic environment that changes the variable assignment, with respect to which we determine which object a proper name contributes to the expressed proposition.

To understand the advantages of variabilism over Millianism, recall, first of all, variabilism enables one and the same proper name to introduce distinct variables within a single sentence or discourse, which implies that one and the same proper name can be used to talk about different individuals. This aspect of the variable analysis already gives it an edge over the Millian analysis. Jerrold J. Katz discusses a number of counterintuitive outcomes of the Millian analysis of proper names, some of which I will return to discuss in connection with the modified use of a name. Here I want to point out two facts about names that Millianism cannot easily account for whereas variabilism has no trouble with.

Imagine two John Smiths who are conversing with one another. Their claim like (2) or (3) appear to us the literal truth.

(2) We have the same name.

(3) 'John Smith' is my name, too. (Katz, 2001, 150)

Millianism has to deny the truths of (2) and (3), however, because it is theoretically impossible for one name to stand for more than one individual. At the same time Millianism has to affirm that the two John Smiths are speaking the literal truth when they say (4).

(4) We have different names. (Katz, 2001, 150)

Likewise, according to Millianism, (5) is probably analytically false.

(5) My name is Mary Smith, too, so I'm her namesake. (Katz, 2001, 151)

Millians need to dismiss the theoretical significance of these examples as a 'loose talk': a 'name' here is not concerned with a natural language expression in a theoretical sense. Two individuals cannot share one and the same name as a natural language expression because *John Smith*<sub>33</sub>, which is a name as a natural language expression, never refers to more than one individual. Millians have to presuppose that these facts observed in (2-5) are somehow isolated from our theorization of proper names.<sup>5</sup> By contrast, variabilism has no need to exclude these facts as irrelevant noise. Two John Smiths can have the same name because different occurrences of a single expression *John Smith* can refer to two different individuals, i.e., the two John Smiths.

The bound use of a proper name is also within the reach of variabilism. For example, Cumming discusses the following examples, where the referent of a name inter-sententially depends on the interpretation of a preceding expression.

(6) There is a gentleman in Hertfordshire by the name of 'Ernest'. Ernest is engaged to two women. (Cumming, 2008, 535)

(7) You will meet a man named 'Ernest'. Ernest will bring you every happiness. (Cumming, 2008, 536)

We can use (6) and (7) when there is no specific individual in mind. Suppose that one claims (6) based on a demographic survey and that there are more than one Ernest who is engaged to two women. Since the speaker has no particular Ernest in mind, the second occurrence of *Ernest* seems to be about any Ernest who can be a value of the existential

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<sup>5</sup>For example, Kaplan (1990) posits the category of 'generic names' in addition to ordinary proper names to make sense of the cases like (2-5). We will see below that such a theoretical addition is unnecessary.

statement expressed by the first sentence, not about a unique Ernest. (6) can be paraphrased as follows in this context.

- (8) Whoever is a gentleman in Hertfordshire by the name of 'Ernest' is engaged to two women.

The paraphrase makes it perspicuous that there is some connection between the mentioned gentleman and the referent of *Ernest*.

This intuition is well captured by variabilism because it assigns the following logical form to a use of (6).

- (9)  $\exists x(\text{gentleman-in-Hertfordshire } x \wedge \text{named-Ernest } x \wedge \text{engaged-to-two-women } x)$

Details aside, let us assume that the variable introduced by the second occurrence of *Ernest* in (6) is bound by an existential quantification, which also binds the variable introduced by the occurrence of *a gentleman in Hertfordshire*. The logical form (9) makes it clear that the gentleman  $x$  is identical to the Ernest  $x$  who is engaged to two women.

According to Millianism, however, the fact that we can paraphrase (6) as (8) is a mere coincidence, and there is no theoretical way to note the relation between them. On the Millian analysis of names, a use of (6) contains two completely independent statements. One is an existential statement. The other is a singular proposition concerning a single individual. The referent of *Ernest* in the second statement might make the first existential statement true, which can be nothing but a coincidence.

To summarize, the variable analysis of proper names has the same virtues as the individual constant analysis, while it accounts for a wider set of data including the bound use of a proper name and some intuitive facts concerning names. Below I will present,

however, more facts about proper names that the variable analysis can only inadequately account for.

## 2.2 Complexity of Proper Names

We have seen that the variable analysis of proper names can straightforwardly account for several facts about proper names when the Millian analysis has a hard time. The variable analysis is compatible with our intuitions about ‘having the same name’ and ‘having different names’, and it applies to the bound use of a proper name. The analysis of proper names to be developed in Chapter 3 and 4 equally well accounts for the presented data concerning proper names. In what follows I will examine some other facts about proper names, which demand theoretical complexities in both Millianism and variabilism whereas they can be easily handled by the predicate thesis about proper names, as we will see in Chapter 3. Therefore, empirical facts indicate that the playing field is not level for the three competing theses of proper names.

### 2.2.1 The modified uses of proper names

Let us discuss some of the modified uses of proper names, cited in the previous chapter. A use of *Every Alfred I know studied in Princeton* is most likely to mean that every one of the speaker’s acquaintances who goes by the name ‘Alfred’ studied in Princeton. How do we obtain this reading upon hearing the utterance? How does the occurrence of *Alfred* relate to the quantificational content. The predicate thesis has a straightforward answer to these questions because an occurrence of *Alfred* is uniformly a nominal predicate. A

nominal predicate *cat* can be combined with a quantifier *every* and so is *Alfred*.<sup>6</sup>

Millianism and variabilism must deny that such an occurrence of *Alfred* is a proper name. If it were, for the Millian theorist, the utterance would be incomprehensible because a quantifier cannot bind an individual constant, whereas for the variable theorist, the utterance would be either incomprehensible (the introduced variable is free) or lead to an unobserved meaning (the quantifier binds the variable, but it is not restricted at all due to the lack of any descriptive content). Their solution has to be that there are two words *Alfred*<sub>1</sub> and *Alfred*<sub>2</sub>, each of which has a different semantic specification. One of them is an individual constant or individual variable, and the other is a nominal predicate, whose content is metalinguistic.<sup>7</sup>

I have a few comments on this solution. First, as it will be clear in the following chapters, to account for the same range of data, the predicate thesis only requires one kind of natural language expression (e.g., *Alfred*), not two. I will argue that the referential force of a proper name comes from the basic resource available to nominal expressions in general. More specifically, what makes a definite description a referential expression is what makes a proper name a referential expression. The predicate thesis requires no additional theoretical complication that needs to be introduced on the Millian or variabilist approach. Considerations of parsimony support the predicate thesis. Certainly such considerations might not weigh heavily against Millianism/variabilism. But we still have *prima facie* reason to deny them.

A second comment is on the following possible reply. The Millian/variabilist the-

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<sup>6</sup>See also Chapter 3 for more details.

<sup>7</sup>See Chapter 3 for the discussion on the metalinguistic or quotation theory of proper names.

orists might argue that my first comment is unfair because the *Alfred*<sub>1/2</sub> ambiguity poses no theoretical burden. In other domains of language use, we independently observe homophonous expressions whose meanings seem to be somehow related to one another. Consider some polysemies (e.g., ‘I am writing a *book*’; ‘I brought a *book*’; ‘I *booked* a hotel’). Each polysemous expression sounds the same, but has a distinct meaning. Also compare *water* and *three waters*. The former is an uncountable mass term, which seems to be about some amount of water. But in the latter phrase the same word *water* (or what appears to be the same word) is used as a count noun, denoting perhaps three bottles of water; two occurrences of *water* have two distinct meanings, just like *Alfred*<sub>1/2</sub>. If we acknowledge that there has to be some productive way to relate the occurrences of *water* or *book* (a ‘universal grinder’ of some sort), we would also be justified in presupposing some productive relation between *Alfred*<sub>1</sub> and *Alfred*<sub>2</sub>. Therefore, the modified uses of proper names do not threaten Millianism/variabilism.

Note that, even if this reply is flawless, the playing field for three competing theses of names is merely level, and the scale is not tipping in favor of Millianism or variabilism. The ambiguity thesis merely makes Millianism/variabilism logically consistent with the productive uses of proper names, and never explains why we should have such uses. By contrast, the predicate thesis predicts that we have such uses of names because we use other nominal predicates, such as *cat*, in the same productive ways. Furthermore, we have good reason to think that the polysemous expressions mentioned above are bad analogies. Certainly three occurrences of *book* above have three different meanings. However, none of the meanings is structurally different from the others. They are all predicative expressions that are true of things or pairs of things. We have not yet observed a transformation

of meaning in which an expression for a particular object turns into a predicate, or *vice versa*. Certainly it is easy to come up with a way to ‘Socratize’ an individual constant. That is, we can devise a formal principle that turns an individual constant into a predicative expression. However, such a rule as Richard Montague’s *ident* merely creates a predicate whose extension is a singleton, which is irrelevant to the modified uses in question.<sup>8</sup> In order to account for the modified uses of proper names, we need metalinguistic predicates true of more than one objects, not an essential predicate true of just one thing. A productive rule between proper names and homophonous metalinguistic predicates is hard to come by.<sup>9</sup>

The individual constant or variable theorists now have to acknowledge that the *Alfred*<sub>1/2</sub> ambiguity is rather similar to that of *bank*<sub>1/2</sub>. It is not the case that there is an internally represented rule connecting a proper name to a metalinguistic predicate. This option might not look so bad after all. Competent speakers are indeed capable of remembering a great number of homophonous expressions. Furthermore, all Alfreds have some sociological or anthropological property in common, i.e., they are all named or regularly called ‘Alfred’. It is easy for us to pick up this property to make an independent predicate that is true of all Alfreds.<sup>10</sup>

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<sup>8</sup>The function *ident* gives us, for any object, a function that assigns Truth to nothing but that object.

<sup>9</sup>What about *water* and *three waters*? Perhaps, the former denotes an abstract kind, and the latter is a predicate true of any amount of the kind water. If we have a productive rule to derive a count noun from a kind term, then we might be able to derive a metalinguistic predicate from an individual constant. This suggestion is problematic for two reasons. First, semanticists, such as Chierchia (1998), who utilize kind-like denotations in the semantics of mass terms only appeal to property correlates, not abstract kinds, as the denotations of mass terms. We can easily recover properties from property correlates based on type theory. See Chapter 5. Second, the relation between a kind and its members is disanalogous to the relation between an object and the other objects that share the same name. A kind instantiates particulars, whereas a particular Alfred stands in no such instantiation relation to other Alfreds.

<sup>10</sup>Kaplan’s (1990) ‘generic names’ are such metalinguistic expressions, which are distinct from Millian names.

Notice, however, this process of making a metalinguistic predicate is a new theoretical commitment for Millians/variabilists, and it is also the very claim that the predicate thesis advocates for. The predicate theorist, such as Burge, is committed to the same claim that we somehow create a predicate true of all objects that have the same name. Millians/variabilists are committed to an additional thesis that there is also an independent linguistic category: ‘proper names as individual constants’ or ‘proper names as individual variables’. We are now making a full circle. In order to account for the three main uses of proper names, Millianism and variabilism need two categories of expressions: proper names and homophonous metalinguistic predicates. By contrast, the predicate thesis only requires metalinguistic predicates to cover the same range of facts. Therefore, the predicate thesis of names is simpler than Millianism/variabilism.

I would like to repeat the same point by using a different set of data. Consider the following examples, which I borrow from (Paul, 1994).

- (10) a. W. A. Mozart visited Paris.  
b. The young W. A. Mozart visited Paris.
- (11) a. Woody Allen is funny.  
b. The joking Woody Allen is funny.

The predicate thesis requires no auxiliary theory in explaining (10b) and (11b). All occurrences of proper names in (10-11) are metalinguistic predicates, which are constituents of complex phrases. Since I formally analyze the subject *W. A. Mozart* in (10a) as a definite description, the name with an overt definite article in (10b) is reduced to its variation.

For the Millian and variable theorists, there are a couple of different ways to han-



dle (10b) and (11b) rather than declaring them to be noise. A first option is to consider a complex phrase such as *the joking Woody Allen* to be a newly created name, which refers to just some part of an individual. This option never compositionally explains why *the joking Woody Allen* applies to Woody Allen while he is joking because, on Millianism/variabilism, a part of the name *joking* has no semantic significance. Thus, *the joking Woody Allen* never means the joking Woody Allen, although it might happen to refer to a joking slice of Woody Allen, which is an undesirable outcome of the first option.

A second option for Millians and variabilists is to follow the predicate theorist in this limited domain. The occurrence of *Woody Allen* in (11b) is in fact not an occurrence of a proper name, but an occurrence of a metalinguistic predicate. Thus, the phrase *the joking Woody Allen* is a definite description whose descriptive content partly consists of the content of the metalinguistic predicate. This option accounts for why the phrases like *the joking Woody Allen* are productive and their usages are predictable from the meaning of the modifiers (e.g., it is used to talk about Woody Allen while he is joking).

However, with the second option, the Millian and variable theorists are now dangerously associated with the predicate theorist. They all need to cooperatively work together to construct a compositional semantics for (10b) and (11b). The phrase *the young W. A. Mozart* is not merely about any individual who fulfills the explicitly stated description, i.e., ‘being young and being named ‘W. A. Mozart’’. Kripke’s (1980) Gödel and Feynman cases decisively show that we cannot rely on purely qualitative contents to fix the referent of a singular term.<sup>11</sup> The speaker uses the phrase to refer to the famous composer W. A.

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<sup>11</sup>This is what is sometimes called a ‘semantic argument’ against descriptivism. See Chapter 4 for more discussion.

Mozart in his early ages. But how is that possible? I will argue that the singular use of a proper name is an incomplete description whose descriptive content is supplemented with a particular situation in the world chosen by the speaker (Chapter 4). That is how *the young W. A. Mozart* can be used to refer to that famous W. A. Mozart while he was young, not to any other individual with the same name who happens to be young. Millians/variabilists also have to adopt this account or something equally adequate to explain the same set of data. Now, if the Millian and variable theorists need to ally with the predicate theorists, only temporarily though, their analyses of names are roughly twice as complex as an analysis based on the predicate thesis, assuming that the predicate thesis can cover the singular use of proper names, such as (10a) and (11a), without invoking the Millian or the variable analysis. Therefore, the Millian and variable analyses of proper names are greatly inferior to a semantic analysis based on the predicate thesis in terms of theoretical simplicity.<sup>12</sup>

### 2.2.2 Generics with proper names

When we turn our attention to non-English languages, there are further facts about proper names that Millianism and variabilism have difficulty in explaining. As we will extensively discuss in Chapter 5, Japanese is one of many articleless languages where a noun can appear on its own without being modified by any other word. Such a ‘bare’ noun can be used to express a variety of different thoughts, one of which is a generic statement.

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<sup>12</sup>There is another (rather unattractive) option available to Millians/variabilists, which is to treat the occurrences of names in (10b) and (11b) not as predicates, but referring to particular individuals, and develop an adverbial analysis of the modifiers in the noun phrases (Lowe, 1988). The role of *Woody Allen* in (11b) is the same as that in (11a), but the way in which he is funny is somehow modified by the word *joking*. The approach is unattractive not only because such an adverbial analysis is empirically implausible (Paul, 1994), but also it does not help us explain the other modified uses of proper names.

(12) is such an example where the bare NP *chiisai kodomo* ('small child') is equivalent to the English bare plural *small children*.

- (12) [**chiisai kodomo**-wa hitomisirisuru koto] -ga ooi  
[**small child**-TOP shy.do COMP] -NOM many  
'It's common that a small child is shy of strangers.'

A generic statement can be made by using a proper name as well. (13) is a claim about the demographic distribution of a surname.

- (13) [**Saito**-wa Tohoku syusin dearu koto] -ga ooi  
[**Saito**-TOP Tohoku birthplace is COMP] -NOM many  
'It's common that a Saito is from the Tohoku area.'; 'Many Saitos are from the Tohoku area.'

The occurrence of the name *Saito* in (13) is not modified by any determiner, at least superficially, just as the count noun in (12). In whatever way we ultimately analyze the occurrence of a name in (13), we can fully expect this type of use as long as we consider proper names to be semantically on a par with other count nouns.

Millianism and variabilism here again need to introduce a metalinguistic predicate to accommodate (13). On the one hand, an individual constant (e.g., *Saito<sub>3</sub>*) cannot yield a statement about the majority of Saitos. On the other hand, an individual variable cannot also contribute the metalinguistic content to the sentential meaning because it is devoid of any predicative meaning. By contrast, the predicate thesis of names predicts that a name can be used in the generic constructions like (13). The scale is tipping in favor of the predicate thesis of names.

### 2.2.3 Informativeness of proper names

There is another challenge to Cumming's variabilism: it fails to semantically distinguish a proper name from other pronominal expressions and also from other coreferential proper names. Consider the contrast between (14) and (15), in the latter of which a personal pronoun is used in the place of the name *Ernest*. For the ease of exposition, I insert the indices '*i*' and '*j*' to signify that the co-indexed expressions are used to talk about the same individual.

(14) There is a gentleman<sub>*i*</sub> in Hertfordshire. #Ernest<sub>*i*</sub> is engaged to two women.<sup>13</sup>

(Cumming, 2008, 543)

(15) There is a gentleman<sub>*i*</sub> in Hertfordshire. He<sub>*i*</sub> is engaged to two women.

The name *Ernest* cannot be seen as anaphoric to the preceding indefinite phrase *a gentleman in Hertfordshire*, unlike the pronoun *he* in (15). An individual pronoun such as *he* is, however, usually analyzed as introducing a variable that receives its value from a variable assignment.<sup>14</sup> Since Cumming analyzes *Ernest* in (14) as introducing an assignment-sensitive variable, the semantic contribution that *Ernest* makes would be identical to that of *he* in (15). Then there should have been no difference between (14) and (15).

Cumming attempts to explain the contrast by pointing at a possible additional structure in a linguistic antecedent, which he calls a 'naming construction'. Compare (14) with the earlier impeccable sentence (6).

(6) There is a gentleman<sub>*i*</sub> in Hertfordshire by the name of 'Ernest'. Ernest<sub>*i*</sub> is engaged

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<sup>13</sup>I use '#' to indicate that a use of the sentence sounds odd to competent speakers.

<sup>14</sup>Alternatively, the E-type/D-type approach analyzes third-person pronouns as definite descriptions (Heim, 1990; Elbourne, 2005). I doubt that Cumming adopts the E/D-type approach to pronominals, which would defeat his comparison between names and pronouns.

to two women.

(Cumming, 2008, 535)

Once we add a metalinguistic predicate to (14), such as *by the name of 'Ernest'* in (6), a name can take a preceding indefinite phrase as its antecedent. Cumming suggests that this is because an indefinite phrase together with a naming construction is an operator that binds the variable introduced by an occurrence of a name. The naming construction *by the name of 'Ernest'* explicitly connects a use of *Ernest* to a previous expression. In the absence of the naming construction, the speaker would not intend that the interpreter recognizes such a coreferential relation on Gricean reasons.

Cumming's suggestion does not work for two reasons. In the first place, an indefinite phrase plus naming construction is not always able to bind a following name.

- (16) There is a gentleman<sub>*i*</sub> in Hertfordshire by the name of 'Ernest'. #Worthing<sub>*i*</sub> is engaged to two women.

The naming operator he posits selectively binds only the variables that are introduced by the very same name used in the linguistic antecedent. The naming construction *by the name of 'Ernest'* binds only an occurrence of *Ernest*, not *Worthing*, which can be used to refer to the same individual on his theory. But how is a naming construction sensitive to the difference between *Ernest* and *Worthing*? Cumming's variabilism has no resource to mark such a fine-grained distinction at his semantic representations. Both *Ernest* in (6) and *Worthing* in (16) are semantically on a par, introducing variables with indices. There is no way to tell, for example, if  $x_{33}$  corresponds to an occurrence of *Ernest* or *Worthing* in his semantics. The presence of a naming construction might be sufficient for distinguishing (14) and (15), but it is not sufficient for distinguishing (6) and (16).

Note that the problem is not about the disambiguation of a sequence of sounds. Certainly, on Cumming's approach, each occurrence of a proper name is ambiguous at the level of pronunciation because it is open whether it should be translated as bearing the same index as a previous variable-introducing expression. The interpreter could have *contra*-indexed *Worthing* and *a gentleman in Hertfordshire by the name of 'Ernest'* in (16), which would lead to a possible reading of the utterance. However, the problem is not that his analysis cannot produce a possible reading of an utterance, but that his analysis has no way to exclude *unattested* readings. The pronoun *he* in (15) may or may not be co-indexed with the previous indefinite phrase; either way, the translated semantic representation would yield a possible reading of (15). Cumming's analysis rightly excludes neither of the indexing for pronouns. But he also does not exclude the bad indexing in (16).

In the second place, Cumming's hypothesized operator that selectively binds some uses of names misses the right generalization. A naming construction is not a necessary condition for an anaphoric name to be felicitously used.

(17) The succession of nuclear wars has exterminated all living creatures on earth except one. There is just one man<sub>*i*</sub> who survived the disasters. The survivor<sub>*i*</sub> often dreams of women. Some of them look familiar to him<sub>*i*</sub>. Ernest Worthing<sub>*i*</sub> used to be engaged to two women.

(17) seems to be fine, if not perfect, even though it does not contain any naming construction. A naming construction is not always relevant. I propose that what Cumming's examples (14) and (6) indicate is that the speakers follow Grice's second maxim of Quan-

tity ‘Do not give more information than is required’ (Grice, 1975, 33). The fact that the gentleman in (14) is named ‘Ernest’ is not important if the speaker just wants to refer back to him. The speaker should not throw in any extra information. That is why any expression that is no more informative than the preceding *a gentleman* can take it as its antecedent.

- (18) a. There is a gentleman<sub>*i*</sub> in Hertfordshire. He<sub>*i*</sub> is engaged to two women.  
b. There is a gentleman<sub>*i*</sub> in Hertfordshire. The guy<sub>*i*</sub> is engaged to two women.  
c. There is a gentleman<sub>*i*</sub> in Hertfordshire. The man<sub>*i*</sub> is engaged to two women.  
d. There is a gentleman<sub>*i*</sub> in Hertfordshire. The gentleman<sub>*i*</sub> in Hertfordshire is engaged to two women.

In the absence of the naming construction, *Ernest* cannot be used to refer back to the gentleman because *Ernest* is more informative than *he*, *the man*, etc in this context of use. The less informative phrases *the man*, *he* etc would have been enough to refer to the introduced gentleman. But the speaker instead used a novel expression *Ernest* in (14). The interpreter, thus, infers that the speaker does not refer back to the gentleman.

To corroborate the point, consider the following examples. Why are (19a-b) so bad in comparison with (20a-b)?

- (19) a. There is a gentleman<sub>*i*</sub> in Hertfordshire. #The county council member<sub>*i*</sub> is engaged to two women.  
b. There is a gentleman<sub>*i*</sub> in Hertfordshire. #The richest person<sub>*i*</sub> in Hertfordshire is engaged to two women.

- (20) a. There is a gentleman<sub>*i*</sub> in Hertfordshire, who is a member of its county council.  
The county council member<sub>*i*</sub> is engaged to two women.
- b. There is a gentleman<sub>*i*</sub> in Hertfordshire, who has more money than anyone else  
in the county. The richest person<sub>*i*</sub> in Hertfordshire is engaged to two women.

(20a-b) are better for the same reason as why (15) and (6) are better than (14). The grammatical subjects of the second sentences in (19a-b) involve novel predicates, which would violate the second maxim of Quantity. The speakers would have used less informative phrases to refer back to the introduced objects, but they did not. Then the interpreters reason that they used the informative expressions for different purposes.

In short, variabilism cannot semantically distinguish a proper name from coreferential names and pronouns. It cannot explain an incoherency we find in a discourse like (16). The same problem applies to the individual constant thesis of proper names because it also finds no semantic difference between two coreferential expressions such as *Ernest* and *Worthing*.

### 2.3 Summary

In this chapter I have argued that the playing field for the competing three theses of proper names is not level when we consider them against a full range of data. We have seen numerous facts about proper names stemming from their predicative nature, which pose serious difficulties against both Millianism and variabilism. The Millian and variable theorists have to either dismiss the legitimate facts as theoretically irrelevant noise or ally with the predicate theorist and multiply the size of the lexicon by creating one metalin-



guistic predicate for each proper name. I have also pointed out a problem that is inherent in a view that proper names have no additional content than their referents. Such a view cannot explain why the speaker uses one proper name (e.g., *Ernest*) not any other expression (e.g., *Worthing*, *he*).

A common Millian response at this juncture is that I am greatly misunderstanding Millianism (or variabilism in this context) in thinking that they associate with a proper name absolutely nothing beyond its referent. The Millian theorist suggests that proper names are possibly associated with a variety of different things, such as the form and sound of a name. Such things are not semantically associated with proper names, but somehow account for the examples we have thus far discussed.

The Millian theorist, however, does not have a clear proposal of how such possible associations are theoretically described and used to account for the wide-ranging data we have observed. By contrast, the predicate thesis straightforwardly explains why two proper names are same or different (because they have predicative contents rather than referents as their meanings). Therefore, until Millianism (or variabilism to the same extent) develops a fully specified account of how one name is different from another, it has no advantage over the predicate thesis of proper names.

## Chapter 3

### The Form and Meaning of Names

The current chapter has two goals: to identify the syntactic status of a proper name and to clarify its lexical meaning apart from the conditions of its use. On the one hand, I will propose that the singular and bound uses of proper names in languages with articles are constituted by overt or covert definite determiners and proper nouns. On the other hand, the singular and bound uses in languages without articles are constituted by proper nouns only. For the lexical meaning of a proper noun, I adopt the metalinguistic theory of names: the proper noun *Tyler* expresses a relational property one can stand in to the sound type ‘Tyler’.

#### 3.1 Syntactic Theory

Here I present what I assume about the syntax of natural language. Syntactic theory is a chapter of generative linguistics, which studies the form or structure of natural language. I assume the theoretical framework being developed under the heading of ‘Minimalist Program’ (Chomsky, 1995, a.o.). The construction of a sentence starts by enumerating a subset of elements in the lexicon, which is the speaker’s word knowledge. Lexical elements can be independent words, such as *moose* or *melt*, as well as sub-atomic items that cannot be used in isolation with other items, such as the English third-person morpheme *-s*. Each element is associated with or defined as a group of features that are related to

sound, meaning, or structure, which contribute to the overall properties of the sentence containing that element.

Besides the lexicon, there exists one or more basic operations that manipulate linguistic objects. One such basic operation is 'Merge' that combines two elements to form a new unit, which in turn can be combined with another element or unit to form a larger unit. For example, (1) schematically represents how Merge constructs a complex unit, where A, B, and C are lexical elements; D and E are the composed units; and the diagonal lines connecting items indicate the steps of how the larger unit is composed via Merge.



One thing implied by this framework is that a sentence is not a mere flat concatenation of words. Although a sentence is linearly pronounced, it has a hierarchical structure. The series of letters 'ABC' has no hierarchical structure: 'A' and 'B' are next to each other, and so are 'B' and 'C'. Once we impose (1) on the series, however, 'C' has no direct relation to 'A' or 'B'. Instead 'C' is connected to the unit 'D', which is derived from 'A' and 'B'. Hierarchical structures of sentences are crucial in explaining why sentences allow some interpretations and disallow any others.

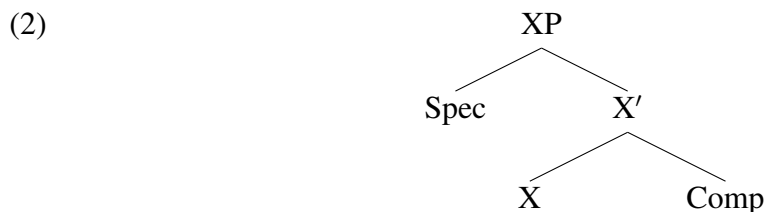
Some syntactic units are, when pronounced, judged unacceptable by competent speakers of a certain language. A syntactic theory attributes the cause of some instances of unacceptability judgement to ungrammaticality, an error of syntax, which eventually affects native speakers' acceptability judgments. One way to understand an error of syntax is to take it to be an error at the interface between syntax and semantics. A Merged

unit is deemed illicit when it has any syntactic feature to which the rules of semantics cannot apply. Some syntactic features are inherently unintelligible and uninterpretable to the semantic system, and have to be deleted before an interpretive process begins. Let  $[uF]$  stand for such an uninterpretable feature, which can be deleted or ‘checked’ by an appropriate compatible syntactic feature. I sometimes describe the deletion of an uninterpretable feature in terms of ‘feature-checking’, where an unchecked feature  $[uF]$  can be checked with a feature  $[F]$ . For example, the series of words *the in* is not an acceptable sequence of English because some uninterpretable feature of *the* is not compatible with a feature of *in*, and remains unchecked. By contrast *the bed* sounds fine because the two words have compatible features. We might associate *the* with an uninterpretable feature that always demands the feature  $[N]$  (call it ‘ $[uN]$ ’), which yields a licit construction when merged with a noun *bed* (which has the feature  $[N]$ ), as expressible as ‘*the<sub>[uN]</sub> bed<sub>[N]</sub>*’. On the other hand, *the* yields an illicit construction with *in* because it has the feature  $[P]$  ( $P$  for ‘pre/post-position’). Every uninterpretable feature must be checked at some point of the derivation of a sentence in order to have a grammatical unit.

At some point of the repetitive applications of the basic operations, the constructed unit is sent to the part of the mind related to pronunciation, the ‘articulatory-perceptual’ systems. The point is called ‘Spell-Out’. The type of linguistic representation that is relevant to the articulatory-perceptual systems is called ‘PF’, which is constructed on the basis of the phonetic and syntactic features of lexical items. The basic operations sometimes manipulate the composed unit after the Spell-Out, whose ultimate outcome is the type of linguistic representation that is relevant to meaning, called ‘LF’. I assume that our semantic theory compositionally assigns semantic values to LF representations. How

much information an LF representation specifies is a substantial question we will return in Chapter 5.

I also use several theoretical terms originally developed in more traditional frameworks in generative syntax to describe the structural properties of linguistic representations. A complex syntactic unit is organized around a ‘head’ that determines the main properties of the entire unit. When Merge combines two elements, the Merged unit inherits the features of one element, the head of the structure. Alternatively we can think of this process as the one in which a head ‘projects’ into a higher structure, so the Merged structure is a ‘projection’ of the head. The first item that is combined with a head via Merge is called a ‘complement’. The second item combined with the head-complement unit under Merge is a ‘specifier’. The head-complement unit is also called an ‘intermediate’ or ‘bar-level’ projection of the head (written as  $X'$ , where  $X$  is the head), and the whole structure together with a specifier the ‘maximal’ projection (written as  $XP$ , where  $P$  indicates ‘phrase’). The presented system gives us as much of what is known as  $X'$ -theory. A typical maximal phrase  $XP$  projected by a head  $X$  can be represented as follows:



A maximal projection does not always have to have the structure (2). If an element cannot project any further, it can be seen as a maximal projection, although it has no complement or specifier inside.

I also assume that it is sometimes possible that a constituent in a phrase is displaced into a different position. Syntactic theory might account for the properties of displace-

ment by introducing different basic operations such as ‘Copy’ and ‘Delete’ in addition to Merge. I will, however, call the displacement of a constituent ‘movement’ with no commitment to the details of how it is realized.

## 3.2 The Syntax of Names

Burge (1973) presents an essentially correct analysis of proper names: they are predicates on their own. This section discusses what his predicate thesis syntactically amounts to when we consider various languages. If a name is a predicate, then it cannot be used by itself to denote a ‘saturated argument’ in Frege’s sense. I will argue that a proper name in English used in an argument position is a complex phrase.<sup>1</sup>

I will first present an empirical thesis, according to which an argument of a sentence is a projection of a determiner, not of a noun. Then I use the thesis to account for the syntax of proper names in English, Japanese, and other languages.

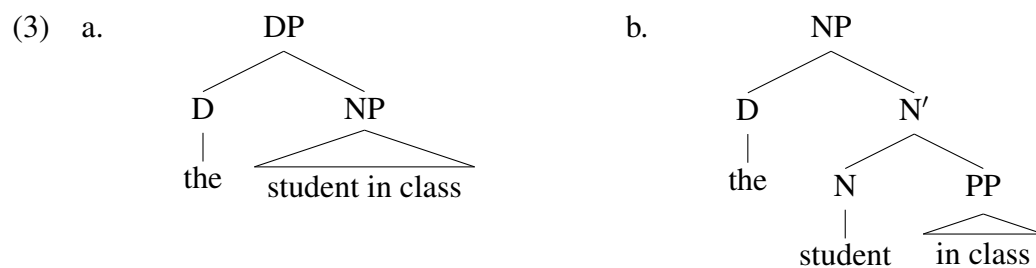
### 3.2.1 The DP analysis

The structure of the nominal domain has been widely reconsidered and extended since 1980’s (Abney, 1987, a.o.). The ‘DP analysis’ reanalyzes what has been referred to as a noun phrase (NP): a nominal argument is not the maximal projection of a noun, but of a determiner. Namely, the head of what has been seen as an NP is indeed a determiner, and

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<sup>1</sup>By an ‘argument position’ I merely mean the position for a grammatical subject or object of a sentence, such as *Kurt* and *a few tomatoes* in *Kurt picked a few tomatoes*. In linguistics, a phrase that stands in a certain structural relation to a verb in a clause is called an ‘argument’. An argument on a grammatical representation should not be confused with an ‘argument as an input of a function’. In this chapter I will mostly follow the linguistic convention and use ‘argument’ to talk about a linguistic phrase. But in the following chapters I will also use it to talk about what it denotes, so long as no confusion arises.

the noun is demoted to the complement of the dominating determiner. The determiner class usually includes articles, quantifiers, and demonstratives. The DP analysis is opposed to the traditional position that considers determiners to be specifiers of NPs. For example, on the DP analysis, *the student in class* has the structure in (3a), as opposed to the traditional analysis in (3b), where *the* is not the head, but a specifier of the maximal projection of *student*:



A great deal of evidence indicates that the DP analysis is required in, at least, some cases. It is controversial to what extent the DP analysis is applicable. I here defend the position that the DP analysis globally holds for all nominal expressions appearing as arguments of sentences in languages that have articles. I use ‘article’ in the traditional grammatical sense. Articles include independent words (e.g., German *der*) and nominal suffixes (e.g., Norwegian, Bulgarian, etc). Strictly speaking, I will remain neutral whether the DP analysis is also applicable to languages without articles, such as Japanese. I will present the semantics of Japanese articleless, ‘bare’ nouns, including proper names, in Chapter 5 on the assumption that Japanese and other articleless languages have no covert projection that is semantically equivalent to the English definite article. However, if the DP analysis turns out to be universally applicable to all languages, including Japanese, then the theory of English proper names in Chapter 4 would apply to Japanese.

I want to first show that the DP analysis is sometimes necessary. Here is evidence for why a determiner must be a head with its own projection.<sup>2</sup> Observe the parallelism between interrogative clauses and interrogative arguments in Greek (Horrocks and Stavrou, 1987). In an echo question (4a) the *wh*-word remains in the argument position, whereas as in (4b), it can also be fronted like English to make a regular interrogative sentence.

- (4) a. Ekane ti?  
 did.3SG what  
 ‘He did what?’
- b. Ti ekane?  
 what did.3SG  
 ‘What did he do?’

A movement of a *wh*-word is usually called A' or non-argumental movement because the landing site of the *wh*-word is not an argument position. It is usually assumed that a *wh*-word moves to the specifier position of a CP (complementizer phrase) in a clause, so (4b) is analyzed as follows:



Now consider (6a-d), where a *wh*-word moves around not in a whole clause, but locally with respect to an NP.

- (6) a. to vivlio tinos?  
 the book who.GEN  
 ‘whose book?’

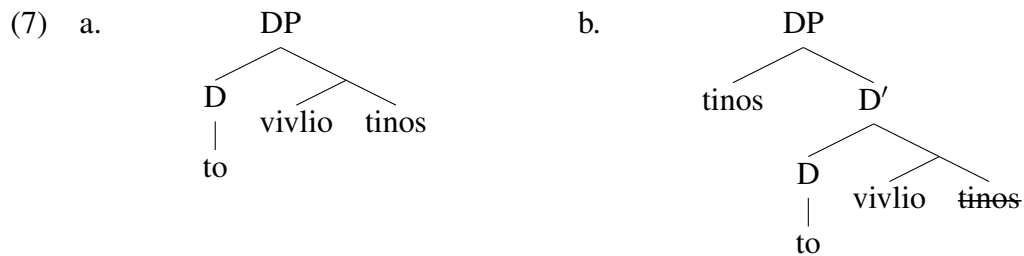
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<sup>2</sup>I owe many of the arguments in this section to Alexiadou et al. (2007).



- b. *tinós* to *vivlio*?  
 who.GEN the book  
 ‘whose book?’

If we can assume that the fronting of the *wh*-word *tinós* in (6b) is analogous to the *wh*-movement in (5), then we expect that *tinós* moved into a specifier position in (6b). But which specifier position is available for the movement? If the definite article *to* in (6a) were in the specifier position of the NP, then there would be no position for *tinós* to move in. However, if we assume what is seen as an NP *to vivlio* (‘the book’) to be the projection of a determiner, then the phrase could have a specifier position for *tinós* to occupy, as shown below.<sup>3</sup>



Is the fronting of *tinós* in (6b) really a movement into a specifier position? Consider a use of (6) in a larger sentence.

- (8) a. *Mu ipes* [<sub>CP</sub> *pos dhjavases* [ *to vivlio tinós* ] ]?  
 me.GEN said.2SG that read.2SG the book who.GEN  
 ‘You told me you read whose book?’ (Horrocks and Stavrou, 1987, 86)
- b. *Mu ipes* [<sub>CP</sub> *pos dhjavases* [ *tinós to vivlio tinós* ] ] ?
- c. [<sub>CP</sub> [ *Tinós* ] *mu ipes* [<sub>CP</sub> *tinós pos dhjavases* [ *tinós to vivlio tinós* ] ] ] ?

(8c) is the case where *tinós* is fronted all the way to the specifier of the matrix CP. It is generally assumed that a long-distance *wh*-movement does not take place in a single step,

<sup>3</sup>The same point can be made by using the fronting of a focused element in Greek (Horrocks and Stavrou, 1987, 86).

but via multiple successive movements.<sup>4</sup> It has been argued that the specifier of a lower CP must serve as an escape hatch for A'-movement to a higher clause. That is why (8c) includes multiple deleted instances of *tinós* within the embedded CP. We can assume that the leftmost deleted *tinós* is the specifier of the lower CP. We also know that *tinós* does not have to directly move to the lower spec CP position as in (8b). If the lowest movement of *tinós* is part of the long-distance successive movements, then we can conclude that the lowest movement also targets a specifier position.

There are many other arguments of this sort that motivate the view that traditional NPs are headed by determiners when overt expressions such as articles are present. See (Abney, 1987; Szabolcsi, 1994) for more evidence gleaned from various other languages.

Now I turn to a stronger claim that the DP analysis holds even when determiners are not overtly present. In languages with articles, a limited class of expressions are sometimes allowed to appear as arguments with no article or other preceding modifier, i.e., singular mass nouns, plural count nouns, and proper names, as illustrated by the following examples:

- (9) a. Bevo sempre vino. (Italian)  
I.drink always wine  
'I always drink wine.'
- b. Mangio patate.  
I.eat potatoes  
'I eat/am eating potatoes.' (Longobardi, 1994, 613)
- (10) a. John arrived.
- b. Dinosaurs are extinct.

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<sup>4</sup>See (Adger, 2003, Ch. 10) for a textbook account of cyclical movements.

One might wonder why we need to consider not only a complex phrase (e.g., *the wine*), but also a ‘bare’ expression (e.g., *wine*) to be a projection of a determiner. In what follows I present some reasons to believe that every argument in languages with articles has a determiner projection.

In Italian and other Romance languages, the distribution of bare mass and plural nouns is restricted in a peculiar way, which can be accounted for by the presence of a determiner head. For example, Italian bare nouns are allowed in postverbal positions but excluded from preverbal position as in (11-12).

- (11) a. \*Acqua viene giù dalle colline.  
water comes down from.the hills
- b. Viene giù acqua dalle colline.  
comes down water from.the hills
- c. Ho preso acqua dalla sorgente.  
I took water from.the spring

(Longobardi, 1994, 616)

- (12) a. \*In questo ufficio marocchini telefonano sempre.  
in this office Moroccans call.up always
- b. In questo ufficio telefonano sempre marocchini.  
in this office call.up always Moroccans
- c. In questo ufficio incontro sempre marocchini.  
in this office I.meet always Moroccans

(Longobardi, 1994, 616)

Giuseppe Longobardi (1994) claims that the contrast is due to a general constraint that applies to any phonologically empty item such as a trace of movement and an unpronounced head as in the case in hand. The constraint is called a ‘lexical government re-

quirement'. For our purposes, suffice it to say that the requirement forces unpronounced items to appear after the related verbs such as in object position. Otherwise the whole unit that contains an unpronounced item would be deemed illicit. Given the DP analysis, the bare nouns *acqua* ('water') and *marocchini* ('Moroccans') in (11a-c) and (12a-c) are the projections of unpronounced determiner heads. Let us assume that there is an empty determiner head  $\emptyset_{\text{mass/pl}}$  in Italian that takes mass and plural terms as its complements. Bare mass and plural nouns are thereby subject to the lexical government requirement, which weeds out (11a) and (12a) as illicit constructions.

So far we have discussed why bare plural and mass terms can be seen as DPs. What about proper names? In Italian a proper name such as *Gianni* may appear on its own with no article in front. What makes us believe that it also has a determiner projection? The following examples strongly suggest that not only mass and plural nouns, but also proper names are projected by determiners. First observe, in Italian, any adjectives, possessive or not, cannot appear before determiners (13a-b), whereas they may be used prenominally in between a determiner and a noun (14a).

- (13) a. \*mio il Gianni  
           my the Gianni
- b. \*vecchio il tavolo  
           old the table

(Longobardi, 1994, 623)

- (14) a. Il mio Gianni ha finalmente telefonato.  
           The my Gianni finally called.up
- b. \*Mio Gianni ha finalmente telefonato.  
           My Gianni finally called.up

- c. Gianni mio ha finalmente telefonato.  
Gianni my finally called.up
- d. Il Gianni MIO ha finalmente telefonato.  
The Gianni my finally called.up

(Longobardi, 1994, 623)

Now consider (14b), where the lack of an article makes the sentence unacceptable, but the mere lack of an article is not the only cause of the unacceptability because (14c) is acceptable. Longobardi hypothesizes that the DP analysis is correct for all arguments of sentences: every argument must be introduced by a determiner. Then he claims that the name *Gianni* in (14c) obeys the requirement by moving into the determiner position. The subject of (14c) is analyzed as follows:



On the other hand, *Mio Gianni* in (14b) is not introduced by a determiner, which is why it cannot be an argument of the sentence.

To corroborate this hypothesis, Longobardi also points out that the possessive adjective *mio* in (14c) has no special phonetic status, unlike that of (14d), which has a contrastive accent, as noted in capital letters. In fact a postnominal possessive usually has a contrastive accent in Italian. This contrast suggests that *mio* in (14c) is not in the canonical postnominal position, but in the prenominal position just as (14a). Thus, the structure (15) is also motivated on an independent ground.

Here I introduced the DP analysis and illustrated how it plays the roles in the analyses of the nominal domain. I also presented some evidence that shows even bare nouns

have determiner projections in Italian. The discussion thus far, of course, falls short of proving that English proper names also must be headed by determiners.

One motivation for the wider application of the DP analysis is that determiner heads and their properties provide a disciplined explanation for the attested cross-linguistic distributional variations of proper names among languages with and without articles. The next subsection proposes an overall picture of the syntax of proper names across languages, which essentially relies on the DP analysis.

### 3.2.2 Proper names

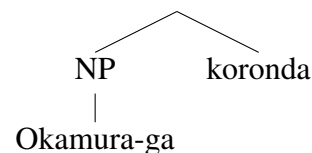
I claim that there is at least one semantic rule that is inherently available to all human language users. Let us call it the ‘definiteness’ rule, which can be seen as an instruction to identify a single object under some conditions. The definiteness rule provides the basis for the semantics of proper names, definite descriptions, and bare mass and plural terms. I will explore the semantic details of the definiteness rule and its variants in Chapter 4 and 5.

I speculate that the definiteness rule is a linguistic analog of a basic constant in human cognition. It might have its roots in pointing capacity (Diessel, 2006; Tomasello, 2008), which creates a triadic relation between the pointer, the pointee, and the device for pointing (e.g., an index finger, lips, etc). I see no reason to deny that the device for pointing can be linguistic. The direction of an index finger is a hint to identify the intended pointee. The presuppositional content of a demonstrative, for example, also provides hints to identify an object.

The definiteness rule is a semantic constant available to any language. Different languages employ it in different ways. Japanese never lexicalizes it as an article, overtly or covertly. There is no instance in which a proper or common noun is preceded by an article. Children do not have to figure out which silent word corresponds to the definiteness rule because there is no such silent word. Competent Japanese speakers simply apply the definiteness rule whenever necessary. The singular and bound uses of proper names in Japanese are constituted by proper nouns (and optionally their qualitative modifiers), without any additional structure, as in (16a-b). The referential force of a proper name comes from an extra-syntactic use of the definiteness rule. More of this will be discussed in Chapter 5.

- (16) a. Okamura-ga koronda  
 Okamura-NOM fell  
 ‘Okamura fell.’

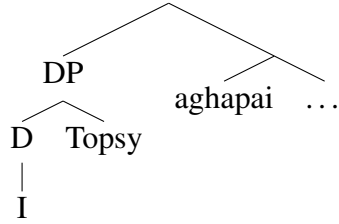
b.



Some languages lexicalize the definiteness operation as a definite article and apply it indiscriminately to proper and common nouns. In such languages proper names are the projections of definite articles that take proper nouns as their complements. For example, Greek seems to belong to this group of languages. In a Greek sentence (17a) the proper noun *Topsy* must be supported by a definite article, and hence the DP analysis is most likely to be the case as in (17b).

- (17) a. \*(I) Topsy aghapai to tiri.  
 The Topsy love.3SG the cheese  
 ‘Topsy loves cheese.’ (Alexiadou et al., 2007, 165)

b.



In addition to a definite article, English, Italian, and many other languages contain another determiner expression whose meaning is based on the definiteness operation. The determiner expression is a variant of the definite article, which specifically selects a proper name as its complement. I represent the determiner for proper names as  $\emptyset_\eta$  because it contains no phonetic information, and thereby never gets pronounced. With respect to English, the empty determiner  $\emptyset_\eta$  is different from the overt definite article *the* in two important ways. First, its presuppositional content is uniqueness, not maximality that the regular definite article needs to encode. If  $\emptyset_\eta$  has the same semantic profile as the definite article, then *Maries* and *the Maries* would behave in the same way, which is not the case. An articleless pluralized proper name behaves differently from a plural definite description.<sup>5</sup>

Second, the empty determiner  $\emptyset_\eta$  somehow distinguishes itself from the definite article so that it does not select a non-metalinguistic common noun as its complement. The DP [ $\emptyset_\eta$  cat], which is pronounced as ‘Cat’, does not have the same meaning as *the cat*.  $\emptyset_\eta$  should be combined only with a metalinguistic predicate. There are several different ways to implement the distinction. One option is to do so semantically by adding a presuppositional content to  $\emptyset_\eta$  that only takes a metalinguistic predicate as its argument.

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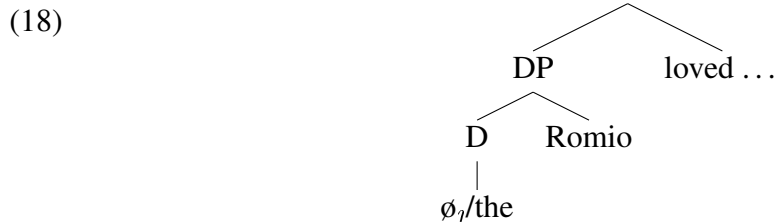
<sup>5</sup>I will discuss the semantics of definite descriptions and mass and plural terms in Chapters 4 and 5 respectively. To preview and avoid the terminological confusion, I want to note that  $\emptyset_\eta$  encodes the type-shifting function *iota* in Montague’s and Barbara Partee’s sense. The plural version of *iota*, analogous to what Richard Sharvy (1980) calls ‘*mu*’, is encoded by the English definite article. A bare plural in argument position is not headed by  $\emptyset_\eta$ , but by another empty determiner that selects a mass or plural term.



Formally speaking, we can stipulate that  $\emptyset_7$  is defined only over a certain set of functions of type  $\langle e, t \rangle$ .

Alternatively we could add a syntactic feature to the set of our primitives, such as [*u*PROPER], which is checked by [PROPER]. The empty determiner  $\emptyset_7$  has the feature [*u*PROPER], and only proper names have [PROPER]. Thus, a non-metalinguistic noun such as *cow* cannot be combined with  $\emptyset_7$ . Competent speakers are capable of distinguishing proper nouns from common nouns fairly easily. It is not implausible to assume that there is such a feature as [PROPER].

At any rate, in English, Italian and similar languages, the singular and bound uses of proper names are analyzed as the projections of those definite determiners *the* and  $\emptyset_7$ .



The emerging picture can be summarized as follows. There are two different language groups, those with articles (English, French, Greek, etc) and those without articles (Japanese, Chinese, Hindi, etc). Proper nouns themselves have no variation across languages: they are all metalinguistic predicates that have the feature [N]. Languages with articles lexicalize the definiteness operation as a definite article and as an empty definite determiner  $\emptyset_7$ , each of which has the feature [*u*N]. The singular and bound uses of proper names in those languages with articles are analyzed as DPs, headed by a definite article or  $\emptyset_7$ . Languages without articles allow NPs to be arguments of sentences, without being introduced by determiners. The singular and bound uses of names in articleless languages

are constituted by proper nouns.<sup>6</sup>

Now I turn to more details of the proposal. There are some distributional differences between English and Italian proper names. As noted earlier the adjective-proper noun sequence is prohibited in Italian, but seems accepted in English, whereas a proper name cannot be fronted in English unlike Italian. Compare (19a-b) and (20a-b).

- (19) a. Old John came in.  
b. \*John old came in. (Longobardi, 1994, 628)
- (20) a. \*Mio Gianni ha finalmente telefonato.  
b. Gianni Mio ha finalmente telefonato. (Longobardi, 1994, 623)

The DP analysis together with the Minimalist syntactic framework can account for this distributional difference in terms of the strengths of features. Following the spirit of Longobardi (1994), I assume that the unchecked feature [*u*N] associated with the determiner head  $\emptyset_i$  always requires N-to-D movement, so the N-raising of a proper noun invariably occurs in the singular and bound uses of a proper name both in English and Italian. Additionally, [*u*N] in Italian is a ‘strong’ feature, as opposed to the ‘weak’ [*u*N] in English, which causes N-raising before Spell-Out. Since the moved unit prior to Spell-Out is relevant to pronunciation, we can observe the movement as in (20b). On the other hand, since N-raising takes place after Spell-Out in English, we do not hear its consequence.

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<sup>6</sup>I am here suggesting that there is some fundamental syntactic difference between languages with articles and those without articles. The former are DP languages, where the DP analysis universally holds, and the latter are NP languages, where argumenthood does not require a determiner projection. For the DP/NP parameter and other differences between DP languages and NP languages, see (Bošković, 2008, 2009, pear). See also (Takahashi, 2011) for the motivations to consider Japanese to be an NP language. However, I should repeat that the lack of determiner projections is not necessary for my semantic theory of proper names and other bare nominals. If nominal arguments in Japanese and other articleless languages turn out to have a determiner layer, then I would simply apply my analysis of DP languages to languages without articles.

Anticipating the discussions in Chapter 5, I want to mention a few things about plural and mass terms. Consider the following.

(21) Penguin arrived.

(21) sounds odd if the predicate *penguin* is construed to apply to individual penguins. The grammatical subject *penguin* in (21) lacks any overt marking, which would have led to a different interpretation—for example, if the predicate is pluralized (*penguins*), then the sentence would probably mean that some penguins arrived. Since every argument in English must be introduced by a determiner, the remained interpretive options are to either interpret *penguin* with  $\emptyset_1$  or with another silent determiner that selects a mass or plural noun. If the interpreter considers *penguin* to be introduced by  $\emptyset_1$ , then the noun is treated as a metalinguistic predicate to satisfy the presupposition of  $\emptyset_1$ . As a result (21) would mean that the person known as ‘Penguin’ arrived, which seems an option available to all analogous examples. If the argument in (21) is understood as the projection of the mass/plural determiner, then it would be interpreted as saying that some amount of penguin meet arrived. See Chapter 5 for more discussions on bare plural and mass terms.

Now I list several independent facts that count in favor of the proposal.

## Restrictive relative clauses

The direct evidence for the presuppositional content of  $\emptyset_1$  comes from the following examples, which mislead Longobardi to posit expletive articles.<sup>7</sup>

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<sup>7</sup>Longobardi’s own semantic view of proper names seems to be a Millian analysis. Although an argumental name must be introduced by a determiner head because of the general requirement of argumenthood, he considers the silent determiner to be semantically vacuous.

- (22) a. Il (simpatico) Gianni che conoscevo non esiste più.  
 the nice Gianni that I.knew not there more  
 ‘The (nice) Gianni that I used to know no longer exists’.
- b. \*Gianni (simpatico) che conoscevo non esiste più.  
 Gianni nice that I.knew not there more  
 ‘(Nice) Gianni that I used to know no longer exists’.

(Longobardi, 1994, 657)

An articleless proper name such as the one in (22b) cannot be modified by a restrictive relative clause, unlike a proper name introduced by a definite article as in (22a). The proposed content of  $\emptyset_i$  implies that it cannot take an extra heavy predicate as its argument because it always requires the combined predicate to be metalinguistic, and we would not be able to reanalyze a large predicate including a relative clause as something metalinguistic. If the modifier of a proper noun is simple enough, as in

- (23) Old John arrived,

then we would be able to impose a metalinguistic interpretation on the adjective and to take the predicate *old John* as singling out someone who can be appropriately called ‘old John’. However, if the modifier is complex and clearly attributing a non-metalinguistic property to an individual, we would have to use a regular definite article instead of  $\emptyset_i$  in order to fulfill its presupposition. We have already seen the same pattern in English in Chapter 2.

- (24) a. The late Wittgenstein is more influential.
- b. The joking Woody Allen is funny.

The proper nouns in (24a-b) are headed by the definite article, not the empty determiner  $\emptyset_1$ . Thus, when the modifier of a name (an adjective or restrictive relative clause) is non-metalinguistic, the overt definite article must be present.

Furthermore, as already noted in Chapter 1, Japanese proper names are freely modified by a restrictive relative clause.

- (25) Gianni-wa kawatteshimatta. Bokura-ga siru yasasii Gianni-wa mo  
 Gianni-TOP has.changed we-NOM know kind Gianni-TOP already  
 inai.  
 exist.not  
 ‘Gianni has changed. The kind Gianni that we used to know no longer exists.’

This makes a sharp contrast to the Italian and English cases above, which supports my position that a Japanese name in argument position is not introduced by a null determiner.<sup>8</sup>

## Catalan

The phonetic property of the determiner  $\emptyset_1$  (or the lack thereof) seems to be a mere accident. No problem would arise if it were pronounced in some way or other. Catalan seems such a language, many varieties of which distinguish two types of definite articles: one of them *en* is exclusively used with a personal proper noun as follows:

- (26) a. el gos  
           the dog  
       b. en Pere  
           the Peter (Longobardi, 1994, 656)

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<sup>8</sup>There is another possibility in which Japanese is a DP language and a covert determiner equivalent to the definite article is always present in bare nominal arguments. So Japanese could be a covert version of Modern Greek. I will present an argument against the view that Japanese has a covert determiner equivalent to the definite article in Chapter 5.

However, the article for personal names cannot be used with a plural personal name or a restrictive relative clause as in (27a) and (28a). The ordinary definite article must be used with a pluralized name and restrictive relative clause as in (27b) and (28b); we have seen the same pattern in English and Italian above.

- (27) a. \*ens (dos) Peres  
the (two) Peters
- b. els (dos) Peres  
the (two) Peters (Longobardi, 1994, 656)

- (28) a. \*En Joan que coneixia ja no existeix.  
'The Joan that I used to know no longer exists'.
- b. El Joan que coneixia ja no existeix.  
'The Joan that I used to know no longer exists'. (Longobardi, 1994, 657)

The proposed analysis has a simple explanation for all these facts by encoding a selective property in the article *en* as its presupposition. The article *en* is basically an overt counterpart of  $\emptyset_1$ , which needs to be combined with a personal metalinguistic predicate with uniqueness.

### Non-argumental uses

A DP projection is presumably selected by the related verb of a clause. A verb has the feature [*u*D], which is the reason for the generalization that an argument is introduced by a category D in languages with articles. If so, then a proper noun would not be dominated

by a determiner, if it is not introduced as an argument of a verb. The expectation turns out to be correct.

- (29) a. Mio caro Gianni, vieni qui!  
my dear Gianni come here
- b. Gianni mio caro, vieni qui!  
Gianni my dear come here

(Longobardi, 1994, 626)

- (30) a. Si è mascherato da vecchio Camerese.  
he himself disguised as old Camerese  
'He disguised himself as old Camerese'.
- b. Si è mascherato da Camerese vecchio.  
he himself disguised as Camerese old  
'He disguised himself as old Camerese'.

(Longobardi, 1994, 626-7)

In vocative constructions both adjective initial and adjective final forms are permitted (29a-b), unlike in argument positions as we observed above. The adjective initial form is also permitted in a place where a mere predicate is expected to appear as in (30a).

## Modified uses

By considering proper nouns belonging to the category N, we can costlessly explain the modified uses of proper names, repeated below.

- (31) a. Every Tyler I know studied in Princeton.
- b. A Tyler joined the club today.
- c. George Wallace is a Napoleon.
- d. The Tyler who joined the club today studied in Princeton.

- e. Some Tylers are smart; some are not.
- f. There are two Tylers in the department.
- g. I know every Tyler in the department.
- h. That Tyler is different from this one. (a-g, after Burge, 1973)

Quantifiers, number words, articles, and demonstratives can be seen as either determiners or functional expressions that have the feature [*u*N]; they can be combined with any NP whether it is constituted by a proper or common noun.

### Noun-incorporation

Likewise, the proposal explains why names pattern with common nouns in allowing noun-incorporation whereas genuine referential expressions such as demonstratives do not:

- (32) a. Stalin-hater, Reagan-bating
- b. I'm going tree-chopping; He's a dog-lover.
- c. \*I'm going that tree chopping; \*I was it-chopping (Higginbotham, 1988)

The facts naturally follow from the thesis that proper nouns are predicative expressions belonging to the category N.

### 3.3 The Metalinguistic Theory of Names

I have discussed the structural aspect of the predicate thesis about proper names. Now I like to turn to its semantic aspect. Burge (1973) proposes that a proper name itself is a predicate in its own right, not a singular referring expression. The name *Tyler* is



true of any object just in case the object is a Tyler (Burge, 1973, 435). I will argue that Burge's view is essentially correct, whatever semantic framework one adopts, and further elaborate his view by specifying what we should mean by 'being a Tyler'.

I will defend the 'metalinguistic' or 'quotation' theory of proper names as the analysis of the lexical meaning of a proper noun. To the first approximation, the lexical meaning of a proper noun is the property of standing in a naming relation to the sound type specified by the phonological properties of the noun. The metalinguistic theory has been developed and defended in various places.<sup>9</sup> However, many authors dismiss the metalinguistic theory based on either Kripke's brief objections to a metalinguistic quantificational descriptivism, or on the problems that are not stemmed from the metalinguistic theory. After presenting the metalinguistic theory, I will examine the criticisms expressed by Kripke and others.

### 3.3.1 The theory

For simplicity's sake, I assume for now that our semantic theory for English is an extensional truth theory, within which Burge laid out his predicate thesis of proper names. But the metalinguistic theory of names can be employed in any semantic framework insofar as a semantic theory can handle common nouns.

The lexical meaning of the proper noun *Tyler* can be described as follows:

(33) For any object  $x$ , *Tyler* is true of  $x$  if and only if  $x$  bears /tajlɚ/

Following Ora Matushansky (2008), I use phonetic symbols to express a phonological

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<sup>9</sup>See (Katz, 1994, 2001; Bach, 2002; Matushansky, 2008). Russell also suggests that such a metalinguistic property, e.g. 'being called 'Romulus'', might be the only description the speakers usually associate with a name (Russell, 1918, 77–92).

string or sound type (e.g. ‘/tʌjlər/’, ‘/ælis/’). I also use ‘bearing’ to stand for the naming relation one can stand in to a certain sound type.

A few remarks are in order. By focusing on a spoken language, I ignore the potential issues surrounding orthography. Do Cate and Kate have the same name? Are ‘Cate’ and ‘Kate’ one name or two? I am not sure if we have any coherent set of facts with respect to speakers’ judgments that are theoretically tractable.

No such problem arises for the sound of a linguistic token. Of course, each token or occurrence of a word has distinct acoustic properties. But competent speakers have no difficulty in judging if one occurrence of a word shares the same sound with another occurrence of a word. ‘Alfred’ and ‘Alfred’ have the same sound. So do ‘has’ and ‘has’.

The bearing relation is a man-made relation in which one or more objects stand in to a certain sound type—one of many man-made properties and relations we can exploit to construct the meanings of natural language expressions. As is clear from (33), the noun *Tyler* is a predicate applicable to one or more objects, semantically on a par with other nouns, not a singular referring expression.

A common misconception about the metalinguistic theory is to regard it as claiming a name to be synonymous with a different construction such as ‘being called NAME’ and ‘being named NAME’. The complex construction *being called ‘Tyler’* is only roughly coextensive with *Tyler*. Perhaps Tyler in question is never called by his name. In a different circumstance, Tyler might go by ‘Tyler’ for a random reason, without having been named ‘Tyler’. There are a number of phrases that paraphrase the predicate *Tyler*, but none of them is really coextensive with the proper noun. The noun *dog* is not perfectly synonymous with any complex predicate such as *being a four-legged domestic mammal*,

*having hairs, usually carnivorous ...* etc. The bearing relation is *sui generis*, and referred to as a primitive notion in our metalanguage, just as ‘... is a dog’ is a primitive notion in our metalanguage. That does not mean that the bearing relation is an irreducible, fundamental notion in our scientific theory. At a different level of explanation, we can investigate the bearing relation. Animal sciences study what underlies something being a dog, but semantics does not. Similarly, semantics does not specify the necessary and sufficient conditions for something to bear a certain name.<sup>10</sup>

Another misconception is that the metalinguistic theory has to treat proper names as ‘token-reflexives’ in Hans Reichenbach’s sense (1947, § 50). One might consider (33) to imply that the meaning of a proper name must be specified in terms of the name itself. This misconception might have fostered the idea that the metalinguistic theory is circular. It is clear from (33), however, that the lexical meaning of a proper noun has no reference to an occurrence of a word. The right hand side of (33) contains a reference to a sound type, not a use of a name itself.

The first half of this chapter discusses the syntactic differences between proper and other nouns. Once we set aside the minor distributional differences, it is hard to find any structural difference in the meanings of proper and common nouns. The lexical meaning described in (33) is no more complex than that for *accountant*:

(34) For any object  $x$ , *accountant* is true of  $x$  if and only if  $x$  is an accountant

Understanding under what conditions one would count as an accountant is as equally easy or difficult as understanding under what conditions one would count as bearing the sound

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<sup>10</sup>Matushansky (2008) falls into this trap and claims that a proper noun expresses a different relational property depending on a context (e.g., ‘being called such-and-such’, ‘being nicknamed so-and-so’, etc).

/tajlər/. A single introduction of one's name or her occupation might give us enough justification to use either one of the nouns to describe the individual. At the same time the extensions of both nouns can be vague if we consider complex contexts of use.

Although the detailed investigation of the bearing relation itself must be conducted in the fields of sociology or anthropology, we now grasp some aspects of the relation because philosophers have spent a good amount of time in discussing its nature by thinking of the relation to be the key to understanding the notion of reference and, perhaps ultimately, Brentano's problem.

A widely used method to create a bearing relation is baptism or ostensive naming ceremony (Kripke, 1980). People declare that a baby is named 'Tyler'. Most actual Tylers today seem to have gone through such naming ceremonies in some way or other. The relation between an infant and the sound /tajlər/ can be perpetuated through a number of linguistic activities. Tylers today can be referred to with a use of the noun *Tyler* in a sentential clause because speakers are aware of the established relation, which makes *Tyler* to be true of them.

Another method of establishing a bearing relation between one or more objects and a sound type is a descriptive naming ceremony. For example, one could leave a will dictating that her first grandchild be named 'Tyler' (let us say that the person has three daughters, and none of them is yet to conceive a baby). Once the first child was born, we have enough reason to use something that has the sound /tajlər/ to call the child.

It is sometimes said that there must exist a 'causal-historical chain' between an ostensive or descriptive naming ceremony and each use of a proper name. The proposed lexical meaning suggests that the alleged causal-historical chain is not necessary for de-

termining whether a given proper noun is true of a certain object. As long as the speaker recognizes a bearing relation between an object and a sound, the speaker would use the sound to refer to the object that she wants to talk about. The natural language meaning (33) does not require for any sort of causal history to be present.

An alleged causal chain is not necessary for a speaker to recognize a bearing relation. I do not know the necessary and sufficient conditions for a bearing relation, but such a relation seems possible as long as the members of a speech community collectively construct it via conventional acts, whatever the conventions turn out to be. An ostensive naming event and a series of successive uses form just one possible conventional way to establish the association between an object and a sound type. There could be many others, which perhaps involve no causal-historical chain between an expression and an individual.<sup>11</sup>

For example, the Akan language, one of the major languages spoken in Ghana, includes personal proper nouns that can be used purely descriptively with no preceding naming event (Agyekum, 2006). A ‘day name’ is given to everyone according to the day of a week in which the individual was born. Crucially, even a foreign visitor is not spared from this naming convention, so the reader also has an Akan day name regardless of her personal connection to the west African country. For example, if you are a male who was born on Friday, then your Akan name is ‘Kofi’—just as Kofi Annan.<sup>12</sup>

The Akan example suggests that a bearing relation is constructed based on highly complex yet contingent social facts. I consider it to be analogous to other man-made

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<sup>11</sup>Of course, any bearing relation is based on complex socio-anthropological facts. Causal and historical facts cannot be separated from any man-made relation. In that sense the meaning of a proper noun is ‘causally and historically’ fixed.

<sup>12</sup>Naho Orita informed me about these Akan facts (p.c.).

properties and relations, for which we have vocabulary, such as *accountant* and *married*. Proper nouns are not essentially different from such predicates.

### 3.3.2 Criticisms

Chapter 4 and 5 will explain how speakers of different languages use proper names to refer to particular objects. Here I want to discuss the criticisms of the metalinguistic theory, and why they are baseless.

#### Kripke

In *Naming and Necessity* Kripke criticizes a metalinguistic form of quantificational descriptivism, not the metalinguistic theory as a theory of the lexical meaning of a proper noun, so the reader should expect that his critiques would not apply to the analysis of proper names that I am developing because my analysis is not a variant of quantificational descriptivism as I sketched in Chapter 1. However, it is worth looking at his critiques to remove any misconception of the metalinguistic theory.

Kripke raises two objections to William Kneale's metalinguistic form of descriptivism, according to which the descriptive content of a proper name is the property of being called with the very name, not any cluster of the properties associated with the referent of the name. For example, the proper name *Socrates* can be seen as synonymous with the description *the individual called 'Socrates'*.<sup>13</sup>

The first objection is that Kneale's descriptivism is circular. Kripke states a reasonable condition to which any theory of reference needs to be subject.

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<sup>13</sup>This is perhaps equivalent to Russell's 1918 analysis of proper names.

(C) For any successful theory [of reference], the account must not be circular. The properties which are used in the votes must not themselves involve the notion of reference in a way that it is ultimately impossible to eliminate.

(Kripke, 1980, 68)

Kripke claims that Kneale's metalinguistic descriptivism violates the condition of non-circularity (C) because the description *the individual called 'Socrates'* is not informative enough for us to tell what the referent of the name *Socrates* is. We would not be able to know to whom the speaker is referring by calling the individual 'Socrates'. To identify the referent of the name, we would need to appeal to speaker's reference or its ilk, so Kneale's descriptivism involves the notion of reference in an ineliminable way.

I am not sure how good this circularity objection is. Whether the objection is successful, however, it is clear that Kripke is accusing Kneale's analysis of failing to provide a theory of reference. That is, he is targeting Kneale's theory of reference, not the metalinguistic theory of proper nouns as the theory of their lexical meaning. No objection has been raised against the metalinguistic treatment of the lexical meaning of a proper noun. I will blame the referentiality of the singular use of a proper name on a semantic operation, whose modes of appearance might differ across languages. Proper nouns themselves have nothing to do with a theory of reference, or they are no more relevant to the notion of reference than other nouns such as *dog* and *car*. By saying *this car* or *the dog*, speakers can refer to particular objects. Likewise, speakers use proper nouns to refer to particular objects. Kripke's noncircularity objection is irrelevant to the metalinguistic theory of proper nouns presented above.

The second objection Kripke raises against Kneale's descriptivism is that the analysis is too general in its applicability. Kripke rightly points out that a metalinguistic content can be found in any expression, which is not surprising at all given most words are pronounceable. He claims that a metalinguistic analysis could apply to many other expressions besides proper names. For example, Kripke claims that the meaning of the term *horse* could also be analyzed as 'the things called 'horses''. If the metalinguistic theory is applicable to all natural language expressions or, at least, to all nouns, then it would not be the right analysis of the meaning of a proper noun.

However, it is easy to see why the metalinguistic theory fails to apply to common nouns, at least in the form specified above. Suppose that English speakers' semantic knowledge about *horse* could be metalinguistically described as follows:

(35) For any object  $x$ , *horse* is true of  $x$  if and only if  $x$  bears /'hòrs/

Under the supposition that (35) is correct, I could be a horse without ceasing to be a human because I could have been named by the sound /'hòrs/. In other words, in some circumstances, I would not have to be a horse for the predicate *horse* to apply to me. However, that is not possible. For me to be a horse, I would have to cease to be a human (even if we put aside the question whether 'I' could really be a horse at all). That is, while I have to be a horse for the predicate *horse* to apply to me, having a bearing relation to /'hòrs/ is not sufficient for me to be a horse. Therefore, (35) is not the correct analysis of the lexical meaning of *horse*. Even if Kripke's second objection undermines Kneale's descriptivism, it does not undermine the metalinguistic theory of names presented above.



## *Begriffsschrift*

Many authors rely on Kripke's objections discussed above when they dismiss the metalinguistic theory of names. Some also mention in passing that the metalinguistic theory of proper names is inadequate because it is equivalent to Frege's discarded view on names in his *Begriffsschrift*.<sup>14</sup>

No critic has yet fully developed and discussed this line of objection, and it is difficult to accurately assess its implications. All authors who mention the objection seem to be assuming that the metalinguistic theory of names is a metalinguistic variation of quantificational descriptivism. According Russell's or Kneale's metalinguistic descriptivism, the true identity statement

(36) Cicero is identical to Tully.

asserts that there exists one object that is uniquely called 'Cicero', which is also identical to an object that is uniquely called 'Tully'. Arguably this content of the statement resembles Frege's view on the identity relation in *Begriffsschrift*, according to which '=' expresses the relation between signs of objects. The content is not very informative for those who have no idea about who or what 'Cicero' or 'Tully' is. By taking (36) to be true, all one would know is that there is at most one object to which the two signs 'Cicero' and 'Tully' apply, which falls short of the cognitive value of (36).

Russell's or Kneale's metalinguistic descriptivism is not adequate because the descriptive contents they associate with proper names are too coarse-grained to provide the cognitive values of some of their uses. This is, however, hardly a criticism, if we consider

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<sup>14</sup>See (Soames, 2002, 41-2); Section 6 "Two Special Description Theories and Some Non-Millian, Non-Descriptive Alternatives" in (Braun, 2006); (Richard, 2006, 706-7, n.3) and (Cumming, 2008, n.22).

their analyses to be the analyses of natural language. Their metalinguistic contents might be too coarse-grained for the adequate individuation of the thought of language users; but they could be adequate as an analysis of what is linguistically conveyed. Furthermore, Millianism and variabilism, of course, do not associate with proper names the senses that are fine-grained enough to account for the cognitive value of utterances—they associate none. The cognitive value is explained at a different level than at a theory of natural language meaning. It is not clear to me why Russell and Kneale should not adopt a similar strategy.

At any rate Burge's, Elbourne's, and my analyses of proper names are not quantificational. We all take proper names to be complex singular referring expressions. Identity statements are identifying two objects as one, not concerned with two signs or symbols. Therefore, the objection in question is not warranted. We will discuss both individual and theoretical identity statements later in Chapters 4 and 5 respectively. But one thing worth emphasizing here is that the metalinguistic theory of proper names is not the theory of the singular use of a proper name. In a true identity statement, such as (36), the subject name is not just an occurrence of a proper noun. A proper noun in (36) is situated in a particular position in the overall clause. The semantics of complex noun phrases in general explains the relation between such a formal feature of a proper name and its interpretation. The metalinguistic theory of names only explains the predicative contents of names.

### 3.4 Summary

In this chapter I have first proposed a syntactic analysis of proper names based on the DP analysis of sentential arguments. In English and English-like languages the singular and bound uses of proper names are complex nominal expressions headed by either a definite article or a silent determiner that is semantically similar to the definite article. As for Japanese, proper names in argument positions are identified as NPs, not having an isomorphic structure to English. We have already seen some preliminary evidence for treating Japanese proper names differently than English and Italian (restrictive relative clauses). We will also see an independent argument against the view that Japanese bare NPs have a semantically significant silent projection in Chapter 5.

I have second presented and defended the metalinguistic theory of names as an analysis of the lexical meaning of a proper noun. I have argued that the theory is coherent and the common objections are based on the misconceptions of the theory.

## Chapter 4

### The Semantics of Definite Descriptions and Proper Names

The last chapter discussed the syntax of proper names and their lexical meaning. I have argued that the singular and bound uses of proper names in English are complex phrases constituted by one or more predicative proper nouns and a determiner head. I have also defended the metalinguistic view of names as an analysis of the lexical meaning of a proper noun. The current chapter presents a situation semantic analysis of definite descriptions, which also applies to both singular and bound uses of proper names in English, building on the syntactic and lexical proposals in the previous chapter. The core of my semantic analysis of proper names resides in implicit domain restriction via situations and the treatment of definite descriptions as singular referring expressions.

#### 4.1 Situation Semantics

##### 4.1.1 Introduction

This section introduces a situation semantic framework, on the basis of which I will develop an analysis of proper names and other bare nominals. I construe situation semantics as a modification of possible world semantics. Possible world semantics is a fruitful theoretical framework that allows us to formalize not only our modal talk and reasoning (Kripke, 1963), but also other aspects of natural language such as propositional attitude reports (Hintikka, 1969). Within possible world semantics, our metalanguage includes

reference to possible worlds. For example, the truth of *necessarily*  $\phi$  might be understood as the truths of  $\phi$  in all ‘possible worlds’ that are in some sense accessible from the ‘actual world’. I will have a few words about how to think of these uses of possible and actual worlds in our theory of natural language (Section 4.1.3).

Now, assuming that the possible worlds apparatus is useful in natural language semantics, we might also want to have our theory refer to ‘situations’, which indeed subsume all possible and actual worlds. There are two motivations for this move. The first motivation is that the introduction of situations achieves greater empirical coverage with a relatively small modification to possible world semantics. The scope of possible application of situation semantics is very broad, including not only more fine-grained analyses of attitude reports and counterfactual conditionals, but also other independent phenomena such as tense, aspect, nominalizations, etc (Kratzer, 2007). I will mostly focus on the use of situations in the explanation of nominal phrase interpretations. I suggest that the move is justified by connecting and explaining a wide range of heterogeneous phenomena in a disciplined way.<sup>1</sup>

The second motivation for introducing situation semantics is that possible world semantics might be inherently deficient, not merely that its scope is limited. For example, sets of possible worlds might not be good candidates for the objects of propositional attitudes. We might want to introduce fine-grained situations to define or model the objects of our psychological attitudes.<sup>2</sup> Thus, we have some independent reasons to develop a

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<sup>1</sup>I am also, perhaps naïvely, open to the possibility that we will be able to argue that a situation semantic framework provides a deeper explanation by connecting it to our cognition and perception of events, scenes, and situations.

<sup>2</sup>A better treatment of propositional attitude reports is also one reason for why some theorists have developed an alternative semantic framework based on structured Russellian propositions (Soames, 1985, 1987, 1989; King, 2007). The recent Soames (2010a,b) also offers a distinct account of propositions.

situation-based semantic theory.<sup>3</sup>

#### 4.1.2 Basic definitions

The particular semantic system that I will present here is an intensional version of Irene Heim and Angelika Kratzer's (1998) semantic system, which follows the tradition of Montague (1974). Within this kind of semantic system, both object-language expressions and entities in a domain are categorized in terms of types.

(1) *Semantic types*

- a.  $e$  is a type.
- b.  $t$  is a type.
- c.  $s$  is a type.
- d. If  $\alpha$  and  $\beta$  are types, then  $\langle \alpha, \beta \rangle$  is a type.
- e. Nothing else is a type.

For example, singular-referring expressions are of type  $\langle e \rangle$ , and the referents of such expressions are also of type  $\langle e \rangle$ . Let us use the label 'intensional' for any expression or entity of a type that includes ' $s$ '. Some intensional expressions are associated with intensional entities as their semantic values.

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This also suggests that situation semantics is not the only semantic framework available when we theorize a variety of linguistic phenomena including the uses of proper names. I will not discuss the structured entities view of propositions in this dissertation. However, such an alternative view of propositions might as well be compatible with the bare bone of my analysis of proper names.

<sup>3</sup>For another example of the limit of possible world semantics, Kratzer questions the notion of comparative overall similarity of possible worlds. Kratzer (1989) argues that both Stalnaker's and Lewis's analyses of counterfactual conditionals based on comparative overall similarity among worlds cannot account for some intuitively clear cases of counterfactual conditional such as the following.

- (a) If a different animal had escaped instead, it might have been a gazelle. (Kratzer, 1989, 626)

Based on the examples like (a), Kratzer motivates a situation-based semantic theory.

Correlatively, a domain of discourse includes possible and actual situations. I adopt and modify some of the definitions from (Kratzer, 1989).

(2) *Semantic domains*

- a.  $S$  is the set of all situations.
- b.  $D_e$  is the set of all particulars.
- c.  $D_t = \{F, T\}$
- d. The entire domain  $D$  includes all the entities above:  $D = S \cup D_e \cup D_t$
- e. If  $\alpha$  and  $\beta$  are semantic types, then  $D_{\langle\alpha,\beta\rangle}$  is the set of all functions from  $D_\alpha$  to  $D_\beta$ .

A few terminological remarks are in order. I assume the ‘entity’ to be the most general category of things. By ‘particular’ I understand a non-repeatable and non-multirealizable entity, such as the philosopher Leibniz and a chocolate éclair. My kindle is a particular, which is distinct from your kindle. I interchangeably use ‘particular’ and ‘individual’. I construe situations to be particulars, so the sets  $S$  and  $D_e$  are not mutually exclusive. But distinguishing  $S$  from the rest of entities is important for a situation semantics. We can now think of a domain specific metalanguage variables  $s, s', s'', \dots$ , which range over situations.<sup>4</sup>

Now I want to introduce some of the characteristics of situations. The domain is partially ordered by a mereological ‘part-of’ relation ‘ $\sqsubseteq$ ’, which satisfies at least the following conditions:

(3) *Mereological ordering*

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<sup>4</sup>Perhaps things like ‘tropes’ are also particulars, but do not fall under the category of individuals. But such a notion plays no role in my analysis of bare nominals.

- a. For any  $s \in S$ , there is a unique  $s' \in S$  such that  $s \sqsubseteq s'$  and for any  $s'' \in S$ ,  
if  $s' \sqsubseteq s''$ , then  $s'' = s'$

That is, for any situation, there is a largest situation that contains it.

- b. For any  $x \in D_e$ , there is a unique  $s' \in S$  such that  $x \sqsubseteq s'$  and for any  $s'' \in S$ ,  
if  $s' \sqsubseteq s''$ , then  $s'' = s'$

That is, for any object, there is a largest situation that contains it.

- (4) There is a subset of  $S$  (call it ' $W$ ') such that it contains all and only maximal  
elements with respect to  $\sqsubseteq$ . I will use  $w, w', w'', \dots$  to refer to an element in  $W$ .  
 $W$  is the set of worlds.

In intuitive terms, a world contains a number of things that exist in that world. Situations and entities are parts of worlds, and they stand in a mereological relation to one another. There seems to be no difficulty in considering a world to be a big individual. I can talk about the world just as I can talk about my brother. Likewise, if a situation is part of a world, then there is no difficulty in considering a situation to be an individual as well—the right arm of my brother is an individual that we can talk about. A world is a large individual, consisting of numerous other individuals, such as galaxies, planets, apples, and electrons. We also ordinarily think that such individuals as planets inhabit in the world. I take the part-whole relation to be primitive, which also paraphrases our ordinary locution of ' $\alpha$  is in  $\beta$ '. A galaxy is in a world by being part of it. A situation is also in a world by being part of it. A galaxy consists of many other individuals (such as stars); So does a situation. In light of this, a world is the biggest situation. A situation is a world



just in case there is no other situation of which it is a part.<sup>5</sup>

The semantic system assigns semantic values to simple and complex natural language expressions, some of which are intensional. Crucially, I appeal to the following intensional semantic values:

(5) *Intensional semantic values*

- a. The semantic value of an utterance of a sentence with respect to variable assignment  $g$  is a function of type  $\langle s, t \rangle$ . Call such a function a ‘proposition’.
- b. The semantic value of a one-place predicate is a function of type  $\langle e, \langle s, t \rangle \rangle$ .

By (5a) propositions are now defined as (partial) functions from situations to truth-values. For example, the proposition expressed by a use of (6) assigns Truth to any situation in which Obama is a Democrat, and False to every other situation.

(6) Obama is a Democrat.

This kind of function defined over situations plays the roles that a proposition is supposed to play, at least, as equally well as the kind of function defined over possible worlds. The set of situations includes the set of possible worlds as defined by (3-4). The proposition for (6) gives Truth to any worlds where Obama is a Democrat, and False to those where Obama is not.

(5b) represents the basic semantic type of predication. We might want to see a predicate as something that yields a truth-value when its arguments are saturated. Now, given that a sentential semantic value is a proposition with intensional type  $\langle s, t \rangle$ , the type frame  $\langle e, \dots \langle s, t \rangle \rangle$  seems appropriate to provide the semantic value of a given predicate

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<sup>5</sup>David Lewis (1983) also suggests that we take a world to be an individual. I am not, however, singling out his position as the correct interpretation of ‘possible worlds’. See Section 4.1.3.

because it would yield a proposition when its arguments are saturated. For example, the semantic value of *dog* can be expressed as follows:

$$(7) \llbracket \text{dog} \rrbracket^g = \lambda x . \lambda s . x \text{ is a dog in } s$$

An interpretation function  $\llbracket \dots \rrbracket$  is relativized to a variable assignment  $g$ . And the ‘is in’ locution should be understood in the mereological sense expressed by ‘ $\sqsubseteq$ ’, which partially orders the entities in the domain. For example, if Snoopy is in the domain, then Snoopy’s tail is part of Snoopy (i.e., ‘Snoopy’s tail  $\sqsubseteq$  Snoopy’). Similarly, the spatiotemporal region that coincides with Snoopy’s house includes Snoopy as its part when Snoopy is in the house.

This particular form of situation semantics explores the idea that the object-language itself quantifies over intensional entities such as worlds, times, and situations, not merely its semantics is relativized to those entities (Cresswell, 1990; Ogihara, 1996; Percus, 2000; King, 2003; Kusumoto, 2005; Keshet, 2008; Schwarz, 2009; Elbourne, 2006). That is why  $D$  includes  $S$ , whose elements can be denoted by some constituents of utterances. I posit object-language expressions that denote situations, which contribute to the interpretations of utterances in a variety of ways. I will call them ‘situation pronouns’ and let them appear as ‘ $s_1$ ’, ‘ $s_2$ ’, ... within the object-language. As I noted italicized ‘ $s$ ’, ‘ $s'$ ’, ... are metalanguage variables over situations. Predicative expressions, i.e., nouns, verbs, and adjectives sometimes coexist with an object-language situation pronoun  $s_i$ , and its semantic contribution to the semantic value of the entire utterance shifts depending on the semantic value of the coexisting situation pronoun.

Here is the list of the composition rules:

(8) *Composition rules*

a. **Functional Application (FA)**

If  $\alpha$  is a branching node and  $\beta$  and  $\gamma$  are its daughters, then, for any assignment  $g$ ,  $\alpha$  is in the domain of  $\llbracket \ ]^g$  if both  $\beta$  and  $\gamma$  are, and  $\llbracket \beta \rrbracket^g$  is a function whose domain contains  $\llbracket \gamma \rrbracket^g$ . In that case,  $\llbracket \alpha \rrbracket^g = \llbracket \beta \rrbracket^g(\llbracket \gamma \rrbracket^g)$ .

b. **Intensional Predicate Modification (IPM)**

If  $\alpha$  is a branching node and  $\beta$  and  $\gamma$  are its daughters, then, for any assignment  $g$ ,  $\alpha$  is in the domain of  $\llbracket \ ]^g$  if both  $\beta$  and  $\gamma$  are, and  $\llbracket \beta \rrbracket^g$  and  $\llbracket \gamma \rrbracket^g$  are of type  $\langle e, \langle s, t \rangle \rangle$ . In that case,  $\llbracket \alpha \rrbracket^g = \lambda x . \lambda s . \llbracket \beta \rrbracket^g(x)(s) \ \& \ \llbracket \gamma \rrbracket^g(x)(s)$ .<sup>6</sup>

c. **Pronouns and Traces (PT)**

If  $\alpha$  is a pronoun or a trace,  $g$  is a variable assignment, and  $i$  is in the domain of  $g$ , then  $\llbracket \alpha_i \rrbracket^g = g(i)$ .

For ease of presentation, let  $g(\zeta_i)$  stand for what  $g$  assigns to any expression  $\zeta$  with index  $i$ .

d. **Predicate Abstraction (PA)**

For any index  $i$  and assignment  $g$ ,  $\llbracket \lambda_i \alpha \rrbracket^g = \lambda x . \llbracket \alpha \rrbracket^{g[x/i]}(x)$

e. **Situation Binding (SB)**

For any index  $i$  and assignment  $g$ ,  $\llbracket \text{s-PRO}_i \alpha \rrbracket^g = \lambda s . \llbracket \alpha \rrbracket^{g[s/i]}(s)$

A few comments are in order. A variable assignment  $g$  is a partial function from variable symbols to anything in  $D_e \cup S$ . There are several classes of object-language expressions that receive their semantic values from assignments. That is, the Pronouns

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<sup>6</sup>By ' $\llbracket \beta \rrbracket^g(x)(s) \ \& \ \llbracket \gamma \rrbracket^g(x)(s)$ ' I mean both  $\llbracket \beta \rrbracket^g$  and  $\llbracket \gamma \rrbracket^g$  return T with respect to  $x$  and  $s$ .

and Traces rule is put to use to determine the semantic values of some expressions. I assume that a context of utterance somehow determines a set of assignments that respect the speaker's intention about which entity is referred to with which expression in the utterance. The interpreter uses one of such assignments to determine the semantic value of the whole utterance.

I am also simplifying  $g$  to a little extent here. First, since the focus of the current work excludes indexical expressions such as *here* and *I*, I ignore how they get their semantic values. As discussed by Richard Larson and Gabriel Segal (1995, Section 6.5), the current system can accommodate indexicals by making several designated positions in a sequence of entities, which is determined by an assignment function. We can say that an instance of *I* always gets the first element of an assignment sequence as its value, and that every sequence chosen by a context of utterance has the speaker of the utterance as its first element.<sup>7</sup> Second, a sequence also has designated positions for situations because situation pronouns are domain specific, and cannot denote ordinary objects.

The Predicate Abstraction rule is sometimes put to use to interpret a trace of an evacuated quantificational phrase. Suppose that  $\alpha$  contains a trace  $t_i$  that is co-indexed with the node  $\lambda_i$ , which is assumed to be created as a result of the movement of a quantificational phrase.  $\llbracket \alpha \rrbracket^{g^{x/i}}$  indicates the semantic value of  $\alpha$  with respect to the modified assignment, which is the same as  $g$  except that it assigns  $x$  to  $g(i)$ .

The Situation Binding rule is a variant of Predicate Abstraction. Situation Binding allows a proposition to have a situation variable that ranges over situations. The basic

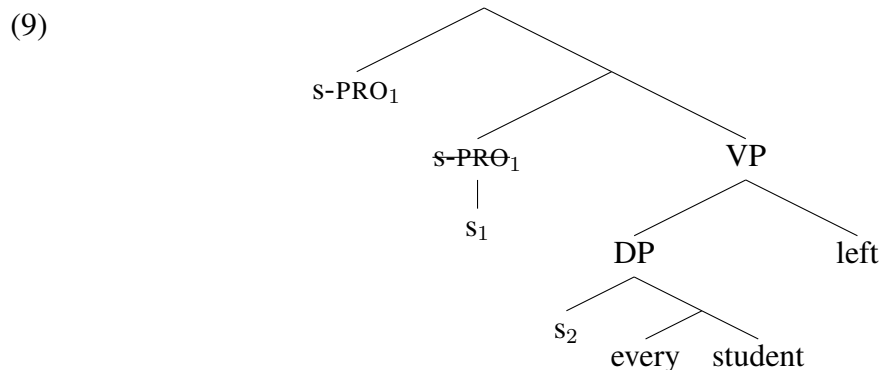
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<sup>7</sup>I will introduce an indexical expression to account for the bound or co-varying interpretations of nominal expressions later in Section 4.2.3.

idea can be expressed as follows. A situation pronoun in a sentence is either bound or free. On the one hand, a bound pronoun results in a quantificationally bound situation variable in the logical form of the sentence containing that pronoun. Situation Binding is an interpretive procedure that creates a situation variable from a bound situation pronoun. On the other hand, a free pronoun results in a referring term in the logical form.

Following a suggestion made by Kai von Stechow and Heim (2011, Section 8.2.6), I posit two different kinds of situation pronouns:  $s\text{-PRO}_i$  and  $s_i$ . The former  $s\text{-PRO}_i$  is analogous to PRO discussed by Heim and Kratzer (1998, Chapter 8), whose roles are (i) to fill an argument of a predicate, (ii) evacuate to leave a trace with the index  $i$  behind, and (iii) triggers Situation Binding. The latter  $s_i$  is analogous to an overt (im)personal pronoun, whose value is determined by a variable assignment. Pronouns and Traces applies to  $s_i$ , but not to  $s\text{-PRO}_i$ , which is analogous to  $\lambda_i$  for Predicate Abstraction.

Now we have both  $s\text{-PRO}_i$  and  $s_i$ . Which sort of situation pronoun appears where? I stipulate that the VP of a sentential clause always takes a  $s\text{-PRO}_i$  to saturate its situation argument slot. For example, the syntactic structure of *Every student left* includes two situation pronouns, one of which is an occurrence of  $s\text{-PRO}$ . The occurrence of  $s\text{-PRO}$  immediately moves to leave a trace behind as follows:



This stipulation has two roles. One is to prevent the semantic system from over-generating unattested readings by constraining the distribution of the indices of situation pronouns. Once we permit syntactically represented indices to appear multiple times in a syntactic structure as in (9), we should be cautious about not allowing a series of indices that leads to an impossible reading. Binding theory deals with this problem with respect to overt pronouns. Orin Percus (2000) has extended the discussion concerning the index distribution to covert cases, and proposed a general constraint that governs the distribution of such indices. Ezra Keshet (2008, 2010) has also put forward a different formulation of the general constraint based on economy considerations. The introduction of  $s\text{-PRO}_i$  aims at achieving the essentially same results as the proposed constraints over situation pronouns. Which particular formulation of the constraint we should adopt is an orthogonal problem that I will not settle here. I adopt the current stipulation for  $s\text{-PRO}_i$  because it makes a use of Situation Binding parallel with a use of Predicate Abstraction.

The other role of the stipulation is to account for the interaction between nominals within a sentence. For example, if the situation pronoun in a DP is coindexed with an instance of  $s\text{-PRO}$ , then it is turned into a variable over situations by Situation Binding. It is then possible to bind the variable inside the DP. This procedure allows us to relate two independent nominals and leads to the explanation of the bound interpretations of complex nominals, including those of proper names. We will see the details of how this mechanism works later (Section 4.2.3).

As an illustration of the presented semantic system, consider the following simplified syntax and semantics of *It is a dog*. I ignore its tense, copula, and the indefinite article. The pronoun bears some index on LF as in (10):

(10)  $it_{12}$  (is a) dog.

- a.  $\llbracket \text{dog} \rrbracket^g = \lambda x . \lambda s . x \text{ is a dog in } s$  (Lexical meaning)
- b.  $\llbracket it_{12} \rrbracket^g = g(it_{12})$  (PT)
- c.  $\llbracket it_{12} \text{ dog} \rrbracket^g = \lambda s . g(it_{12}) \text{ is a dog in } s$  (FA, a, b)
- d.  $\llbracket [s_2 [it_{12} \text{ dog}]] \rrbracket^g = T$  iff  $g(it_{12})$  is a dog in  $g(s_2)$  (PT, FA, c)
- e.  $\llbracket s\text{-PRO}_2 [s_2 [it_{12} \text{ dog}]] \rrbracket^g = \lambda s . g(it_{12}) \text{ is a dog in } s$  (SB, d)

The utterance expresses, under assignment  $g$ , the set of the situations in which  $g(it_{12})$ , which stands for the contextual denotation of the pronoun, is a dog. In this example,  $s\text{-PRO}_i$  and SB have no substantial role to play. They only vacuously saturate and then abstract away a situation argument. But we will see more complex cases where they perform the critical functions.

### 4.1.3 Ontological implications of possible and actual worlds/situations

Our semantic theory refers to possible and actual situations as theoretical primitives, and no further reduction is provided within the semantic theory. The theoretical reference to possible and actual situations is justified to the same extent as the reference to possible and actual worlds is justified. Here I like to make a few remarks about the use of possible and actual worlds in semantic theory.

First of all, a possible world/situation semantic framework seems compatible with any philosophical view of possible worlds. And it matters not how we cash out the reference to possible worlds and the objects therein.

Let us see two major views about possible worlds to make sure that they are com-

patible with the semantic system presented above. First, the system is compatible with modal realism in Lewis's (1986) sense. Kratzer and others who use a situation semantic framework such as Elbourne suggest that their semantic theories ultimately rely on Lewis's counterpart theory. This suggestion, once fully developed, might lead to an endorsement of a Lewisian multiverse theory of possible worlds because the counterpart theory and Lewis's modal realism seem to jointly work to provide a comprehensive picture of modality. On the multiverse understanding of possible worlds, the 'actual world' is the concrete world in which we live, and the other equally concrete worlds that happen to miss us are 'possible worlds'. 'Actual situations' are any situations that are parts of the actual world. 'Possible situations' are parts of possible worlds. The knowledge or cognitive scientific conception of semantic theory is fully compatible with such a genuinely realistic view of possible worlds. Statements in semantic theory describe the stable mental states of competent speakers. If the statements contain reference to concrete possible worlds and individuals, then the speakers' mental states are somehow related to concrete possible worlds and individuals. Or competent speakers can be said to implicitly take for granted the existence of the other worlds as well as the existence of the actual world.

Second, the introduced semantic system is compatible with any non-multiverse account of possible worlds. For example, following the suggestion made by Stalnaker (1976, 1986), we might consider a possible world to be a way the world might have been. Ways the world might have been can be understood as the comprehensive properties of the world, only one of which is instantiated. Possible worlds are uninstantiated properties that reside in the actual world—a single reality. In the light of this, possible situations can be understood as partial properties of the world that specify only some or other aspect of



the world. On this interpretation of possible worlds, a situation semantics does not refer to concrete possible worlds or individuals, but to some abstract aspects of realities. *It could have snowed here today* is true, not because there is a concrete possible world in which it is snowing here today, but because there is an uninstantiated property of the world such that, if instantiated, then it were snowing here today. Any occurrence of ‘possible/actual world’ and ‘possible/actual situation’ in our semantic theory is in principle paraphrasable in accordance with the suggested understanding of possible situations.<sup>8</sup>

One might suspect, however, we cannot remain neutral on the interpretation of the possible world locution when we start discussing one important aspect of our linguistic activities, namely, our talk about things that do not exist. I will discuss the seemingly non-referring definite descriptions and proper names in Section 4.6.

## 4.2 Situation Pronouns and the Interpretations Complex Nominals

It is natural to ask why we want to have the complicated system presented above. Why do we want to crowd a tree with s’s and numerals? In this section I argue that our compensation is large enough to cover any expense we bear. I take advantage of the presented situation semantic system to account for a variety of interpretations we find in the uses of complex nominals. First, I look at the phenomena traditionally called ‘domain restriction’ in the literature (4.2.1). Second, I look at the cases where the interpretations of nominal

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<sup>8</sup>Considering Emmon Bach’s (1986) ‘natural language metaphysics’ does not appear to me very useful at this point, although Kratzer (1989) advises the reader understand her use of counterparts in Bach’s sense. The overall structure of our metalanguage tells us that we need the quantification over what we might call ‘worlds’, ‘times’, ‘situations’, ‘events’, or what have you. So competent speakers implicitly take for granted the existence of *what theorists might call* ‘worlds’, ‘events’, etc in virtue of being competent speakers. But our semantic theory does not tell us what they are.

phrases are independent from the interpretations of the rest of clauses (4.2.2).

To preview what is to come, the unbound use of a situation pronoun explains why the interpretations of some DPs can be independent from the interpretations of the embedding main clauses. In other words, the situation mechanism of domain restriction explains why some uses of DPs are rigid designators, which is one important aspect of the singular use of a proper name. Another important aspect of the singular use of a proper name, i.e., its nondescriptiveness will be explained by adopting a singular-referential analysis of definite descriptions (Section 4.3)

#### 4.2.1 Implicit domain restriction

What is intuitively said by an utterance generally changes depending on the context of utterance. Nominal expressions also seem to be context-sensitive in a variety of cases. Here is an example involving a quantificational DP (Stanley, 2002). Suppose Hannah throws a small party with a moderate number of bottles of beer. Observing that one of her guests is looking for an unopened beer, Hannah utters,

(11) Every bottle is empty,

through which she intends to communicate that every bottle in her house is empty, i.e.,

(12)  $[\forall x : x \text{ is a bottle} \wedge x \text{ is in Hannah's house}](x \text{ is empty})$

The guest has no difficulty in understanding what she intends to communicate. If the semantic value of (11) used in this context is equivalent to

(13)  $[\forall x : x \text{ is a bottle}](x \text{ is empty}),$

then it is different from what Hannah communicates to the audience. She by no means intends to make a false assertion that everything in existence that satisfies the predicate *bottle* satisfies the predicate *empty*, which is the content of (13). How is the sentence (11) used to communicate (12) rather than (13)? The semantic contribution of the quantificational phrase *every bottle* seems to be modified by adding a conjunct. Where does the conjunct come from? What is the mechanism that partially contributes to what is intuitively said by the speaker? In another context of utterance, a speaker would employ (11) to communicate radically different information. Hannah could have intended to convey that every bottle in John's apartment, not in her house, was empty. How does a context influence what the speaker communicates through the use of (11)? The quantificational phrase, *every bottle*, like many other nominal expressions, is context-sensitive.

Largely there are two approaches to the problem of domain restriction: indexicalism and contextualism.<sup>9</sup> According to the indexicalist approach, the *mandatory* saturation of some hypothesized variables determines the implicit domain. By contrast, the contextualist approach hypothesizes an *optional* cognitive process that applies to the customary content of an NP to create an altered content. In the current work, I adopt the indexicalist approach to the problem of domain restriction.<sup>10</sup>

Both linguists and philosophers have developed indexicalist theories of domain restriction.<sup>1112</sup> As an example, I introduce Jason Stanley's theory of nominal restriction,

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<sup>9</sup>The terminology of 'indexicalism vs. contextualism' stems from Recanati (2004, Ch.4).

<sup>10</sup>For a contextualist account of an on-the-fly content construction, see (Carston, 2002; Wilson and Carston, 2007).

<sup>11</sup>See (von Stechow, 1994; Stanley and Szabó, 2000; Stanley, 2000, 2002b, 2005; Martí, 2003; Giannakidou, 2004; Etxeberria and Giannakidou, 2010).

<sup>12</sup>Jon Barwise and John Perry (1983) propose a situation-based approach to domain restriction. Their proposal can also be seen as indexicalism because we can consider their resource situation parameters to be variables of some sort. There are two major differences between their proposal and the situation semantic

according to which every NP is associated with a complex unpronounced variable ‘ $f(i)$ ’ whose interpretation contextually determines the set of salient objects.<sup>13</sup> The domain restriction variables are object-language expressions that require saturation. An NP selects a complex variable as its sister as is seen in the following LF:

(14) [ every [ bottle  $f(i)$  ] ]

Both  $f$  and  $i$  receives their values from contexts of utterances. In the above scenario, the semantic values of the variables  $f$  and  $i$  determine the set of the objects in Hannah’s house. The contents of *bottle* and  $f(i)$  compositionally determine the appropriately restricted set of bottles, i.e., what is within the restrictor of (12). Thus, according to the indexicalist approach to implicit domain restriction, some object-language expressions are deictically used to provide the restricted DP interpretations. Such deictic uses of object-language expressions are analogous to deictic pronouns in that they are semantically treated as unbound variables.

Covert object-language expressions for implicit domain restriction such as  $f(i)$  are also similar to bound pronouns.

(15) Every senator thinks they should be president.

Just as the occurrence of *they* in (15) can be semantically understood as an individual variable bound by a restricted quantifier, domain restriction expressions can be seen as

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account that I will present later. Soames (1986) has critical discussions of Barwise and Perry’s treatment of incomplete definite descriptions, which seems to me quite conclusive. However, my situation semantic account is immune to Soames’s criticisms of Barwise and Perry’s. See (Soames, 1986, fn.17). One of the major differences is captured by the following statement of Soames: ‘[t]he lesson here is that contextual supplementation works at the level of constituents of sentences or utterances, rather than the level of the sentences or utterances themselves. (342)’. The situation pronoun system clearly allows such a contextual influence at the sub-sentential level. Also see (Elbourne, 2008, Section 2) for a related discussion.

<sup>13</sup>Indexicalist theorists are in disagreement about where exactly such a context-sensitive variable appears as a constituent of a syntactic structure.

bound variables. Consider the examples below:

(16) Everyone answered every question. (Stanley, 2002b, 368)

(17) In most of his classes, John failed three Frenchmen. (Stanley, 2002b, 368)

(18) Only one class was so bad that no student passed the exam. (Heim, 1991)

We have seen Stanley's proposal that *every question* in (16) is associated with a covert expression that can be understood as an unbound variable denoting a contextually salient set of objects. (16) indeed has a reading in which everyone answered all the questions that are relevant in the context. (16) also has another reading, according to which each person answered all the questions that were particularly prepared for that person. This reading is theoretically expected if it is possible that a domain restriction pronoun is bound by the preceding quantificational phrase. The semantic contribution of the lower DP *every question* depends on the person picked out by the individual variable introduced by the higher DP *everyone*. Stanley and also Luisa Martí (2003) argue that domain restriction variables must be complex because of such bound or co-varying interpretations. Suppose that the higher *every*-DP binds the variable  $i$  associated with the lower *every*-DP. Also suppose that the value of  $f$  is a function from an individual to the questions that the individual has. Then, for each of the people who answered the questions, the lower DP *every question* would pick out the set of the questions that the very person has.

Likewise, on the most natural reading of (18), the predicate *student* in (18) is relationally understood. That is, it should not be about all students even in the relevant context, but about the students *of* the class selected by the preceding phrase *one class*. This would be also expected if we assume *student* to be associated with  $f(x)$ , where  $x$

co-varies with the value for the preceding *one class*. In other words, *no student* in (18) signifies ‘none of the students of  $x$  (where  $x$  is a class)’. To corroborate this point, we can think of a construction in which *one class* is not preceding *student* as in (19), which does not have the same meaning as (18) above.

(19) No student passed the exam because only one class was so bad.

At this point one might rightly point out that the attested bound or co-varying interpretations do not directly support the existence of syntactically represented indices. It could be argued that an alternative pragmatic approach accounts for the same range of data with fewer theoretical assumptions. In reply, the indexical theorist might search for direct syntactic evidence, such as weak-cross over effects, as in (Chierchia, 1995, 225-7). By adopting the indexicalist approach in this dissertation, I do not intend to settle this debate once and for all. Rather my intention is to sharpen our understanding of the problem by examining what complexity an adequate account needs to contain within itself to explain the observed readings.

In the section below (4.2.3) I will present a situation semantic account of domain restriction proposed by Florian Schwarz (2009) with some modifications. On his account, domain restriction variables are simple situation pronouns, which have no less expressive power than the sketched theory of domain restriction based on complex variables. I will discuss the unbound and bound uses of situation pronouns in turn.

#### 4.2.2 Independent interpretations of complex nominals

We have seen that the interpretations of nominal expressions are often contextually restricted. They are sensitive to the contexts of utterance and also to the interpretations of preceding complex nominals. It is furthermore important to realize that nominal expressions are sometimes *insensitive* to the interpretations of the rest of the sentences in which they appear. This point has been well discussed in connection with the temporal interpretations of complex nominals (Enç, 1981; Musan, 1997, a.o.). For example, (20) would be a straightforward contradiction if those fleeing individuals are incarcerated at the same time.

(20) Many fugitives are now in jail. (Musan, 1997, 3)

(20) instead intuitively says that those who were once fugitives are in jail when the speaker utters (20), which is not explicitly stated on the surface of the sentence. The sentence contains a reference to the present moment, i.e., *are now*, but we somehow ignore the cue in interpreting the complex nominal *many fugitives*, which seems to pick out the individuals that were fugitives some time prior to the utterance time.

We can observe the same pattern fairly consistently across the uses of so-called ‘strong’ determiners, such as *most* and *every* (Musan, 1997, 58-9).<sup>14</sup>

(21) All rich men were obnoxious children. (Enç, 1981, 58)

(22) In the seventies, most professors were young. (after Musan 1997).

(23) Every fugitive is now in jail. (Enç, 1981, 65)

(24) John’s murderer is not yet a murderer. (Musan, 1997, 54)

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<sup>14</sup>The distinction between the ‘weak’ and ‘strong’ determiners originates in (Milsark, 1974).

(25) The murderer was a little boy when he lost his teddy bear. (Musan, 1997, 131)

All the above have a reading in which the subject nominal is interpreted independently from the temporal interpretation of the main clause. For example, (22) has a reading in which most of the professors today used to be young back in the seventies. The subject *most professors* selects most present professors, not those who were professors in the seventies. We can again disregard the explicit cues about the timing, i.e., *were* and *in the seventies* when we interpret the nominal expression.

The independence of nominal interpretations is not peculiar to the temporal domain. Complex nominals can be independently interpreted with respect to the modal domain as well.

(26) Someone in this room could be outside. (after Keshet 2008)

(27) Every fugitive could be in jail.

By uttering (26) I am not claiming that it is possible that there is an individual who is inside and outside of the room at the same time (i.e., ' $\diamond\exists x(Rx \wedge \neg Rx)$ '). The phrase *someone in this room* is not counterfactually understood on the natural reading of (26). (26) seems concerned with those who are actually in this room.

Philosophers refer to this characteristic of modal independence as 'rigidity' and often discuss it in connection with proper names and definite descriptions.

(28) It was possible that Jones's murderer ended up not killing Jones.

[While pointing at Smith; Smith is the murderer.]

(29) Smith could have not killed Jones.



For example, although (28) is concerned with a counterfactual possibility, but the descriptive content of the definite description is not evaluated with a counterfactual circumstance. The description picks out the actual murderer of Jones. The semantic system with situation pronouns accounts for these independent interpretations of complex nominals with respect to modal cases.<sup>15</sup>

### 4.2.3 Situation pronouns in use

#### Deictic situation pronouns

Now I want to discuss the cases where situation pronouns are unbound and receive their interpretations via variable assignments. But, first, I like to note why we want to talk about situations when we are concerned with implicit domain restriction and temporally or modally independent interpretations of complex nominals. Every situation can be seen as associated with a set of individuals because it contains individuals as its parts. Then we can use a situation to represent a restricted discourse domain.<sup>16</sup> Suppose that a complex nominal is somehow associated with a particular situation. Then the complex nominal can be interpreted against a certain discourse domain fixed by the situation. Since the semantic system presented in Section 4.1 includes situation pronouns that denote situations, constituents of sentences are now able to encode enough information about shifting

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<sup>15</sup>Since a situation is a spatiotemporal region, a situation semantics should be able to handle both temporal and modal domains at the same time. I need to, however, leave the discussion on temporal aspects of natural language for another occasion.

<sup>16</sup>Barwise and Perry (1983) propose that we use situations as circumstances of evaluation to realize this idea. But their proposal would not work because a sentence may contain more than one context-sensitive DP and has to be evaluated with respect to more than one restricted domain, as pointed out by Soames (1986). What we need is a way to represent multiple discourse domains at the sub-sentential level. Situation pronouns do exactly that job.

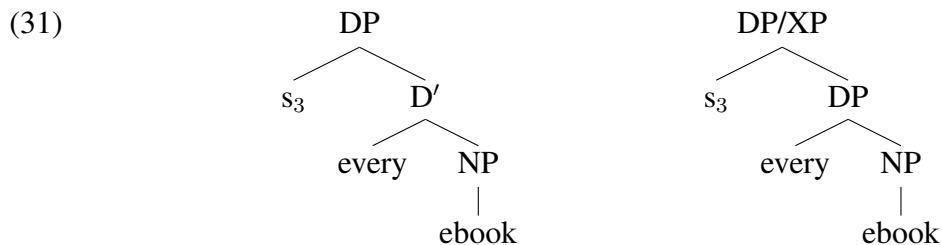
domains.

How exactly is a nominal associated with a situation? There exist a number of syntactic and semantic possibilities that compositionally realize this basic idea. For concreteness, following Schwarz (2009, 2011), I assume that some determiners take a situation pronoun as one of its arguments.<sup>17</sup> For example, consider the universal quantificational determiner *every*, which can be seen as mainly specifying the relation between two predicates or properties (Barwise and Cooper, 1981). The sentence *every cat is cute* basically means that everything that counts as a cat also counts as a cute thing. We introduce a situation into this basic meaning by creating a situation argument slot that the quantifier *every* needs to saturate. More specifically, the lexical meaning of *every* can be expressed as follows:

$$(30) \quad \llbracket \text{every} \rrbracket^g = \lambda F_{\langle e, \langle s, t \rangle \rangle} . \lambda s . \lambda G_{\langle e, \langle s, t \rangle \rangle} . \lambda s' . [\forall x : F(x)(s)] [\exists s'' : s'' \sqsubseteq s'] (G(x)(s''))$$

So *Every F is G* is true with respect to a situation  $s'$  just in case everything that is  $F$  in a certain situation  $s$  is  $G$  in  $s'$ .<sup>18</sup>

Syntactically, the internal structure of a DP can be expressed as follows:



A determiner head is first combined with a nominal predicate, and then with a situation

<sup>17</sup>To the first approximation, the strong determiners, such as *most* and *every* can have the interpretations independent from the matrix clauses (Musan, 1997). The strong determiners are the good candidates for a class of expressions that have a situation argument slot.

<sup>18</sup>The existential quantification introduced by the entry will play a role in accounting for the bound readings of DPs. This is also one of the major differences I have from Schwarz's particular system. See Section 4.2.3.

pronoun  $s_i$ . I do not know what syntactic status a situation pronoun should be assigned. I leave the question open by noting two different possibilities as in (31).

The syntactic and semantic detail of this treatment of determiners is not identical to Schwarz's or Elbourne's (in preparation) treatment of determiners. (31) is in agreement with Schwarz's and Elbourne's proposals in that a situation pronoun is not a sister of an NP.<sup>19</sup> However, they treat situation pronouns as sisters of determiners, being the first argument of a determiner as in (32). By contrast, I treat a situation pronoun as a specifier or an adjunct of a DP, or as an independent head, as in (31).



Semantically, as in (30), I let a determiner be saturated with a property first to form an individual concept of some sort, which creates a standard restricted quantifier once combined with a situation. Overall, the determiner *every* is just an expression that creates a restricted quantifier. There is no difference as a whole between my account and Schwarz's or Elbourne's.

The reason for making my account slightly divert from Schwarz's and Elbourne's is my working hypothesis that Japanese descriptions have no determiner head, which I will discuss and defend in Chapter 5. Without a determiner head, a situation pronoun would lose its landing site if (32) is the correct configuration. English definite descriptions (e.g., *the ebook*) have the same structure as (32), where the definite article is the determiner head. Japanese descriptions, however, have no overt article. In Chapter 3 I have already

<sup>19</sup>Elbourne (2008) also presents an argument for treating a situation pronoun as a complement of a determiner head rather than a sister of NP based on the lack of bound reading in Saxon genitives. But he also reports that the data are very subtle, and that there is a counterexample to his argument (p.c.).

discussed the possibility that Japanese is indeed an NP language where an argument lacks a determiner layer. If there is no covert determiner projection inside a description in Japanese, then the structure like (32) is not applicable to Japanese. Thus, I assume (31) to be on the right track so that the existence of a determiner is not a prerequisite for a situation pronoun. I will argue that the semantic value of a Japanese NP gets type-shifted to be equivalent to an English definite description. A situation pronoun can be combined with an English *the*-NP or type-shifted Japanese NP. (31) permits a parallel analysis of Japanese descriptions as we will see in Chapter 5.

Consider the sentence (11) *Every bottle is empty* again, upon which the interpreter can impose a structure like (33a) below. Following Elbourne (2008) and Schwarz (2009), I assume that a situation pronoun is not a sister of a predicate. A predicate is of type  $\langle e, \langle s, t \rangle \rangle$ , and cannot be combined with a situation argument immediately. (33a) contains two explicit situation pronouns: one is an occurrence of *s*-PRO and the other is an ordinary situation pronoun. I am assuming that verbs project a structure that includes an instance of *s*-PRO.<sup>20</sup> In (33a)  $s_3$  is created by the movement of *s*-PRO<sub>3</sub>. On the other hand,  $s_8$  is there because the quantifier requires a situation argument, not merely because the meaning of the noun *bottle* is intensional.

- (33) a.  $s\text{-PRO}_3 [ s_3 [ [s_8 [ \text{every bottle} ] ] \text{ is empty} ] ]$   
 b.  $\llbracket (33a) \rrbracket^a = \lambda s . [\forall x : \text{bottle}(x)(a(s_8))] [\exists s' : s' \sqsubseteq s](\text{empty}(x)(s'))$

(See Appendix A for derivation)

The situation pronoun  $s_8$  is unbound and receives its interpretation via an assignment

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<sup>20</sup>This is the same assumption made by Percus (2000, 186).

function. Recall that a predicate such as *bottle* is not merely true of bottles, but true of bottles that *is in* some or other situation. The constituent of the logical form ‘ $\text{bottle}(x)(a(s_8))$ ’ in (33b) must be understood in that sense. The LF (33a) expresses under an assignment, say  $a$ , the proposition that gives Truth to any situation in which every bottle in  $a(s_8)$  is empty. So the utterance is not about any bottle. It is about the bottles in a particular situation denoted by  $a(s_8)$ .

It is worth mentioning that the phrase *every bottle* in this context can be seen as a rigid designator because its semantic value does not shift even if it is embedded inside a modal expression. The value to the coexisting situation pronoun, i.e.,  $a(s_8)$ , remains the same whether the DP is inside or outside a modal expression, assuming that a modal expression does not change a variable assignment. When we evaluate the proposition with respect a counterfactual circumstance, the bottles to be considered are the bottles in  $a(s_8)$ , i.e., the actual bottles in the relevant situation, not any other bottle which happens to be in a counterfactual circumstance. Generally speaking, a use of a complex nominal phrase becomes a rigid designator when the coexisting situation pronoun is unbound.

Consequently, the proposed treatment of DPs addresses the independent interpretations of complex nominals presented in Section 4.2.2. Consider again (26) *Someone in this room could be outside*, whose underlying structure is roughly stated as (34a):

- (34) a. possibly [  $s_7$  [ someone in this room ] ] is outside
- b. There is a possible situation such that some  $x$  in this room in  $g(s_7)$  is outside in that situation

The complex nominal coexists with a situation pronoun, and the modal expression ap-

pears as a sentential operator. (34b) represents the proposition expressed by (34a) with respect to  $g$ . The value  $g(s_7)$  is invariant across any circumstances of evaluation. Thus, assuming that the speaker is talking about the actual world, the phrase [  $s_7$  [ someone in this room ] ] rigidly quantifies over those who are actually in the demonstrated room. We will see further discussions on the interactions between situation pronouns and modal or propositional attitude expressions later in Section 4.3.2.

The introduction of situation pronouns inside nominal phrases solves at least two problems at once. First, it accounts for implicit domain restriction, i.e., the context-dependent semantic contributions of DPs. Second, it accounts for why some uses of nominal phrases, including proper names, definite descriptions, and quantificational phrases, are rigid designators.<sup>21</sup>

## Bound situation pronouns

I have discussed the cases where situation pronouns are not bound and contextually denote particular situations. Situation pronouns can also be bound in a variety of ways. Here I will focus on the cases where the values of the coexisting situation pronouns interact with the interpretations of other DPs, which results in the bound or co-varying interpretations of DPs. But how could a DP bind a situation pronoun existing in another structurally lower DP? On Stanley's complex-variable account,  $i$  is a variable over individuals. So  $i$

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<sup>21</sup>Of course, I do not pretend that this is the end of our theorization of deictic pronouns. We need to supplement a theory of pronoun resolution, which is anyway required to account for our understanding of (im)personal pronouns. The pronoun  $it_{12}$  above could denote a variety of objects depending on the contexts of utterance. Its denotation could be an object that the speaker is momentarily perceiving. It could be an object perceived in past, an imaginary object, or an object mentioned earlier in conversation. The situation pronoun  $s_8$  could also denote various situations. One of the possible denotations is Hannah's house in the scenario, which would compositionally yield the appropriate interpretation. I will provide some metalinguistic considerations on the choice of the denoted situation later in 4.3.2.

can be bound by a regular quantifier over individuals such as *every*, which is how  $f(i)$  and the individual variable  $x$  in the higher DP co-shift their values. How could a situation pronoun  $s$  and an individual variable  $x$  shift their values together?

Kratzer (2004) suggests that the semantics of quantifiers includes quantification over situations and ‘matching functions’ discussed by Susan Rothstein (1995). Rothstein (1995) introduces the notion of matching function to account for adverbial quantificational phrases such as those within the brackets below:

- (35) a. [Every time the bell rings], Mary opens the door.  
b. I met a friend [every time I went to the bakery].

For (35a) to be true, Mary must open the door each time when the bell rings. There must be at least as many door-opening events as there are bell-ringing events. That means (35a) cannot be represented as follows:

- (36)  $\forall e(e \text{ is a bell-ringing} \rightarrow \exists e'(e' \text{ is Mary's opening of the door}))$

For (36) allows the possibility that a single opening of the door by Mary corresponds to all bell-ringing events.

It is interesting to compare (35a) with (37), whose logical form might be very similar to (36).

- (37) Every girl saw a film

The difference between (35a-b) and (37) is that (37) has two readings, not one; (37) has both collective and distributive readings, whereas (35a-b) only permits something corresponding to the distributive reading. A use of (37) is compatible with the circumstance in which all the girls together watched a single film, while (35a) excludes such a collective

reading where one and the same door-opening is paired with multiple bell-rings. Similarly, the natural reading of (35b) is that I met a friend at least as many times as I went to the bakery. Thus, the logical form of (35a-b) must be different from (36).

What piece of information is missing from (36)? There has to be some way to encode distributivity on the logical form. Rothstein proposes that we can relate two events by introducing a certain adverbial phrase. The adverbial phrase is a predicate of the lower event variable, but it is also bound by the higher universal quantifier. The logical form of (35a) includes what she calls a ‘matching function’  $M$ :

$$(38) \quad \forall e(e \text{ is a bell-ringing} \rightarrow \exists e'((e' \text{ is Mary's opening of the door}) \wedge M(e') = e))$$

where  $M$  maps one event onto another, never onto more than one event. In other words,  $M$  relates each bell-ringing event to a particular response Mary made to that event. For (38) to be true, Mary must open the door at least once for each bell-ringing event. Otherwise,  $M$  would have to map one and the same door-opening event onto multiple bell-ringing events. Suppose that there are two bell-rings  $e_a$  and  $e_b$ , but there is only one Mary’s opening of the door  $e_1$ . If the instantiation of (38) with respect to  $e_a$  and  $e_1$  is true, then that of (38) with respect to  $e_b$  and  $e_1$  would be false. For now it holds that  $M(e_1) = e_a$ , and thereby,  $M(e_1) \neq e_b$ .

According to Rothstein, a matching function  $M$  is the semantic value of an empty preposition, which takes the preposed adverbial phrase as its complement as below.

$$(39) \quad [\text{every time the bell rings}]_1 \text{ Mary opens the door } [\text{PREP } [t_1]]$$

Here PREP is a syntactic item whose meaning is  $M$ , the exact content of which is determined by a context. The distributive reading based on a matching function is thereby



mandatory for any sentence that contains an adverbial quantifier analogous to (35a-b). Rothstein compositionally derives the logical form (38) based on the structure (39). What is important for us is that a matching function can relate a quantificational phrase to an independent clause without the former directly binding the latter.

Now let us turn to the co-varying interpretations of complex nominals, by which I mean the sentences like those below.

(16) Everyone answered every question.

(40) Every farmer who bought a donkey vaccinated the donkey.

A matching function might be helpful here because it connects two independent phrases without requiring one phrase to directly bind the other. Perhaps a matching function can connect the subject and object of the sentences. The sentences (16) and (40), however, contain no preposition nor adverbial quantifier, which we saw in Rothstein's examples. Where could a matching function come from?

Kratzer's answer is to integrate a matching function into the lexical entry for *every* so that a matching function is introduced at the logical form.<sup>22</sup> But I think that is problematic. (40) is analogous to (37), which permits both collective and distributive readings unlike Rothstein's examples. As we discussed the parallel cases in Section 4.2.3, (40) has a reading in which all farmers vaccinated one and the same contextually salient donkey.

<sup>22</sup>We can easily realize Kratzer's suggestion within our system.

$$(a) \llbracket \text{every} \rrbracket^g = \lambda F_{\langle e, \langle s, t \rangle \rangle} . \lambda s . \lambda G_{\langle e, \langle s, t \rangle \rangle} . \lambda s' . [\forall x : F(x)(s)] [\exists s'' : s'' \sqsubseteq s' \wedge M(s'') = x] (G(x)(s''))$$

Based on this lexical entry for *every*, we can derive the bound interpretation of (16) as follows:

$$(b) [s_4 \text{ Every one}] \text{ answered } [s_1 \text{ every question}]$$

$$(c) \lambda s . [\forall x : \text{person}(x)(g(s_4))] [\exists s' : s' \sqsubseteq s \wedge M(s') = x] [\forall y : \text{question}(y)(s')] (\text{answered}(x)(y)(s'))$$

This is also more or less what is presented in (Schwarz, 2009).

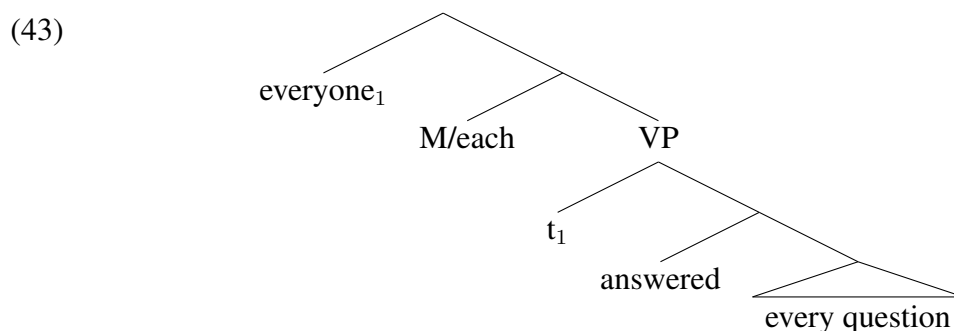
We are not forced to have the other distributive reading in which each farmer is paired with a different donkey. Thus, we do not always have to have a constituent in a logical form that represents a matching function  $M$ . However, as long as we encode a matching function into the lexical meaning of a quantifier, a matching function is mandatorily present at the logical form. Schwarz suggests that a matching function in *every* is sometimes semantically vacuous. This is certainly possible because a context of utterance can change the meaning of *every* accordingly. Then, however, we would be claiming that *every* itself is a context-sensitive indexical expression, which seems to be counterintuitive. Fortunately, there is an alternative way to represent a matching function in the sentences like (16) and (40).

I want to suggest that the bound readings of (16) and (40) are triggered by some independent constituent of a sentence, which is similar to *each*.

(41) Everyone each/M answered every question.

(42) Every farmer who bought a donkey each/M vaccinated the donkey.

Syntactically, I assume that  $M$  is combined with a VP or somewhere below the highest quantificational phrase. Something like the following describes the LF of (41):



Semantically, I propose the following lexical semantic value for  $M$ , which treats it as an indexical:

(44) a.  $\llbracket \mathbf{M} \rrbracket^g = \lambda x . \lambda s . M(s) = x$

where  $M$  is a value that  $g$  assigns to  $\mathbf{M}$ .<sup>23</sup>

- b.  $M(s) = x$  is true if and only if  $s$  contains the participants of an instance of a contextually determined kind of event, where  $x$  is one of its participants, and  $s$  excludes the participants of other instances of the same kind of event.

The expression  $\mathbf{M}$  is a predicate of type  $\langle e, \langle s, t \rangle \rangle$ , which is adjoined to the main VP. What  $\mathbf{M}$  does is modify the main predicate by imposing some restriction on it. The clause  $M(s) = x$  holds just in case the situation  $s$  fulfills a certain condition with respect to the individual  $x$ . I suggest that the condition is understood in terms of events as in (44b).

Let us consider (16), which I assume to be implicitly understood as having the structure (41). Given the lexical entry (44), we can obtain something like the following as the proposition expressed by (16) with respect to  $g$ .

(45)  $\lambda s . [\forall x : \text{person}(x)(g(s_1))][\exists s' : s' \sqsubseteq s][\forall y : \text{question}(y)(s')](\text{answered}(x)(y)(s') \wedge M(s') = x)$

See Appendix A for the derivational details. But the result can be easily conceived because  $\mathbf{M}$  is merely another predicate of type  $\langle e, \langle s, t \rangle \rangle$ , which can be added to the content of the main VP via Intensional Predicate Modification. What would be the role of its semantic value, i.e.,  $M$  given a certain context? Suppose that there are three philosophy graduate students who took a qualifying exam at the same time. Each was assigned three different questions with no overlap, which focus on her areas of specialization. All three answered all three assigned questions. In this context  $M(s') = x$  holds just in case  $s'$  only

<sup>23</sup>So, strictly speaking,  $M$  should be written as  $g(M)$ . But I use  $M$  for simplicity.

includes the participants of an event of taking a qualifying exam at that time, where  $x$  is its one of participants.  $s'$  includes the participants of the event other than  $x$ , i.e., the exam  $x$  answered. Crucially, for each student  $x$ , there is a distinct situation to which  $M$  applies. One student's taking her qualifying exam is a distinct event from another student's doing so. Thus, the questions on the exam in  $s'$  are the questions assigned to  $x$ . (45) is the proposition that, for each person in a certain situation  $s_1$ , there is a situation such that it contains the questions assigned to that person, and the person answered every question in it.

I have presented an indexicalist theory of domain restriction within the situation semantic framework. The matching indexical  $M$  connects two separate DPs at the level of semantic composition. Appendix B shows further evidence in favor of the existence of situation pronouns. However, I am open to the possibility that a contextualist theory will be developed to account for all the data discussed in this chapter and Appendix B without multiplying object-language pronouns. For example, Recanati (2004) uses situation indices not as object-language pronouns, but as variables at some level of linguistic representation. At any rate I have at least shown what kind of complexity an analysis of complex nominals should include within itself to account for the co-varying interpretations.

We have already accumulated a great deal of resources to account for the uses of proper names by discussing the general properties of situation pronouns and their roles in complex nominal interpretations. We can now account for implicit domain restriction or the context-dependence of complex nominals, which in turn explains why the speaker can talk about this particular Mary, not any other Mary in the world. We can also account for

how a complex nominal can be used as a rigid designator, which is, of course, one aspect of the singular use of a proper name. The introduction of matching functions is heading toward the exposition of the bound use of a proper name. I will come to these issues later in this chapter. Before doing so, I like to discuss what a definite description is because I basically identify the singular and bound uses of a proper name with a use of a definite description.

### 4.3 The Presuppositional Analysis of Definite Descriptions

I adopt a so-called Fregean-Strawsonian analysis of definite descriptions, which treats descriptions as singular referring expressions with presuppositional content. I initially introduce it extensionally with no reference to situations. I will then incorporate it into the presented situation system to accommodate a broader range of cases.

#### 4.3.1 The analysis without situations

(46) is a theoretical statement of what competent English speakers know about definite descriptions. Recall that the singular and bound use of a proper name in English is a DP headed by an unpronounced determiner  $\emptyset_\gamma$ . I claim that the lexical meanings for *the* and  $\emptyset_\gamma$  are nearly identical.

$$(46) \quad \llbracket \text{the}/\emptyset_\gamma F \rrbracket^g = \begin{cases} \iota x(Fx) & \text{if there is one and only one } F; \\ \text{undefined} & \text{otherwise} \end{cases}$$

‘ $\iota x(Fx)$ ’ is a metalanguage logical name for the element of a singleton set determined by  $F$ .<sup>24</sup> In other words, ‘ $\iota x(Fx)$ ’ is a *complete* symbol in our metalanguage that denotes an object that  $F$  is true of, not an abbreviation of something else, as opposed to Russell’s (1905) theory of descriptions, in which there is no constituent in the logical form of an utterance that corresponds to a definite description. According to Russell, a(n) (in)definite description is an incomplete term for which only a contextual definition is appropriate. Subsequent authors who endorse a Russellian quantificational analysis of definite descriptions attribute some constituent in logical form to descriptions. Stephen Neale (1990), for example, claims that a definite description corresponds to a restricted quantifier of the form ‘[the  $x: F(x)$ ]’. In model theoretic terms, a Russellian analysis can also assign to a definite description a property of properties (a characteristic function of sets) as its semantic value. In this light whether a definite description is analyzed as a complete symbol or not is probably not an important question. The essential difference between a Fregean-Strawsonian analysis of definite descriptions and a Russellian analysis is that the former attributes no scope to a definite description because it is a referring expression, whereas the latter attributes scopal properties to descriptions. I will discuss the alleged scopal properties of definite descriptions in Section 4.4.<sup>25</sup>

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<sup>24</sup>So the term ‘ $F$ ’ is loosely used as both object-language and metalanguage expressions. I permit such a loose locution when no confusion arises.

<sup>25</sup>There is another difference between Fregean-Strawsonian and Russellian analyses if we adopt a structured propositions view of the semantic values of utterances. The former analysis considers the semantic value of an utterance that contains a definite description ‘object-dependent’ because the existence of the sentential semantic value depends on the existence of the object that is the semantic value of the description (Neale, 1990, 15-19). By contrast, the latter treats the semantic value of the utterance as being ‘object-independent’ or ‘general’ because the definite description signifies a relation between two properties or sets; whether there is a unique object that have the properties has nothing to do with the existence of the sentential semantic value.

Although many philosophical concerns arise at this juncture, I mentioned this difference just to put it aside. Russell’s own epistemological constraints might provide substantial advantages to Russellian analyses because one might think that we can barely get acquainted with an object-dependent proposition, and

According to (46), the semantic value of a description *the F* is nothing but a particular individual. As long as ‘ $\iota x(Fx)$ ’ felicitously appears, there is a single *F*. Thus, it holds that, for any *F* and *G*,

$$(47) \quad G(\iota x(Fx)) \rightarrow \exists x(Fx \wedge \forall y(Fy \rightarrow y = x)).$$

It also entails that, whenever it is that  $G(\iota x(Fx))$ , (48) holds, which is equivalent to Russell’s theory of descriptions, when the description takes scope over any element in *G* or it has its ‘primary occurrence’ in Russell’s terms.

$$(48) \quad \exists x(Fx \wedge \forall y(Fy \rightarrow y = x) \wedge Gx)$$

The semantic value of an utterance that contains a definite description corresponds to ‘*Gx*’ while the rest of (48) corresponds to the presupposition of the definite description. Thus a definite description is analyzed not as a quantificational phrase, but as a singular referring phrase.<sup>26</sup>

Furthermore, I suggest that the lexical knowledge of the definite article *the* pertaining to the meaning is captured by the following:

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that the former analysis requires always requires object-dependent propositions. However, first of all, it is not very clear what range of objects we have direct acquaintance with, if we do not agree with the later Russell’s sense-datum position. We might as well have direct acquaintance with many different objects that we refer to with definite descriptions.

Second, the distinction between object-dependent and independent propositions seems to disappear if we define a proposition in terms of sets of truth-supporting circumstances.

Last, as I will argue below, the standard Russellian analysis is descriptively inadequate. It will be shown that a Russellian quantificational analysis generates many more readings than actually observed; the analysis fails as an empirical theory that account for some aspect of human natural language, whether it is conceptually desirable. Epistemological considerations might be useful when we have more than one equally adequate theory of descriptions.

<sup>26</sup>I consider a quantificational phrase to be able to take different scopes with respect to other operators. A quantificational determiner, such as *every*, is an expression that specifies the relations between two predicates. See Elbourne (2005, 99, fn.7) for a related point. Assuming that Russell analyzes definite descriptions as quantificational phrases, the rule (46) is non-Russellian. Heim (1991) precisely formulates and defends the rule (46). Also see Heim and Kratzer (1998); Elbourne (2005); Glanzberg (2009) for further arguments in favor of the analysis.

$$(49) \quad \llbracket \text{the} \rrbracket^g = \lambda F_{\langle e,t \rangle} : \exists! x(F(x)) . \iota x(Fx) \quad (\text{Extensional version})$$

The semantic value of *the* is the function defined only over singleton sets or their characteristic functions. That is, *the* can be felicitously combined only with a predicate that is true of just one thing. Thus, the semantics of the definite article is structurally different from that of quantifiers presented earlier.

This kind of lexical meaning leads to a presupposition, which I understand in Stalnakerian terms in the sense that presuppositions are properties of the speakers' mental states (Stalnaker, 1972, 1973, 1975). As far as a speaker is performing a speech act, the speaker assumes her utterance to have a semantic value. However, if any constituent of the utterance is valueless, then the whole would also be valueless. Therefore, a speaker of an utterance also assumes the facts that allow every constituent of the utterance to have a semantic value. As for a use of the definite article *the*, the user must be assuming that the combined predicate determines a singleton set. Otherwise, the value of the description would be undefined, making the user's utterance valueless.<sup>27</sup>

From the interpreter's viewpoint, semantic knowledge like (52) allows an interpreter to assume that a speaker is in a certain mental state, namely, that the speaker makes a certain assumption about the world. A sincere use of *the F* allows an interpreter to attribute a belief equivalent to the Russell's uniqueness condition to the speaker, which is the presupposition of the description. Interpreting others is, to say the very least, a complex task, sometimes involving linguistic capacities, and sometimes not. There are several different ways to attribute mental states to others. For example, people have an innate abil-

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<sup>27</sup>I used the term 'Stalnakerian' because I will not appeal to the notion of intersubjective 'common ground' and that of the subtler propositional attitude 'accepting' unlike Stalnaker himself. Such notions would play no explanatory role at least for the cases we discuss in this chapter.



ity to attribute various beliefs and desires to others ('theory of mind' or 'mindreading'), whatever systems underly the ability.<sup>28</sup> Facial expression recognition is another capacity that enables us to attribute an emotional state to others, whose underpinnings are probably not rule-based. It is not surprising if we find a use of some lexical entry leads to a belief attribution.<sup>29</sup>

Notice that the presuppositional content of a definite description should be ultimately analyzed as context-sensitive because the interpretations of complex nominals shift relative to situations, and, since the definite article is a strong determiner, we can expect it to have a situation argument slot. It is hard for the interpreter to tell if the semantic value is really undefined even when the interpreter knows that there is no *F* or are more than one *F* in the non-relativized sense of the term *F*. On many occasions, the attribution of the belief that there is a unique *F* in the relevant situation can keep the speaker more or less rational because the interpreter can change her own belief or choose an appropriate situation.

Suppose I said to you the following:

(50) I need to pick up my brother at the airport.

Following (46), you would attribute to me the belief that there is one and only one brother in some relevant situation, and based on the derivation of the meaning, you would think

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<sup>28</sup>See (Nichols and Stich, 2003; Goldman, 2006; Carruthers, 2011) for competing pictures of mental state attributions.

<sup>29</sup>Strawson's (1950) remarks can be seen as being on the same line, 'if a man seriously uttered the sentence ["The king of France is wise"], his uttering it would in some sense be *evidence* that he *believed* that there was a king of France' (298, emphasis in original); 'one of the conventional functions of the definite article is to act as a *signal* that a unique reference is being made — a signal, not a disguised assertion' (299, emphasis in original).

that I said that I need to pick up that person.<sup>30</sup> The rule (46) always applies to recognized tokens of *the F*. Whether you in fact know if I have a brother does not affect the application of such basic semantic knowledge. If you do not know that I have a brother, and take me to be a credible person, then you would entertain a situation that contains exactly one brother of mine. This is how the phenomenon sometimes called ‘accommodation’ takes place. There is no need to develop new linguistic notions and rules other than the basic understanding of our psychology.

I have been relying on an intuitive understanding of the notion of relevant situation. Now I want to incorporate our situation semantic system into the presented analysis of definite descriptions.

### 4.3.2 The analysis with situations

Let us now revise the presented analysis of definite descriptions within our situation semantic framework. The following rules for definite descriptions are basically parallel to our treatment of quantificational determiners in Section 4.2.3. A situation pronoun is the second argument of a definite article.

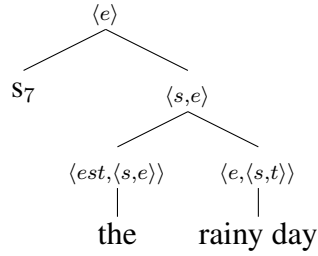
$$(51) \quad \llbracket s_i \text{ the } F \rrbracket^g = \begin{cases} \iota x(F(x)(g(s_i))) & \text{if there is one and only one } F \text{ in } g(s_i); \\ \text{undefined} & \text{otherwise} \end{cases}$$

$$(52) \quad \llbracket \text{the} \rrbracket^g = \lambda F_{\langle e, \langle s, t \rangle \rangle} . \lambda s : \exists! x(F(x)(s)) . \iota x(F(x)(s)) \quad (\text{Situation version})$$

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<sup>30</sup>It is also worth noting that there is no implication that I have only one brother here. The uniqueness requirement seems to be relativized to some discourse domain, which can be given by a contextual situation.

(53)



For example, (53) denotes with respect to  $g$  the unique rainy day in a certain situation denoted by  $g(s_7)$ . Below I will apply this situation-based analysis to a variety of uses of definite descriptions, which have been extensively discussed in the philosophical and linguistic literature. I will again separate and discuss the two distinct uses of situation pronouns in turn, i.e., the unbound and bound uses.

### Deictic situation pronouns

I have assumed that a variable assignment provides what is necessary for deriving what the speaker intends to say. For example, the semantic value of a personal pronoun, say,  $g(\text{him}_{11})$  is an element on some sequence determined by a variable assignment. But nothing within the semantic system guarantees that the element is the very individual that the utterer intends to talk about with the expression *him*. I have simply assumed that the variable assignment is suitably restricted so that it reflects the speaker's intention. One might wonder how exactly the interpreter figures out which variable assignment is suitable for understanding the utterance. This is, however, a metasemantic question concerning pronoun resolution, which I cannot address in the current work. I take the same attitude toward situation pronouns. The presented semantic system can adequately specify the semantic contributions of deictic situation pronouns. How exactly agents resolve the pronominal ambiguities is not a question solvable within a first-order semantic theory.

However, one might have been alarmed by my casual remarks such as ‘ $g(s_6)$  denotes Hannah’s house’, ‘ $g(s_1)$  is the relevant situation’, and so forth. We are now dealing with unpronounced pronouns unlike the familiar *she* and *it*. Can we treat situation and personal pronouns in a completely parallel fashion? What is the ‘relevant situation’ denoted by a certain situation pronoun? How is it possible that a speaker ‘uses’ an unpronounced expression?

To address these questions, I propose that we conform to the following generalization in interpreting a use of a definite description that contains an unbound situation variable.

(S) *Metasemantic generalization*

For any situation pronoun ‘s’ that remains unbound in a definite description, assign ‘s’ the situation intended by the speaker.

I make a plausible assumption that we normally have some insight into the speaker’s knowledge and attention state. The interpreter is able to infer the intended referent or what the speaker has in mind based on behavioral cues and other information. Our use of a personal pronoun illustrates what I mean by ‘the intended referent’. When a speaker uses, for example, *he* to talk about a particular individual, the speaker is in some cognitive state that is somehow related to the referent of the use of *he*. There are several different cognitive states that the speaker can be in. The referent might be in the focus of attention by being the object of visual perception. Or perhaps the referent is temporarily represented in short term memory; the speaker has activated or recalled a percept of the referent. The speaker is not always in such an epistemically privileged position. The

speaker might just entertain or imagine the referent of a use of *he*.

(54) Someone hit my car. He might still be around. I parked here only for a few minutes.

Although the speaker of (54) has never met the referent of the pronoun *he*, the speaker is capable of thinking about the referent with the use of *he*. The speaker represents the referent of a use of a linguistic sign in some way or other. By ‘the intended referent’, I mean an individual that is represented by the speaker in some such way.

A situation is an individual that can be intended by the speaker, just as a male person is an individual that can be intended by the speaker. Of course, being a referent of an overt expression such as *he* must be different from being a referent of a covert expression, which is something, by definition, no speaker is aware of. A speaker does not literally ‘intend’ anything by ‘using’ something she is never aware of.

I suggest that the intended situation is the background of what the speaker intends to talk about. By means of an example I can best illustrate the point. Consider a typical ‘incomplete definite description’ in Strawson’s (1950) sense, which might also be seen as an instance of ‘the referential use’, following the terminology by Keith Donnellan (1966). Suppose that (55) is used to comment on a particular table right in front of the speaker.

(55) [  $s_5$  the table ] is covered with books.

In this scenario the table is in focus of the speaker’s current attention or very recently presented to the speaker’s consciousness. I want to point out that, in addition, the speaker represents where the table is situated as the background of her visual perception. This is a familiar Kantian theme. Objects never appear in isolation with settings. It seems

to me highly unlikely that, when I see a table in a room, I see absolutely nothing else but a table; at least at the sub-personal level, I must be seeing the floor on which the table is located, the further corner of the room, etc. The situation represented as the background of the speaker's referent is the intended situation.

Following (S), the semantic value of  $s_5$  in this particular context of utterance is the situation that includes the table. The background situation would not be too large to include some other table. If the background scene included more than one table, then the speaker would be representing more than one table, which would make her use of the description infelicitous. The description [  $s_5$  *the table* ] denotes a unique individual that is in the background situation and counts as a table. There is only one such thing. Thus, the description in this context successfully denotes a unique object. The background situation provides enough restriction to uniquely identify a table.<sup>31</sup>

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<sup>31</sup>Neale (1990, 95) characterizes various attempts to solve the problem of incomplete descriptions with two labels: the explicit and implicit approaches to the problem of incompleteness. According to the explicit approach, incomplete descriptions are 'elliptical', and contexts provide the 'complete' descriptive contents, i.e., uniquely designating descriptions. According to the implicit approach, the context of utterance delimits the domain of quantification so that the descriptive content as it is uniquely designates an object.

I think that these two labels are too broad and underspecified to carve the logical space. But they help us locate where my own analysis stands in comparison with other analyses. My analysis has the characteristics of both explicit and implicit approaches. Neale might call it the 'hybrid approach' (Neale, 2005). On my own account, an incomplete description is elliptical in two senses. First, I claim that every definite description syntactically includes an unpronounced contextual variable, ranging over situations. Such a variable is elliptical in the sense that it never appears on the surface syntax. Variables demand interpretation just as much as other expressions. So, second, the descriptive content is also elliptical in the sense that it always means more than its surface form suggests.

My analysis also takes the implicit approach. What the contextual variable in a description does is restrict the domain of quantification. The important point for us is that such restriction is the only role that a variable can play. Though it may be unbound or bound, a variable always denotes a situation in which a restricted number of things exist. My analysis is not susceptible to the problems with the earlier attempts on the explicit approach, such as (Sellars, 1954), because it never introduces an arbitrary reference-fixing content.

## More cases

I want to discuss more cases that involve (S), where a definite description denotes a unique object. Strawson's example we have just seen is a case where the speaker's referent is present in front of the speaker.

A second case I want to consider is also an incomplete description, but does not involve an immediate object and a scene that the speaker is currently perceiving. The speaker's referent is not perceptually available to the interpreter. To supplement the nominal predicate, the interpreter uses what the speaker recalls or entertains as the relevant background scene.

(56) I've just been to a wedding. [  $s_2$  The bride ] wore blue. (Lyons, 1999, 7)

(57) [Nurse entering operating theatre]

I wonder who [  $s_1$  the anaesthetist ] is today. (Lyons, 1999, 7)

(58) My neighbor has a dog. [  $s_7$  The dog ] kept me awake last night.

The predicate *bride* in the description in (56) is not uniquely identifying without restriction. But a bride always appears in a certain setting. The speaker must be representing some background scene in which the speaker conceives of the foreground object, the bride. The audience has no difficulty in hypothesizing which scene it is that the speaker is entertaining because the speaker has mentioned something that corresponds to the background situation, i.e., the wedding she has just been to. The intended situation, the value of  $s_2$ , in this context of utterance is the situation that is as large as the mentioned wedding. Assuming that a regular wedding includes only a pair of bride and groom, the definite description in (56) successfully denotes the bride that the speaker means to talk about. Many

anaphoric uses of definite descriptions fall under this type of situation use. Likewise, as for (58), when the antecedent sentence is understood, the interpreter can infer that the speaker represents some background situation in which the neighbor has a dog. Everyone has a dog in some spatiotemporal region. The description *the dog* can thereby be understood as denoting the unique dog in that situation, i.e., no other but the neighbor's one. (57) is the case in which the intended situation is not explicitly stated, but it can be easily inferred based on shared knowledge.

A third case is where the intended situation is much larger than the previous ones. Suppose that (59) and (60) are used 'attributively' in the sense of (Donnellan, 1966) without knowing which individual fulfills the descriptive content.

(59) [  $s_1$  The murderer of Smith ] is insane.

(60) [  $s_3$  The president of Trinidad and Tobago ] is probably rich.

The intended situation in this type of case is basically the same as the previous one, the entertained background scene. Additionally I suggest that the intended situation can be as large as a possible world or its temporal slice.

First of all, notice that there has to be some intended situation for either description because the nominal predicates are probably not uniquely identifying. The former case *the murderer of Smith* could be used to describe an imaginary scenario without referring to any actual individual; *the president of Trinidad and Tobago* could also be concerned with some former or future president, not the current one. The speakers of these descriptions must be representing something that provides the restriction. My claim is, of course, that situations as parts of possible worlds provide the restricted domains.



By uttering (59) the speaker expresses a certain attitude toward the world she lives in. The speaker takes a certain fact to hold in the actual world or the world to contain such a fact, namely, that whoever killed Smith is insane. She does not know who and where the murderer is at the point of utterance. But she believes that the world she lives in contains a part in which there is a unique murderer of Smith. The interpreter can infer that the speaker is representing such a situation/world in uttering (59). The intended situation that belongs to the descriptive content is such an actual situation that includes the unique murderer. The occurrence of the description denotes, thereby, whoever is counted as having murdered Smith in such a situation in the actual world, i.e., the actual murderer of Smith. As for (60), without further contextual information, the speaker is most likely to be talking about the current president of Trinidad and Tobago. The intended situation is a temporal slice of the actual world that includes the utterance time, but does not go beyond much further. The nominal predicate *president of Trinidad and Tobago* uniquely identifies an individual who is in that slice.

We have discussed the cases in which definite descriptions successfully denote individuals. The speakers in those cases are not much misinformed and the intended situations provide the appropriately restricted domains, in which the nominal predicates of descriptions determine singleton sets. We first started off with a small situation that is immediately and mutually available to both speaker and interpreter. Then we moved up to larger situations. At least for these cases where descriptions are not infelicitous, Donnellan's referential and attributive distinction is not encoded in either semantics or syntax. The semantic analysis of definite descriptions is always the same. But the speaker's mental states and relation to the denoted situation and individual can vary from context to

context.

## Bound situation pronouns—de re/de dicto and beyond

As we have seen in Section 4.2.3, a DP can be bound by a preceding expression (e.g., the coexisting situation pronoun can be bound by an existential quantification introduced by *every*). That is, we can sometimes ‘quantify into’ a nominal expression. Since a definite description is a DP that contains a situation pronoun, it can also be bound by a preceding expression.<sup>32</sup>

First, let me informally present an example. A use of (61) today has two readings.

(61) The president of the United States could be female.

In one reading (61) means that Barack Obama is female in some counterfactual scenario, whereas the other reading makes an obvious point that a female person could be the US president today were the history different. The proposed analysis of definite descriptions indeed makes two readings possible, not because a definite description take two different scopes with respect to a modal expression *could*, but because the situation pronoun inside the description can either remain unbound or bound by *could*. The two distinct interpretations of (61) can be paraphrased as follows:

- (62) a. There is some situation/world  $s$  in which the US president in the contextually salient situation, i.e., Obama, is female.
- b. There is some situation/world  $s$  in which the US president in  $s$  is female.

The truth-conditions of (62a) and (62b) are different. The former may or may not be true

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<sup>32</sup>Kripke (2005, 236) points out that Russell already has an example of a quantified description: *If  $u$  is a unit class, the  $u$  is a  $u$*  (Russell, 1905, 46). My strategy is to allow all descriptions to be bound.

depending on how we understand the term *female* and the sociological/psychological/biological natures of humans. The latter is a plain truth, and such a world even seems very close to the actual world.

Now I want to formally introduce the relevant lexical entries. I will discuss both modal expressions and attitude verbs. This aspect of the analysis is worth dwelling on because it will be crucial to answering Kripke's objections to descriptivism and solve Frege's puzzle later in this chapter.

$$(63) \quad \llbracket \text{necessarily} \rrbracket^g = \lambda p_{\langle s,t \rangle} . \lambda s . [\forall w : w \text{ is accessible from } s](p(w))$$

$$(64) \quad \llbracket \text{possibly} \rrbracket^g = \lambda p_{\langle s,t \rangle} . \lambda s . [\exists w : w \text{ is accessible from } s](p(w))$$

$$(65) \quad \llbracket \text{believe} \rrbracket^g = \lambda p_{\langle s,t \rangle} . \lambda x . \lambda s . [\forall w : w \text{ is compatible with } x\text{'s belief in } s](p(w))$$

For simplicity, I assume that modal expressions such as *could* are sentential adverbs like *possibly* that take propositions as their arguments. They do not shift a world parameter because there is no such thing in our semantic system. But the outcomes are equivalent to the systems whose interpretation functions are relativized to world parameters. I also assume a simple Hintikka style analysis of propositional attitude verbs.

First, consider (66), which is in fact ambiguous given our semantic system and syntactic assumptions.

$$(66) \quad \text{The number of planets is necessarily even.}$$

We have defined the meanings of ordinary words in intensional terms. A predicate *be even* demands to be saturated by not only an ordinary individual argument, but also by a situation argument because of its lexical property.

(67)  $\llbracket \text{be even} \rrbracket^g = \lambda x . \lambda s . x \text{ is even in } s$

As a result *be even* has to be combined with not only the subject of the sentence, but also a situation pronoun as follows: [ s-PRO<sub>i</sub> [SUBJ be even ] ] (it gets an s-PRO<sub>i</sub> because it is the main verb). But the subject also contains a predicate that demands equal privileges. This means that the sentence should have two situation pronouns, whose indices create an ambiguity.

The interpreter imposes either (68a) or (68b) on the utterance of (66).

- (68) a. necessarily s-PRO<sub>1</sub> s<sub>1</sub> [ [ s<sub>4</sub> the number of planets ] is even ] (contra-indexed)  
 b. necessarily s-PRO<sub>1</sub> s<sub>1</sub> [ [ s<sub>1</sub> the number of planets ] is even ] (co-indexed)

(68a) is the case where the situation pronoun in the description is unbound and contextually receives its interpretation. The description in (68a) is thereby a rigid designator because its semantic value, i.e., the number of planets in a certain situation, is the same in any circumstance of evaluation. If the speaker intends to talk about the number of planets in the actual world today, i.e., 8, then the embedded part of (68a) yields a proposition that is true in all possible worlds. Thus, (66) is true when understood as (68a).

By contrast, the description in (68b) is not a rigid designator because it has no fixed semantic value with respect to the circumstances of evaluation against which we evaluate the proposition expressed by the embedded clause containing the description. Due to Situation Binding invoked by s-PRO<sub>1</sub>, the situation pronoun inside the description becomes a variable over situations bound by a universal quantification introduced by *necessarily*. For some worlds *w*, the number of planets in *w* is even; the number of planets in the rest of the worlds are odd, assuming zero is an even number. Therefore, the embedded clause

of (68b) yields a contingent proposition. Thus, (66) is false when understood as (68b).

What is sometimes noted as the *de re* and *de dicto* distinction is now accounted for in syntactic-semantic terms. Notice, however, that this ‘quantifying-in’ approach genuinely replaces Russell’s scope approach to the ambiguities of definite descriptions, not merely substitutes the *de re/dicto* distinction. The bindability of a situation pronoun is not a dual distinction, which would be useless when we consider more than one scope-taking expression as Kripke (1977, 2005) repeatedly emphasizes.

(69) The number of planets might have been necessarily even. (Kripke, 1977)

Russell’s quantificational analysis allows the description in (69) to have three different scopes as follows:

- (70) a.  $[\iota x(Fx)] \diamond \Box(x \text{ is even})$   
 b.  $\diamond [\iota x(Fx)] \Box(x \text{ is even})$   
 c.  $\diamond \Box [\iota x(Fx)](x \text{ is even})$

(69) seems to have a true reading, and (70b) correctly describes that reading. The presented analysis of definite descriptions also creates a three-way ambiguity depending on which operator binds the coexisting situation pronoun, as schematically represented below.

- (71) a.  $\diamond \Box(\iota x(F(x)(s)) \text{ is even})$   
 b.  $\diamond_w \Box(\iota x(F(x)(w)) \text{ is even})$   
 c.  $\diamond \Box_w(\iota x(F(x)(w)) \text{ is even})$

(71a) is the case where the situation pronoun inside the definite description is not bound by

any preceding modal expression. (71a) corresponds to Russell’s outermost scope reading (70a). (71b) is the case where the pronoun is bound by the existential quantification introduced by the possibility modal *might have been*, which is equivalent to Russell’s intermediate scope reading (70b). (70b) is true because, in some world (like ours), eight is the number of planets and eight is necessarily an even number. Similarly, (71c) is the case where the necessity modal binds the situation pronoun in the description, and it corresponds to Russell’s inner scope reading (70c).

## Diagonal propositions

Before turning to propositional attitude reports, I want to note that the strategy I am exploring here is as useful as the introduction of ‘propositional concept’ and ‘diagonal proposition’ proposed by Stalnaker (1978, 1987). Let us one more time look at the bound use of a situation pronoun in (68b). The embedded clause of (68b), repeated below as (72), yields the proposition (73).

(72)  $s\text{-PRO}_1 s_1 [ [ s_1 \text{ the number of planets } ] \text{ is even } ]$

(73)  $\lambda s . \text{ the number of planets in } s \text{ is even in } s$

(73) is the proposition that is true at  $w$  if and only if the number of planets in  $w$  is an even number in  $w$ . Which number we want to consider depends on which circumstance of evaluation we are considering. This proposition is in fact equivalent to Stalnaker’s diagonal proposition.

The general goal of Stalnaker (1987) is to characterize *that P in x believes that P* within a possible world semantic framework without creating any puzzling consequence.

A puzzling consequence, for example, is the following. If *Hesperus is Hesperus* and *Hesperus is Venus* are necessarily equivalent and mean the same thing, then one should either believe or disbelieve both of them at the same time. But it is easy for us to come up with a circumstance in which one believes that Hesperus is Hesperus while disbelieving that Hesperus is Venus. Thus, something must be wrong here. There are a number of different reactions to this kind of puzzle. One reaction is, for example, to define ‘meaning’ in terms of something other than truth-conditions. Then *Hesperus is Hesperus* and *Hesperus is Venus* would not mean the same thing, even if they are necessarily equivalent, and one would not have to believe both at a single time. Another reaction is to reconsider our conception of believing. There are some advantages and challenges in any of such reactions.

Stalnaker has proposed a different strategy. He agrees with Millian theorists in that *Hesperus is Hesperus* and *Hesperus is Venus* contain two coreferential names and thereby semantically express one and the same metaphysical identity statement concerning a single object. Stalnaker, however, denies that *Hesperus is Hesperus* and *Hesperus is Venus* are *always* necessarily equivalent.

I will question the second assumption, that sentences that appear to be necessarily equivalent really are, in the relevant context, equivalent. There is, I will suggest, more complexity and flexibility—and more context-dependence—in the relationship between sentences or sentential complements and the propositions they express or denote. Sentences necessarily equivalent in one context may be only contingently equivalent in another.

(Stalnaker, 1987, 118)

I interpret Stalnaker's passage to suggest that some *use* of *Hesperus is Venus* is necessarily true, as Kripke points out, but some other *use* is merely contingently true.

With this strategy in place, Stalnaker has to overcome two problems: 'What contingent proposition does a sentence like *Hesperus is Venus* express in some relevant context?'; 'How does a sentence express such a proposition?'. Stalnaker fully answered the first 'what' problem, but failed to adequately answer the second 'how' problem. The semantic proposal presented in this chapter solves both problems.

The 'what' problem is solved by introducing a 'diagonal proposition'. In Stalnaker's terms, a 'propositional concept' is a function from possible worlds to propositions. In other words, a propositional concept takes a pair of circumstances of evaluation to determine a truth-value. We evaluate a propositional concept in two steps, with two circumstances of evaluation. A first circumstance of evaluation determines a proposition, which then can be evaluated against a second circumstance of evaluation to yield a truth-value. A diagonal proposition is a propositional concept that takes the same world twice to determine a truth value. That is, we use one and the same world in both steps of evaluating a propositional concept.

According to Stalnaker, *Hesperus is Venus* is associated with a propositional concept, which gives a necessarily true proposition with respect to the actual world, and a necessarily false proposition with respect to some other world. Both *Hesperus* and *Venus* are rigid designators, so the proposition expressed must be necessarily true, if true at all, and necessarily false otherwise. The propositional concept can be represented by (74),



where the vertical series of possible worlds are used for the first step of evaluating the propositional concept, and the horizontal series of worlds represent the ordinary circumstances of evaluation.

(74)

	$w$	$w'$
$w$	T	T
$w'$	F	F

The horizontal rows of (74) ensure Stalnaker’s claim that some use of *Hesperus is Venus* is necessarily true or false. For example, with respect to  $w$  (on the vertical series), the propositional concept determines the proposition that is true with respect all possible worlds (on the horizontal series).

Now, if we look at (74) diagonally from the upper-left, then we can find a contingent series of truth-values (T, F, ...) with respect to each possible world ( $w$ ,  $w'$ , ...). That is, the propositional concept (74) determines a proposition that is only contingently true. Stalnaker claims that this ‘diagonal’ proposition is the contingent proposition that a speaker asserts when she says *Hesperus is Venus*, and also the proposition that a subject believes when she believes *that Hesperus is Venus*. Since this is a contingent proposition, by asserting it, the speaker is non-trivially excluding a certain possibility. And by believing the proposition, the subject non-trivially delineates what kind of world she believes to live in.

What kind of world does the diagonal proposition determined by (74) delineate? On Stalnaker’s view, it can be described in the following way (Stalnaker, 1987). It is the world where Venus appears as the first bright star in the evening, and gets the name *Hesperus*. Some other planet, like Mars, could have appeared as the first bright star in the evening, and have gotten the name *Hesperus*. The proposition excludes such a possibility.

With respect to  $w$ , *Hesperus* is the name of Venus, so *Hesperus is Venus* is of course true. With respect to  $w'$ , *Hesperus* is the name of Mars, so *Hesperus is Venus* is not true. The diagonal proposition excludes such a possibility. By believing *that Hesperus is Venus*, the subject believes to live in a world like  $w$ , not like  $w'$ . Thus, the diagonal proposition determined by (74) seems to capture our intuitions about what the subject believes when she believes *that Hesperus is Venus*.

We have seen Stalnaker's solution to the problem 'What is the contingent proposition a use of *Hesperus is Venus* expresses?'. The diagonal proposition determined by (74) is indeed a contingent proposition. But the question as to 'how' remains challenging for him. Stalnaker suggests that the name *Hesperus* sometimes behaves as if it is a non-rigid designator, which changes its referent across possible worlds. The suggestion directly contradicts with the Millian analysis of proper names as long as it is taken to be a semantic suggestion. It is unclear how exactly we can produce the right kind of propositional concept while retaining the Millian analysis of proper names. Stalnaker also claims that this kind of diagonalization is a Gricean pragmatic effort that a conversational participant performs to make sense of a semantically trivial utterance. He says that '[u]nder certain conditions, the content of an assertion is not the proposition determined by the ordinary semantical rules, but instead the diagonal proposition of the propositional concept determined' (Stalnaker, 1987, 124). So we also have to figure out under what conditions we start using a diagonal proposition, not an ordinary horizontal proposition.

I am not sure if we can consistently develop Stalnaker's story about how to obtain a diagonal proposition. It is clear that, however, we do not need such an additional story because the semantic system we have developed introduces a diagonal proposition as a

product of a regular semantic composition. As we saw in (72), a definite description, which contains a situation pronoun, can introduce a non-rigid designator to the logical form because the pronoun can be quantificationally bound. And argumental proper names such as *Hesperus* in *Hesperus is Venus* are definite descriptions. Thus, in virtue of containing a situation pronoun, an argumental proper name can be a non-rigid designator, which Stalnaker's diagonal propositions need to have. Therefore, the proposed semantics can account for the content of assertion and also attitude attribution without adding any new theoretical component.

### Attitude reports

I want to now turn to the uses of definite descriptions with attitude verbs. As I will point out in Section 4.4, a Russellian quantificational analysis is problematic when a definite description is embedded within an attitude verb such as 'wonder' and 'hope'. For, in a propositional attitude construction, there seems to be no narrow scope reading of a definite description, which is expected from the quantificational treatment of definite descriptions. For example, the narrow scope reading of (75) would imply that a part of what George IV wondered is whether there is one and only one author of *Waverley*.

(75) George IV wondered whether the author of *Waverley* is Scott.

(75) does not seem to have such a reading as discussed in (Heim, 1991; Elbourne, 2005, 2010; Kripke, 2005).

But worse yet, Kripke (2005) points out that the wide scope reading of (75) also has an undesirable outcome. To avoid the complexity of *wonder*, which might be analyzed

as *want to know*, let us consider a different, but analogous *George IV believes that the author of Waverley is Scott*. Here is a paraphrase of its wide scope reading.

(76) There is an  $x$  such that  $x$  alone wrote *Waverley*, and George IV believes that  $x =$   
Scott.

Given the semantics of *believe*, (76) is true in the actual world if and only if there actually is exactly one  $x$  such that  $x$  wrote *Waverley*, and in all possible worlds that are compatible with what George IV actually believes,  $x =$  Scott. Now Kripke asks who an  $x$  is such that the person alone wrote *Waverley* in the actual world. That is of course Scott. And Scott is Scott in all possible worlds. Then the rightmost variable  $x$  is nothing but Scott. So (76) is true if and only if Scott is Scott in all of George IV's belief worlds; it is trivially true as long as George IV is minimally rational. However, of course, we are *not* attributing such a trivial belief to 'the first gentleman of Europe', as Russell found it very disturbing. Thus, Russell's theory is problematic with respect to both narrow and wide scope readings of a definite description in an attitude context.

By contrast, the current proposal can handle both cases. My analysis treats definite descriptions as nondescriptive singular referring expressions, where descriptive contents become presuppositions. It achieves the effect of outermost scope without actually scoping out a description from where it base-generates. It also allows a definite description to be non-rigid by quantifying-in. When the coexisting situation pronoun is co-indexed with the *s*-PRO for the main verb of the embedded clause, the embedded clause expresses a contingent diagonal proposition as follows:

(77) George IV believes  $\lambda s$  [the unique author of *Waverley* in  $s$ ] is Scott in  $s$ .

Who wrote *Waverley* presumably changes from world to world. In some worlds Scott is the author; someone else wrote it in different worlds.<sup>33</sup> Our metalanguage expression ‘[the unique author of *Waverley* in *s*]’ changes what it denotes depending on the value of *s*. Thus, the description *the author of Waverley* is not a rigid designator. (77) is true if and only if in all George’s belief worlds, Scott alone wrote *Waverley*, which is not trivially true. Likewise, when George wondered whether Scott is the author of *Waverley*, George’s belief worlds contain both worlds where Scott alone wrote *Waverley* and those where someone else did it. George wants to know in which group of worlds he lives in.

Notice that we can also attribute a trivial belief or an interest in the law of identity to George IV, if we construe the coexisting situation pronoun to be unbound. The results would be equivalent to Russell’s wide scope readings. I believe that (75) has such a reading, if it is used in a metaphysical conversation.

#### 4.4 Interlude—Quantification and Inevitable Scope

Here I want to present some considerations on scopes that count against a Russellian quantificational analysis of definite descriptions. Any quantificational treatment of definite descriptions entails a variety of scopal properties. When a sentence contains multiple occurrences of quantifiers, its interpretation changes depending on the order of applications of the rules we have for the quantifiers, as we can observe in a familiar example like (78a). Quantifiers also interact with other operators such as negation as in (78b-c).

(78) a. Some philosophy book is read by every linguist.

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<sup>33</sup>One might suggest that a novel is similar to a person, and that no novel can be *Waverley* unless Scott gave birth to it. Then we can use a different example such as *the tallest five year old boy* in the place of *the author of Waverley*.

- b. It is not the case that some philosophy book is readable.
- c. Some philosophy book is not readable.

The order of applying quantificational rules is sometimes overt as in (78b-c): (78b) denies that there is a sequence made out of the domain of which the predicates ‘*x* is a philosophy book’ and ‘*x* is readable’ are both true; (78c) asserts that there is a sequence such that ‘*x* is a philosophy book’ is true of, but ‘*x* is readable’ is not.

The contrast between (78b) and (78c) suggests that syntactic structure leads us to apply our semantic rules in different orders. So I assume that, insofar as there are two interpretations available to a use of (78a), there are also two structurally distinct representations, something like (79a-b), available to the interpreter at the sub-personal level:

- (79) a. ... some ... every ...  
 b. ... every ... some ...

In other words, the availability of (79a-b) is a necessary condition for a use of (78a) to be interpreted in two different ways. I think that people today use the term ‘scope’ to refer to such a structural relation between quantifiers, logical connectives, operators and so forth. For example, in (79a), *some* takes wider scope over *every*.<sup>34</sup>

It follows that, if the availability of multiple structures is interfered with for whatever reason, multiple interpretations would not be available to the interpreter of the utterance. For example, the multiple structural representations such as:

- (80) a. ... a ... every ...  
 b. ... every ... a ...

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<sup>34</sup>We could, and perhaps we should define the notion of scope in broad terms, covering all words and phrases in general (Neale, 2005).

are both available when interpreting a use of (81a), whereas they are not available with respect to (81b-c):

- (81) a. A doctor will interview every new patient.
- b. A doctor will examine the possibility that we give every new patient a tranquilizer.
- c. A doctor should worry if we sedate every new patient. (Reinhart, 1997, 336)

(80b) is not available to the interpreter of (81b-c) presumably because there are some syntactic constraints (generally called ‘island’ constraints) that prevent the quantificational phrase *every new patient* from taking widest scope as in the structural representation (80b).

To summarize, quantificational phrases can stand in structural scope relations to other expressions, in accordance with syntactic constraints. Multiple scope positions sometimes yield multiple interpretations (sometimes because there can be vacuous scopes). If there is no more than one scope possibility, then there is no more than one interpretation as long as scope is concerned. If there are no more than two scope possibilities, then there are no more than two interpretations, and so on.

What is important for us is that a Russellian quantificational analysis of definite descriptions is committed to this whole package of the scope mechanism. Where *some F* or *every F* permits multiple scopes, *the F* would permit multiple scopes; where *some F* or *every F* does not, *the F* would not, at least other things being equal. This commitment can be a virtue of the Russellian analysis of definite descriptions, which is exactly what Russell advertised for, and the reason why Kripke (1977) emphasized that the scope

relation cannot be reduced to any two-way distinction. However, the commitment is at the same time the reason why the Russellian analysis overgenerates and undergenerates interpretations: we do not actually have interpretations that we should have according to the quantificational analysis, and we have interpretations that we should not have.

## Negation

First, let us consider how definite descriptions interact with negations.

(82) The present king of France isn't bald.

According to a Russellian analysis of definite descriptions, the definite description in (82) takes wide or narrow scope with respect to the negation (corresponding to the 'primary' and 'secondary' occurrence in Russell's terminology). When it takes wide scope, the rule for the definite article *the* is put to use first, and a use of (82) is taken to mean that there is one and only one sequence such that '*x* is a present king of France' is true of and '*x* is bald' is not true of. So the use of (82) today is false when the definite description takes scope over the negation because there is no king of France.

On the other hand, when the definite description in (82) takes narrow scope, a use of the sentence is interpreted as saying that there is no unique sequence such that both '*x* is a present king of France' and '*x* is bald' are true of. Now the use is true because of the same fact: there is no king of France today. It is unclear whether our intuitions concerning (82) are compatible with these theoretical predictions.

Likewise, the Russellian analysis predicts the existence of two possible interpretations for each of the following pair:



- (83) a. The Japanese emperor isn't bald.  
 b. The best student in my logic class isn't bald.

- (84) a.  $[\text{the } x : Fx] \neg(Gx)$   
 b.  $\neg[\text{the } x : Fx](Gx)$

(84a) and (84b) represent the wide and narrow scope readings respectively. However, as Heim (1991) points out, the narrow scope readings of (83a-b), i.e., (84b), are really difficult to obtain. You could hardly mean that there is not exactly one emperor in Japan who is bald by uttering (83a).

One might argue that one of the interpretations is strongly preferred for some other reason, and there indeed are two interpretations all the time, and hence, the Russellian analysis remains intact. Perhaps, the negations in (83a-b) are structurally entrapped somehow, and cannot take scope over a definite description. Negations exhibit such a property in relation to other quantifiers as shown in the following:

- (85) Some philosophy book is not readable.

You could hardly mean by uttering (87) that there is no philosophy book that is readable.

This line of reasoning does not work for two reasons. First, it defeats an alleged virtue of the Russellian analysis of definite descriptions with respect to negative existentials. According to Russell, the use of (86) today is true because the definite description can take narrow scope—the negation takes scope over it. If the negation cannot take scope over a definite description, then it cannot have a true reading. It would be judged false because the description has wide scope and entails that there is exactly one French king today.

(86) The present king of France doesn't exist.

Second, Heim (1991) points out that other quantificational phrases have a narrow scope reading when preceded by negation as in (87a-c).

- (87) a. I'm not buying every expensive car at the dealer.  
b. I'm not having breakfast with every Dutch prince.  
c. It's not the case that every professor is bald.

For example, (87a) means that the speaker is denying that she buys all expensive cars at the dealer (88a), whereas it is hardly used to claim that she buys no expensive car at the dealer (88b).

- (88) a.  $\neg[\forall x : \text{car } x](\text{I am buying } x)$   
b.  $[\forall x : \text{car } x] \neg(\text{I am buying } x)$

By contrast, even when a negation overtly takes scope over a definite description, the narrow reading of the definite description is strongly disfavored:

- (89) a. I'm not buying the most expensive car at the dealer.  
b. I'm not having breakfast with the king of France.  
c. It's not the case that the Japanese emperor is bald.

(89a) is hardly used to deny the conjunction that there is exactly one most expensive car at the dealer and I am buying it, i.e., to assert that either there is not exactly one such car or I am not buying it. If a definite description is a quantificational expression like *every car*, then it should be studied why they interact differently with negation.<sup>35</sup>

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<sup>35</sup>This objection can be undermined if something like the following is felicitous.

We have observed some instances of overgeneration: the Russellian analysis predicts, by virtue of its very quantificational nature, more scope interactions with the negation than there actually are. Of course, one could entertain that some of the predicted readings are suppressed by different mechanisms, which are currently unknown and need further investigations.

### Attitude verbs

Let us see a few more examples of overgeneration, produced by Heim (1991) and emphasized by Elbourne (2005, 109-112):

- (90) a. Hans wants the banshee in his attic to be quiet tonight.  
b. Hans wonders whether the banshee in his attic will be quiet tonight.

According to the Russellian analysis, the descriptions in (90a-b) can take narrow scope with respect to the psychology verbs *want* and *wonder*, whose interpretations can be paraphrased as follows:

- (91) a. Hans wants there to be exactly one banshee in his attic, and for it to be quiet tonight.  
b. Hans wonders whether the following is the case: there is exactly one banshee in his attic and that banshee will be quiet tonight.

The uses of (90a-b) do not seem to have the interpretations (91a-b), which are generated by the Russellian analysis.

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(a) I'm not buying the most expensive car at the dealer. Because five cars got the same price.

One might argue that the descriptions in (90) always take wide scopes for some unknown reason. The obligatory wide-scope taking cannot be right because we can observe no parallelism with respect to other quantificational expressions. The following structurally analogous sentence that contains an *every*-DP has a narrow scope reading:

(92) Some professor wants every graduate student to publish a paper.

Even if such an unexplained stipulation could be somehow justified, the move would not help Russellians. For Elbourne (2005) shows that there are several constructions in which descriptions cannot have wide scopes, though they *appear* to have them, which are the cases of undergeneration.

As I mentioned earlier, the existence of multiple scope relations is a necessary condition for multiple interpretations. So if any syntactic constraint excludes a wide scope position of a quantificational phrase, then it should not have a wide scope reading, which is in fact verified by the following example containing an *every*-DP in a coordinated structure:

(93) One man wants every banshee to be quiet and the party to go ahead.

(Elbourne, 2005, 111)

If the quantificational phrase *every banshee* can take both wide and narrow scope with respect to the other phrase *one man*, then (93) should have two readings, which can be represented as follows:

- (94) a.  $[\text{one } x : \text{man } x][\forall y : \text{banshee } y](xRy)$   
 b.  $[\forall y : \text{banshee } y][\text{one } x : \text{man } x](xRy)$

However, (93) does not have the reading corresponding to (94b). The *every*-phrase is entrapped inside the coordinated structure and cannot take scope over the *one*-phrase.

The Russellian analysis makes the exact same prediction with respect to a definite description because descriptions are quantificational phrases like *every*-DPs. However, the prediction is not born out. Consider the following example:

(95) Hans wants the banshee in his attic to be quiet and the party to go ahead.

(Elbourne, 2005, 111)

The definite description *the banshee* in (95) should not have a wide scope interpretation, according to the Russellian analysis. However, (95) does have a wide scope reading.

We can reproduce Elbourne's point by using other island constructions.

(96) a. Some student cannot hide her desire that every teacher will praise her.

b. Immanuel cannot hide his desire that the teacher will praise him.

With respect to (96a), there cannot be a scope relation in which the *every*-DP takes a scope over the *some*-DP because it is inside a relative clause. That is why (96a) does not have the reading that, for each teacher, there is at least one student who cannot hide her desire that that teacher will praise her. Likewise, (96b) should not have a wide scope reading, if the quantificational analysis of definite descriptions were correct. However, it seems to have the wide scope reading. Moreover, the predicted narrow scope reading seems lacking in a use of (96b): Immanuel does not seem to desire there to be one and only one teacher.

Perhaps, psychological verbs are special, and the narrow scopes of definite descriptions do not create any problematic readings, contrary to the appearance of the para-

phrased sentences (91a-b). However, we have more cases that present difficulties to Russellians.<sup>36</sup>

## Modal adverbs

The quantificational approach to definite descriptions gives the description in (97) two scope possibilities.

(97) Necessarily, the winner of a lottery is male.

Let us consider its narrow scope interpretation, i.e.,

(98)  $\square [\text{the } x : Fx](Gx)$ .

When someone asserts (97), according to the Russellian analysis, there are two different ways to falsify the assertion. One is to show that it is possible that there is not exactly one winner (perhaps none, perhaps two). The other is to show that it is possible that the winner of a lottery is female. So the following pair of conversation should be equally acceptable:

(99) a. Necessarily, the winner of a lottery is male. —That's so wrong! Because there could be two winners.

b. Necessarily, the winner of a lottery is male. —That's so wrong! Because the winner could be female.

However, (99a) does not sound as good as (99b). Again, there could be some unknown reason for why we overwhelmingly prefer one method of verification over the other. But

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<sup>36</sup>See (Kaplan, 2005; Neale, 2007) for an attempt to defuse the presented worry about psychology verbs. For a rejoinder to Kaplan and Neale, see (Elbourne, 2010).

we do not know what that would look like. By contrast, the presuppositional analysis of definite descriptions does not include uniqueness as part of the asserted content of (97), which explains why directly denying the uniqueness assertion as in (99a) would sound unnatural.

## 4.5 Proper Names

Now I want to apply the analysis of definite descriptions developed in Section 4.3 to the singular and bound uses of a proper name. As I defended in Chapter 3, the singular and bound uses of proper names in English are structurally analogous to definite descriptions. They are headed by  $\emptyset$ , in the place of the definite article. I argue that they are also semantically analogous to definite descriptions. All of what I have said thus far straightforwardly applies to the singular and bound uses of proper names. Since I am suggesting that a name is a definite description, one might worry that I am putting forward a yet another form of descriptivism. So, first, I will go over why Kripke's arguments against descriptivism do not apply to my analysis of proper names. Second, I will look at the bound use of a proper name. Third, I will turn to the uses of proper names that are sometimes called 'descriptive names'. Fourth, I will discuss identity statements and belief reports. Fifth, at the end of the chapter, I will discuss fictional and mythical names together with seeming non-referring definite descriptions.

### 4.5.1 Kripke's objections

The proposed semantics of complex nominals applies to the singular use of a proper name together with a plausible assumption that the covert determiner  $\emptyset_\gamma$  encodes the analogous semantic content as the definite article *the*. As discussed in Chapter 2, I semantically distinguish *the* and  $\emptyset_\gamma$ . The former takes both singular and plural nominal predicates whereas the latter only takes singular ones. I will modify the lexical definition of *the* in Chapter 5 so that we can also account for plural definite descriptions. The lexical meaning of  $\emptyset_\gamma$  is identical to that of *the* specified in this chapter except for the condition that it needs to be combined with a metalinguistic predicate.

$$(100) \quad \llbracket \emptyset_\gamma \rrbracket^g = \lambda F_{\langle e, \langle s, t \rangle \rangle} : F \text{ is metalinguistic} . \lambda s : \exists! x (F(x)(s)) . \iota x (F(x)(s))$$

Since  $\emptyset_\gamma$  is a non-quantificational determiner whose output is a particular individual, it can be seen as a covert demonstrative head.

For example, consider the singular use of *Aristotle*, whose LF can be expressed as follows:

$$(101) \quad [s_8 [\emptyset_\gamma \text{ Aristotle}]]$$

where  $s_8$  is an unbound situation pronoun. The pronoun  $s_8$  receives its semantic value from a variable assignment. If the situation denoted by  $s_8$  is small enough, then the content of (101) singles out an object, who stands in a naming relation to /ærestätl/. (101) can be a rigid designator because the semantic value of the description remains the same whichever circumstance we use to evaluate the sentential semantic value, insofar as  $s_8$  remains unbound. Also notice that (101) is nondescriptive because its descriptive content is part of the presupposition that the user makes, which is irrelevant when we evaluate



the proposition expressed. Therefore, all of this very much suggests that the proposed analysis of proper names is immune to any argument against the traditional form of descriptivism. But we can also confirm the suggestion by looking at the details.

Now I want to show that the proposed analysis of proper names answers Kripke's arguments against classical descriptivism. Following (Salmon, 1982) and (Soames, 2002), I assume that there are mainly three kinds of arguments against descriptivism in Kripke's *Naming and Necessity*. The modal argument depends on the observations that the modal properties of the sentences that contain proper names are different from the modal properties of those that contain definite descriptions. Although the sentence *Aristotle was a philosopher* expresses a contingent truth, *The last great philosopher of antiquity was a philosopher* expresses a necessary truth. According to descriptivism, however, the two sentences must mean the same thing.

The epistemological argument relies on the similar observations with respect to the epistemological properties of the sentences including names. The sentence *Aristotle was a philosopher* is knowable *a posteriori* whereas *The last great philosopher of antiquity was a philosopher* is knowable *a priori*. The descriptivists, again, would have to claim that the two sentences are epistemologically equivalent.

The semantical argument is designed to show that the descriptive content associated with a proper name by speakers sometimes fails to designate what the name is supposed to designate, i.e., its referent. Suppose that all competent speakers of English associate *the logician who proved the Incompleteness Theorem* with the name *Gödel*, and that an unknown logician, Schmidt, had in fact proved the Incompleteness Theorem. Then every sentence that contains the name *Gödel* uttered by a speaker of English would be about

Schmidt because the descriptive content associated with the name picks out Schmidt rather than Gödel according to descriptivism. However, no one would even notice that the utterance is about Schmidt rather than Gödel.

First of all, consider the modal argument against descriptivism. Kripke claims that descriptivism makes an incorrect prediction that a contingent statement such as,

(102) Aristotle is called ‘Aristotle’,

expresses a necessary truth. Since descriptivism analyzes a name as having a certain descriptive content, whatever it is, the predicate that has the same content makes a sentence necessarily true. This problem does not apply to my analysis of proper names. Certainly, the sentence (102) contains two instances of the same predicate, assuming that the proper noun *Aristotle* were to express the equivalent content as ‘is called ‘Aristotle’’.<sup>37</sup> However, on the proposed semantics, the two instances of the same predicate in (102) come with two situation pronouns that may or may not bear the same index. (102) is thereby structurally ambiguous in, at least, two ways:

- (103) a.  $s\text{-PRO}_1 s_1 [ [ s_2 \emptyset, \text{Aristotle} ] \text{is-called-‘Aristotle’} ]$  (contra-indexed)  
 b.  $s\text{-PRO}_1 s_1 [ [ s_1 \emptyset, \text{Aristotle} ] \text{is-called-‘Aristotle’} ]$  (co-indexed)

In (103a) the situation pronoun inside the description  $s_2$  is unbound and an assignment function provides a situation as its semantic value. Suppose that the assignment function  $g$  assigns to  $s_2$  a situation in the actual world. The LF (103a) yields a contingent proposition with respect to  $g$ : the one that is true with respect to any possible situation  $s$  if and only if

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<sup>37</sup>This assumption is unlikely to be the case given the considerations we had in Chapter 3. But I use (102) for its simplicity.

(104) the unique object  $x$ , such that  $x$  is called ‘Aristotle’ in  $g(s_2)$ , is called ‘Aristotle’  
in  $s$

The proposition (104) is true in some situations and false in the others. For  $g(s_2)$  and the value of  $s$  need not be identical, and something that is called ‘Aristotle’ in a certain situation may not be called ‘Aristotle’ in a different situation. Therefore, the sentence (102) can be contingent.

Also note that (103b) captures the *de dicto* reading of (102). There is a sense in which (102) is necessarily true. Someone whose name is ‘Aristotle’ must be called ‘Aristotle’. The proposition expressed by the LF representation (103b) is necessarily true because anything that is called in a certain way in a certain situation is called in the same way in the same situation. Therefore, my analysis of names is flexible enough to produce such *de dicto* readings.

The solution to the epistemological argument has the same structure. The proposition (104) is not knowable *a priori*. To learn that someone who is called ‘Aristotle’ in a certain situation is also called ‘Aristotle’ in some other situation  $s$  is significant and amplifies one’s knowledge.

Since a deictic situation pronoun provides a restricted domain, the proposed analysis can also answer the semantical arguments. Kripke points out that some of the descriptive contents that classical descriptivism associates with names fail to pick out the referents of the names. For example, if speakers associate with the name *Feynman* the descriptive content ‘being a famous American physicist’, then the descriptive content would apply to a number of objects. And, hence, the descriptive content would fail to pick out

the referent of the name, i.e., Richard Feynman. However, the new analysis does not associate what classical descriptivism associates with the name. According to the proposed analysis, the descriptive content of, and hence the presuppositional content of *Feynman* used in an argument position is ‘being an object whose name is ‘Feynman’ in the relevant situation’. Therefore, the name *Feynman* can be used to uniquely refer to an individual, regardless of the speakers’ knowledge about physics.

The proposed analysis is also applicable to the Gödel case. The singular proper name *Gödel* denotes a unique person, who is called ‘Gödel’ in a particular situation. Schmidt is never called ‘Gödel’ in the scenario. Therefore, the name *Gödel* cannot pick out Schmidt in the standard Gödel case.

#### 4.5.2 The bound use of a proper name

Here I discuss the bound use of a proper name, which is represented by the following sentences:

(105) Every woman who has a husband called John and a lover called Gerontius takes only **Gerontius** to the Rare Names Convention. (Elbourne, 2005, 181)

(106) Every time John goes to see a performance of Hamlet, he falls in love with **Ophelia**. (That is, he falls in love with ‘the actress who plays the part of Ophelia at that play’.). (Geurts, 1997, 322)

(107) If a child is christened ‘Bambi’, then Disney will sue **Bambi**’s parents. (Geurts, 1997, 321)

The current chapter has developed a situation-based account of the bound interpretations of complex nominals, which can apply to these cases. First of all, notice that we can easily come up with a completely parallel use of a definite description for each case.

(108) Every woman who has a husband called John and a lover called Gerontius takes **the lover** to the Rare Names Convention.

(109) Every time John goes to see a performance of Hamlet, he falls in love with **the actress playing Ophelia**.

(110) If a child is named ‘Bambi’, then Disney will sue **the child**’s parents.

These are the typical examples of the donkey anaphoric use of a definite descriptions. A number of proposals have been made to account for donkey anaphoric definite descriptions as well as donkey pronouns (Neale, 1990, Ch. 5). For present purposes, I need to only note that a systematic analysis of (108-110) has been proposed, and we can apply any successful account of donkey anaphoric definite descriptions to the bound use of a proper name because, on our semantic proposal, the bound use of a proper name is a donkey anaphoric definite description. Within a situation semantic framework, Heim (1990), Elbourne (2005), and Schwarz (2009) have presented a compositional semantics that can deal with donkey anaphoric definite descriptions. We could use any one of their particular formulations to implement the basic idea that some uses of proper names are complex nominals that can be bound and interact with other complex nominals. Below I present my own formulation of the situation semantic analysis of anaphoric definite descriptions.<sup>38</sup>

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<sup>38</sup>Here I focus on laying out my own analysis, and will not compare it with the extant analyses. For further considerations on conditionals within a situation semantics, see Appendix C.

(108) is the typical co-varying construction that we discussed in Section 4.2.3. (105) should be understood in the exact same manner. The second occurrence of *Gerontius* in (105) is a DP headed by  $\emptyset_{\iota}$ , which includes a situation pronoun. One way to index the situation pronoun creates a situation variable whose value co-varies with the value of the individual variable introduced by the quantificational phrase *every woman who has a husband called John and a lover called Gerontius*. Because of a matching function  $M$ , indirectly though, the DP *Gerontius* below is quantified in by the *every*-phrase above. It is not a rigid designator, but denotes a unique individual whose name is ‘Gerontius’ in each relevant situation for each woman. The proposition that can be expressed by a use of (105) is something like the following:

$$(111) \quad \lambda s. [\forall x : \text{woman} \dots (x)(g(s_1))][\exists s' : s' \sqsubseteq s](x \text{ takes } \iota y(\text{Gerontius}(y)(s')) \text{ to} \\ \text{RNC in } s' \wedge M(s') = x)$$

The matching function  $M$  here specifies a situation that includes all participants of a state of having a relation for each  $x$ . In each such situation we can find exactly one individual named ‘Gerontius’, who is also a lover of one woman in the context. That is why ‘ $\iota y(\text{Gerontius}(y)(s'))$ ’ is defined for each such  $s'$ .

Both (106) and (109) are also analyzed in the same way, where the DP *Ophelia* or *the actress playing Ophelia* is (indirectly) bound by the preceding adverbial quantificational phrase. We consider a different situation for each time in which John goes to see Hamlet. Each such situation contains a performance of Hamlet that John goes to watch. Anyone who takes part in the performance is in that situation. There is exactly one individual who performs Ophelia in each situation, who is also called ‘Ophelia’ in

that situation. Thus, the DPs *Ophelia* and *the actress playing Ophelia* denote a unique individual with respect to each performance of Hamlet that John goes to see.

Let us now turn to (107) and (110), where there seems to be no quantificational expression that quantifies in the relevant DP. How can a proper name or a definite description be bound in these cases? The conditional form in English *if ... (then) ...* can be indeed understood as introducing a quantification that binds an embedded DP. Since an utterance has a proposition as its semantic value, not a truth-value, within our system, *if* cannot be seen as a mere truth-function. I assume that *if* is analogous to a kind of adverbial phrase we saw earlier such as *every time the bell rings*. I want to extend Rothstein's analysis of such adverbial phrases to the expressions *if* and *when(ever)*, among which we find a similarity:

(112) When(ever)/if/everytime it rains, I bring an umbrella.

Following Rothstein, I assume that (112) has a structure like the following:

(113) [when(ever)/if/everytime it rains]<sub>s<sub>1</sub></sub> I bring an umbrella PREP [ s<sub>1</sub> ]

where PREP is an unpronounced preposition, which introduces the adverbial phrase under consideration. The adverbial phrase *every time it rains* is preposed to leave a trace ranging over situations. PREP also signifies a contextually determined matching function, which explains the coherency we observe between the antecedent and consequent. More specifically, I suggest the following lexical meanings for *if* and PREP:

(114)  $\llbracket \text{if} \rrbracket^g = \lambda p_{\langle s,t \rangle} . \lambda q_{\langle s, \langle s,t \rangle \rangle}^{\text{con}} . \lambda s . [\forall s' : s' \sqsubseteq s \wedge p(s')] [\exists s'' : s'' \sqsubseteq s] (q^{\text{con}}(s'')(s'))$

(115)  $\llbracket \text{PREP} \rrbracket^g = \lambda s . \lambda s' . M(s') = s$

$q^{\text{con}}$  in (114) is the semantic value of the consequent of a conditional, which is not a mere proposition, but takes two situations to give a truth-value. This is because the meaning of a consequent contains a matching function that has two situation argument slots, not one.

Given these lexical meanings, we can obtain the following proposition for (113):

$$(116) \quad \lambda s . [\forall s' : s' \sqsubseteq s \wedge \text{it rains in } s'] [\exists s'' : s'' \sqsubseteq s] (\text{ I bring an umbrella in } s'') \wedge M(s'') = s'$$

(See Appendix A)

where  $M(s'') = s'$  holds just in case the two situations contain only a series of two related events. For a use of (112) to be true, I need to respond to each raining event; my bringing of an umbrella ten years ago does not compensate for my failing to act on the precipitation today. The nature of the relation between a pair of events seems to vary from context to context. In many contexts, however, a causal relation suffices to capture the speaker's intention. That is why *If you strike a match, it lights* appears to be true, whereas *If the Sun rises in the East, then Spinoza ground lenses for living* to be false. Suppose that  $M(s'') = s'$  contextually means that  $s''$  includes an event that is causally or explanatorily related to an event in  $s'$ . Then we can paraphrase the derived proposition as follows. For any situation in which it rains, there is some situation in which I bring an umbrella because of the raining, which seems compatible with our intuitions about a use of (112).

Returning to (107) and (110), it is now easy to see why we can talk about a unique child named 'Bambi' in each of many different situations. The DPs *Bambi* and *the child* therein are bound by the existential quantification introduced by the conditional construction. The two situations picked out by the antecedent and consequent are intimately re-



lated via the matching function  $M$ . When we consider a situation in which a child is named ‘Bambi’, we look for nothing but a situation that contains a causally related lawsuit. Any other Bambis or children named ‘Bambi’ are irrelevant as long as this particular naming event is concerned. In the situation that only contains the causally related lawsuit filed by Disney, there is exactly one child named ‘Bambi’, who is also the very child which triggered Disney’s action. Thus, the DPs Bambi and *the child* in (107) and (110) denote the unique child with respect to every situation chosen by the antecedent.<sup>39</sup>

### 4.5.3 Descriptive names

There are at least two different manners in which we name objects. We can ‘ostensively’ name an object by choosing a sound type in the presence of the very object. Or we can ‘descriptively’ name an object by stipulating a connection between a sound type and an object that has the bundle of properties that we have in mind. It is often said that the referents of such ‘descriptive names’ are fixed by descriptions. I have in mind as descriptive names ‘Neptune’, ‘Vulcan’, ‘Deep Throat’, ‘Jack the ripper’, ‘Newman 1’, ‘Julius’ and so forth.

My main claim here is that we should distinguish the study of our linguistic knowledge pertaining to meaning and our general anthropological interests in human activities. I argue that the proposed semantic analysis of proper names is capable of accounting for our intuitions concerning descriptive names without introducing any new theoretical apparatus. However, some of the phenomena we associate with ‘naming’ might remain

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<sup>39</sup>For simplicity, I ignore the problem of minimal situations in this example. See Appendix C for more discussion on minimal situations.

unexplained within semantic theory—a different type of inquiry, anthropology, sociology, etc might as well be required to provide an explanation at a different level of science.

Consider Gareth Evans's example of a descriptive name. Under the supposition of (D), what would (117) mean on the proposed analysis?

(D) Let us use 'Julius' to refer to whoever invented the zip. (Evans, 1979, 181)

(117) Julius invented the zip. (Evans, 1979, 193)

On my analysis, the occurrence of *Julius* has a structure something like [  $s_1$  [ $\emptyset$ , *Julius*] ], and the overall semantic value of (117) is a set of situations in which the unique object whose name is 'Julius' in a certain situation invented the zip. So (117) expresses a contingent proposition. But now we operate under (D), which allows us to refer to the inventor of the zip with the DP [  $s_1$  [ $\emptyset$ , *Julius*] ]. (D) makes the proper noun *Julius* true of the inventor of the zip while we pretend that (D) is effective.<sup>40</sup> A regular speaker of English already possesses the lexical entry for the predicate *Julius*, and hence no special linguistic knowledge is involved to figure out the meaning of (117). The speaker's intended referent of  $s_1$  is a situation that contains the inventor of the zip, whom we decided to call 'Julius'. Thus, the DP [  $s_1$  [ $\emptyset$ , *Julius*] ] can denote Julius, the inventor of the zip. Also we suppose that Julius is identical to the inventor of the zip in the situation denoted by  $s_1$ . Therefore, we consider (117) to be vacuously true because of the supposition.

The DP [  $s_1$  [ $\emptyset$ , *Julius*] ], of course, does not have to mean the inventor of the zip even when we suppose (D), which goes along with our intuitions. The following remark

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<sup>40</sup>As Robin Jeshion (2004) emphasizes, Evans's example is an artificial one and he does not go through the necessary conventional conditions in order to introduce a descriptive name to people's common knowledge.

would perfectly make sense in a philosophy of language class:

(118) Let's discuss Evans's case. Imagine we use the name 'Julius' to refer to the person who invented the zipper. Oh, by the way, my brother in law is also Julius. But I know he is a school teacher and didn't invent the zip. So forget about him. Okay, now, suppose I say Julius invented the zip. ...

If an occurrence of *Julius* could not mean many different Juliuses when we assume (D), then (118) would be hard to make sense. The speaker can explicitly indicate a shift of an intended referent by saying *well, by the way*, etc.

#### 4.5.4 Frege's puzzle

Consider identity statements like (119). According to Millians such as Salmon and Soames, the semantic values of the following sentences are one and the same.

- (119) a. Hesperus is Phosphorus.  
b. Hesperus is Hesperus.

According to some Millian theorists, they both express a Russellian structured proposition whose constituents are the planet Venus, taken twice, and the identity relation. However, the sentences are clearly different in several respects. For example, Frege points out that they have different epistemic properties.

The proposed analysis of proper names has in fact two different resources to account for the differences between (119a) and (119b). Before discussing how so, I want to mention that I consider the sentences like (119a-b) to express identity statements. I assume that both occurrences of proper names *Hesperus* and *Phosphorus* are DPs, to which

the proposed analysis applies, and the copula *be* signifies the identity relation between two objects in the domain of discourse.<sup>41</sup>

One resource available to my analysis of proper names is presuppositional content. In understanding (119a-b), the interpreters would make two different belief attributions to the speakers because of the difference in the presuppositions of (119a) and (119b).

Suppose that the speaker asserts an identity of two objects by uttering (119a). On the proposed analysis of proper names, the utterance is interpreted to express the set of situations in which the unique object named ‘Hesperus’ in a certain situation is identical

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<sup>41</sup>It is not easy to uncover the linguistic structure of these phenomenologically simple sentences. We need to address two tough questions. First, what are the syntax and the semantics of the copula *be*? Second, what are the syntax and the semantics of the second occurrence of a name?

Here is a possible answer to the two questions available to the predicate view of proper names, which I do not adopt. The interpretation of the copula *be* is predicational; it is not *be* of identity. The second occurrences of a proper name in (119a-b) are not DPs, but NPs. They are neither referential singular terms nor definite descriptions, but unsaturated individual-level predicates analogous to *American* and *tall*. The logical form of (119a) is isomorphic with that of:

- (a) The president is American.

This analysis easily accounts for the difference in the cognitive values of (119a) and (119b). The former sentence attributes a different property to Hesperus than the latter.

The analysis has several disadvantages. First, under the analysis, a proper noun is more similar to an adjective than a common noun, occurring with no indefinite article. Yet a proper noun can also occupy the post-copula position with an article:

- (b) Henry is a James.

The use of an indefinite proper noun seems different from a bare occurrence of a proper noun. What makes the difference between the two?

Second, the analysis has no application to other cases of identity statement. A definite description may appear in the post-copula position to form an identity statement, which in any case requires another sort of explanation.

- (c) Robert’s brother is Rachel’s husband.

A third and the most important point is that the analysis, in fact, does not solve Frege’s puzzle at all. We can present Frege’s original question in terms of different constructions:

- (d) (i) Hesperus and Phosphorus are the same.  
(ii) Hesperus and Phosphorus are identical.  
(iii) Hesperus is identical to Phosphorus.

It is possible that the underlying syntactic structure of an English sentence of the form *NAME is NAME* turns out to be unsuitable for expressing a genuine identity statement. However, Frege’s puzzle is concerned with the logical form of identity statements, which can be expressed in some or other way through natural language.

to the unique object named ‘Phosphorus’ in another. So if the utterance is true, then it is true in all counterfactual circumstances where Venus exists. Similarly, the proposition expressed by (119b) would be exactly the same as long as the relevant situations are appropriately chosen so that the value of both DPs *Hesperus* is nothing but Venus. So there is no difference between the semantic values of (119a) and (119b) uttered in the same context.

In interpreting the utterance of (119a), however, the interpreter attributes to the speaker the belief that there is a unique object named ‘Hesperus’ in a certain situation, and that there is a unique object named ‘Phosphorus’ in another. The intended situation for *Hesperus* is probably a spacetime in the evening hours, whereas that for *Phosphorus* is a spacetime in the morning hours. Believing that there is exactly one thing named ‘Hesperus’ in the former situation is clearly different from believing that there is exactly one thing named ‘Phosphorus’ in the latter.

By contrast, suppose that the speaker utters (119b) to illuminate a law in logic, (not as a Paderewski-type utterance—which could also be accounted for on the proposed analysis). The situations associated with the two DPs are identical. The semantic value of the utterance would be the same as that of (119a) in the former scenario: the set of situations where Venus is identical to itself. However, the interpreter can only attribute to the speaker the belief that there is a unique object named ‘Hesperus’ in the situation. Anything about the name ‘Phosphorus’, or indeed any other statement about the speaker would be an extrapolation by the interpreter based on other knowledge about the context, the speaker, and the world in general—it has nothing to do with semantic knowledge that the speaker and interpreter possess.

Therefore, the interpretations of (119a) and (119b) involve different pieces of semantic knowledge, and lead to different outcomes, although the semantic values of the utterances may sometimes be identical—the exact same circumstance makes them to be the case.

The other resource available to us is diagonal propositions. As we saw earlier in Section 4.3.2, (119a) or even (119b) does not have to express a necessary proposition within our semantic system. Each predicate in (119a) requires a situation argument, and thereby its underlying structure contains three situation pronouns. Suppose that the two DPs in (119a) are contra-indexed, and the former *Hesperus* is co-indexed with s-PRO of the main verb (This is analogous to *Hesperus is Venus* in Section 4.3.2). Then the DP *Hesperus* is not a rigid designator, which changes its value relative to circumstances of evaluation. The proposition expressed by the use of (119a) is a diagonal proposition:

(120)  $\lambda s$  . the unique object, whose name is ‘Hesperus’ in  $s$  = the unique object, whose name is ‘Phosphorus’ in the relevant situation

That is, it is the set of situations in which Phosphorus is the object that is uniquely named ‘Hesperus’. In other words, (120) is true in such a situation that Phosphorus is uniquely named ‘Hesperus’ in that situation. In some worlds, including ours, Venus, i.e., Phosphorus is called ‘Hesperus’, and thereby (120) is true in such worlds because they include the situations that make (120) true. But Venus or Phosphorus is not called ‘Hesperus’ in some other worlds. Venus could orbit the Sun at a longer distance than it actually does, and we could not observe it clearly in the evening. Perhaps Mars could be clearly viewed in the evening in such a circumstance. (120) is false in such worlds because Mars is the seman-

tic value of the DP *Hesperus*, and Mars is not Venus in all possible worlds. Thus, (120) is a contingent truth. Therefore, accepting and asserting such a contingent proposition would be genuinely significant.

This in turn explains our uses of proper names embedded within attitude verbs. My treatment of attitude reports that contain proper names is exactly the same as the treatment of the George IV case in Section 4.3.2.

(121) Mary believes/hopes/wonders that/whether Hesperus is Phosphorus.

Since the embedded clause can be understood as expressing a diagonal proposition, which is contingent, believing, hoping, or wondering about such a proposition is significant.

## 4.6 Empty Names and Descriptions

I have thus far circumvented a certain class of names and descriptions that are used to talk about things that we ordinarily consider nonexistent. We often talk about nonexistent objects with a variety of intentions. We tell a fictional story, produce a false report, propose an inaccurate scientific theory, describe an unfulfilled plan, design a new thing, and the list seems open-ended. Both proper names and definite descriptions frequently appear in such creative activities. For example, we sometimes use the following expressions with no genuine intention to have our hands on what they literally seem to express: *Pegasus*, *Hamlet*, *Vulcan*, *the largest prime number*, *the present king of France*, *the effective greenhouse-gas cap measure*, *the fountain of youth*, *the imagined double spy*, etc. I will use the label ‘empty’ as a blanket term to cover all of such expressions.

Nonexistent objects and empty expressions raise a host of interesting questions.

How can we think about what does not exist? In what sense does the mind ‘represent’ something when one of the relata seems to be missing? How can we meaningfully talk about what does not exist? What role do empty expressions play in a theory of language? Are empty expressions syntactically and semantically on a par with their non-empty counterparts? The reader might have thought that I need to address at least some such questions that are primarily concerned with empty expressions. For example, how does the analysis of proper names proposed in this chapter account for the abundant use of empty expressions? Before turning to my own answer to that question, I want to emphasize that any theorist of nominal expressions needs to confront the problem of nonexistence. The problem is not inherent in the predicate thesis of proper names, which I have been pursuing in this dissertation.

First, consider traditional descriptivism. One might think that I am making a setback when I discarded Russell’s quantificational view of definite descriptions and proper names. Since I deny that a definite description contributes any quantificational force to the logical form of the entire utterance in which it appears, I cannot adopt Russell’s explanation for why we judge the following negative existentials to be true.

- (122) a. The present king of France doesn’t exist.  
b. Pegasus doesn’t exist.

According to Russell, (122a-b) are true because the negation correctly denies the existential quantification introduced by a definite description, which might appear to be precisely the reason why descriptivism excels in the domain of fictitious discourse. But the problem of nonexistence runs much deeper. Russell’s descriptivism needs some intricate assump-



tion to account for why the following examples are judged true.

- (123) a. The fountain of youth is a legendary spring that restores the youth of anyone who drinks of its waters. (Wiki)
- b. Hamlet is a prince of Denmark.
- c. Pegasus is a winged white horse.

On Russell's analysis, each definite description implies the existence of an object identified by the associated description. Since nothing fulfills the associated description, the utterances above must be judged false. The discrepancy between the theoretical prediction and our intuitive judgments does not necessarily refute descriptivism; it invites the descriptivist theorists to say more about the uses of empty expressions.

Second, it has been widely recognized that the uses of empty names, such as those in (122b) and (123b-c), pose a difficulty for the Millian thesis of proper names. What predictions the Millian theorist makes about (122b) and (123b-c) depend on the details of a particular proposal. Perhaps, the semantic value of *Pegasus* is undefined, and any sentence in which it appears has an undefined sentential value, which is inconsistent with our intuitive judgements. For example, we would easily assent to a use of (123c). The Millian theorist is then required to somehow remove the apparent inconsistency.

The predicate thesis of proper names shares the same fate as the Millian thesis. Although a predicative proper name itself is not a referring expression, an argumental use of a proper name is a complex phrase contributing an object to the proposition expressed by the entire utterance. But then how can a complex phrase contribute what does not exist? Wherever the Millian theorist faces a difficulty, the predicate theorist suffers from

the same problem.

Therefore, empty expressions and the surrounding questions concerning nonexistent objects cannot help us tease apart the competing theses about proper names.

Having said that, however, in what follows I want to present a possible solution to the problem of nonexistence within the presented situation semantic framework in order to see how we can address the problem of nonexistence on a situation semantic approach.

#### 4.6.1 Empty expressions can denote abstracta

The solution I want to adopt to the problem of nonexistence is the position sometimes called ‘creationism’ about creatures of fiction, myth, and imagination (Kripke, 1973; van Inwagen, 1977; Salmon, 1998; Thomasson, 1999; Caplan, 2004). Creatures of fiction, myth, or imagination are abstract entities created by some acts of real people; they are not very much similar to concrete humans, animals, places, etc, but rather similar to artificial entities such as money, contracts, plots, designs, stories, etc. I assume that the domain of discourse includes such artificial entities as well as mid-size ordinary entities: individual variables range over all of them.<sup>42</sup>

It is in general difficult to tell precisely where and when abstract entities exist. But it is also clear that artificial abstracta are not completely beyond spacetime. It seems counterintuitive to think that the character Hamlet had existed long before Shakespeare wrote the play *Hamlet*, just as it seems counterintuitive to think that the Chinese Renminbi (*yuan*) had existed long before the departure of the first human being from Africa. Thus, I

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<sup>42</sup>A non-reductive theory of social and artificial entities also seems possible (Searle, 1994; Thomasson, 1999). Of course, since the domain of discourse is not a reflected theory of the world, whether such a theory succeeds does not affect my assumption here.

assume that there is some spacetime, i.e., situation, that contains an artificial abstractum, which also nicely fits with my first assumption that artificial abstracta are individuals in the domain.

A variety of nominal expressions are suitable for talking about artificial abstracta. I claim that the subjects of the sentences below have a certain fictional character as their semantic value, assuming the sentences to be used in an appropriate context.

- (124) a. Pierre Bezukhov is the central character in *War and Peace*.
- b. The main character Tolstoy developed in *War and Peace* is well discussed by critics.
- c. This character/he [Pierre Bezukhov] is one of the best known character in the Russian literature.

The abstractum denoted by all subjects in (124a-c) is a fictional character created and named 'Pierre Bezukhov' by Tolstoy. We are all familiar with abstracta that have names: the Peace of Westphalia, Confucianism, etc. So the fictional character here is truly predicated of by the nominal expressions in (124). It is named 'Pierre Bezukhov' by Tolstoy, and appears as the main character in *War and Peace*. Given an actual context, the uses of (124a-c) express true propositions just as *Obama is a Democrat* does so.

Some uses of the sentences (124a-c) have, in some sense, an 'external' or 'real' perspective. They seem to be about the actual or real world. However, empty names also appear in sentences that seem to be rather about fictional or hypothetical worlds. The sentences below can be said to have an 'internal' or 'fictitious' perspective.

- (125) a. Pierre Bezukhov/the principal character of *War and Peace* is a son of a wealthy

count.

b. Hamlet is a prince of Denmark.

c. Pegasus is a winged white horse.

Structurally speaking, (125a-c) are analogous to (124a-c), whose subjects denote an artificial abstract object, not a concrete human being or animal. Then the uses of sentences should be judged false because a Danish prince, for example, is not an abstract object. I think that (125a-c) are indeed false if we suspend the internal perspective, and employ them to describe the actual world. If you are a top-official in the White House, arranging presidential meetings with any member of a royal family, you would not advise that Obama meet Hamlet by claiming (125b). You cannot assert (125b) when you are talking about the actual Danish royals. A straightforward explanation for this is that (125b) is false with respect to the actual world.

However, as long as our stance is an internal one, we take (125a-c) to be true. How could that be the case? Following Amie Thomasson (1999), I suggest that we often consider (125a-c) to be the shorthands for the following sentences.

(126) a. **In War and Peace** Pierre Bezukhov/the principal character is a son of a wealthy count.

b. Hamlet is a prince of Denmark **according to the Shakespeare's longest play**.

c. Pegasus is a winged white horse **in Greek mythology**.

Construed in this way, (125a-c) are not about the actual world, but rather about a story or a mythology. Some uses of (125a-c) can be judged true as long as some uses of (126a-c) can be judged true.

How can some uses of (126a-c) be judged true? I assume that the semantics of *in* here and *according to* is analogous to that of *believe*, repeated below, which introduces a universal quantification over a set of possible worlds compatible with someone’s belief state.

$$(127) \quad \llbracket \text{believe} \rrbracket^g = \lambda p_{\langle s,t \rangle} . \lambda x . \lambda s . [\forall w : w \text{ is compatible with } x\text{'s belief in } s](p(w))$$

We can generalize the compatibility relation to non-animate objects as well. A book, a report, a map, etc can be seen as being compatible or incompatible with a set of possible worlds depending on its information state. The lexical meaning for *according to* can be expressed as follows:

$$(128) \quad \llbracket \text{according to} \rrbracket^g = \lambda x . \lambda p_{\langle s,t \rangle} . \lambda s . [\forall w : w \text{ is compatible with } x\text{'s information state in } s](p(w))$$

Now, given this semantic value of *according to*, the embedded clause is bound by a universal quantification introduced by *according to*. (126c), for example, expresses a proposition that, for every world that is compatible with Greek mythology, the object named ‘Pegasus’ in the relevant situation is a winged white horse in that world. (126c) is not telling us about what the fictitious creature we call ‘Pegasus’ looks like in the actual world. It is not a statement from an external perspective. It rather tells us that Greek mythology represents the fictitious creature as a winged horse, whatever it is in the actual world. The DP *Pegasus* in this context is a rigid designator, which nondescriptively denotes an object. Whether the denoted object is a concrete or an abstract object has nothing to do with its property in a counterfactual circumstance. Although the creature Pegasus is a piece of imagination, not a horse with flesh and blood in the actual world,

the mythology treats it as a horse with wings.

One might consider this result counterintuitive. I am claiming that an abstract entity in the actual world can be a concrete human being or an animal in another world. I do not think of this outcome to be counterintuitive. Consider the opposite direction. Namely, can a concrete entity be an abstract entity? I think it can. Imagine that Spanish Inquisitors accuse me of being Satanic for whatever reasons. Spanish Inquisitors think that I am evil spirits. That means, in the Inquisitors' belief worlds, I am evil spirits, not an ordinary human being. Assuming that spirits are at least aspatial, I am an aspatial being in some counterfactual circumstance. A concrete human can be an aspatial thing. Then, there seems to be nothing wrong for an aspatial thing, such as a fictional character, to be a concrete thing in a different circumstance.<sup>43</sup>

We have seen that some definite descriptions denote abstracta: *the main character of War and Peace, the peace treaty, the brilliant hypothesis, the horse-like mythical creature*, etc. I also want to claim that definite descriptions for ordinary concrete objects can also be used to refer to abstracta. Suppose that we are conversing about some fictional story, according to which (129) is true.

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<sup>43</sup>At this point one might also think that I am implicitly assuming Lewisian counterpart theory, on which we counterfactually evaluate the counterparts of the objects in question. For example, the mythical character Pegasus is not identical to the concrete creature Pegasus in a mythical world; but the former stands in a counterpart relation to the latter. One might think that I need Lewisian counterpart theory because we cannot make sense of the identity between an abstract character and a concrete animal. How could a fictional character avoid ceasing to be itself when it loses all its typical properties, such as 'being created by such-and-such author'? However, counterpart theory is not necessary for the kind of approach I am presenting here. We could also assume Lockean substances or 'bare' particulars, which in themselves have no essential property, but underlie all the properties associated with objects. Such a notion of bare particular may be conceptually coherent (cf. Sider 2006). If we think that an argument of a sentence, such as *Pegasus*, nondescriptively denotes a bare particular, then it is not difficult to conceive of an identity between a fictional and a concrete object. When we identify the mythical Pegasus and the animal Pegasus, we are merely identifying two bare particulars, which in themselves should not be characterized as 'being created by such-and-such' or 'having wings'. Bare particulars themselves do not have such a substantial property.

(129) [Context: The Persian king finally hunted down a unicorn.]

The unicorn is now penned.

The predicate *unicorn* is, however, true of concrete animals, not of abstract entities. There is no such animal as a unicorn. The semantic value of the description *the unicorn* in (129) is thereby undefined. This is not a good result for my discussion thus far. My presented analysis of an internal statement, such as, *Hamlet is a prince*, relies on the view that the DP in question has a semantic value. The DP *the unicorn* must have a semantic value for the whole utterance to be significant.

Here I again appeal to the distinction between external and internal perspectives. If we take an external perspective, namely, use (129) to talk about the actual world, then it is neither true nor false because its semantic value is undefined. This result fits with our intuitions about (129). As discussed by Strawson, we would be baffled if anyone sincerely uttered (129) to describe the actual world.<sup>44</sup>

If we take an internal perspective, then (129) is construed as a shorthand for the following sentence:

(130) **The unicorn in the relevant story** is now penned.

The complex predicate *unicorn in the relevant story* is not a predicate true of concrete animals. Similarly, the predicate *cat in my dream* is true of a piece of my imagination, not of concrete cats. The noun *unicorn* or *cat* in such an environment seems to lose its customary meaning. The meaning of the complex predicate is not a mere sum of the meanings of the noun and the prepositional phrase. The phrase *fake diamond* seems to

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<sup>44</sup>We will discuss more on Strawson's judgments concerning seemingly undefined descriptions in Section 4.6.3.

be an analogous case. I am not, however, able to provide the compositional semantics for these phrases. But the result is that the DP in (130) denotes an abstract object, i.e., the unicorn in the story. This explains why (129) and (130) are meaningful.

#### 4.6.2 Negative existentials

Now I want to turn to negative existentials. One might think that the proposed treatment of empty expressions directly conflicts with negative existential statements that contain empty expressions because I claim them to denote abstract ‘existing’ objects. However, my assumption that the domain includes artificial abstracta in itself is neither refuted nor supported by our uses of existential constructions. The notion of the discourse domain is different from that of the extension of the verb *exist* or *there*-construction. Accepting that an individual variable ranges over the characters such as Pierre Bezukhov and Hamlet does not imply that a competent speaker needs to assent or dissent to *Hamlet exists*. Here is a consideration in support of this point. Frederike Moltmann (2011) points out that the English verb *exist* has a sortal requirement, which makes a contrast with other verbs such as *occur* and *happen*. The requirement is that, on the one hand, *exist* usually applies to ordinary objects, whereas it hardly applies to events; on the other hand, *occur* applies to events, whereas it fails to apply to ordinary objects.

- (131) a. ?? The assassination of JFK exists/existed.  
b. ?? John’s playing the piano exists/existed.

- (132) a. The assassination of JFK happened/took place on November 22, 1963.  
b. John’s playing the piano occurs in the morning.



We ordinarily think of and talk about events as existing things. Furthermore, no one denies the existence of the assassination; it was a real event. However, it is not clear at all if competent speakers would assent to a use of (131a-b). Therefore, the relation between the discourse domain and our usages of *exist* is not straightforward. What competent speakers say about a use of the sentence *Hamlet exists* is neither supporting nor falsifying evidence for creationism about the denotations of empty expressions unless we have a substantial theoretical assumption about the functions of *exist* within sentences. In order to provide an accurate assessment of my proposal, we have to first arrive at a detailed analysis of existential constructions. In this work, unfortunately, I cannot provide a comprehensive discussion of existential constructions across languages.

However, I want to sketch a plausible view of existential constructions that is compatible with the proposed view of empty expressions. Following Salmon (1987) and Moltmann (2011), I assume that the verb *exist* can be seen as a predicate true of individuals, which is analogous to the verbs such as *happen*, *take place*, and *occur*. Furthermore, I suggest that *exist* is a predicate true of all non-eventive entities, whether they are concrete or not. Something like the following might be sufficient for the suggestion:

$$(133) \quad \llbracket \text{exist} \rrbracket^g = \lambda x : x \text{ is not an event} . \lambda s . x \in D_{\langle e \rangle} \wedge x \sqsubseteq s$$

Given this lexical meaning of *exist* and the presented treatment of empty expressions, each of the following sentences expresses a true proposition with an appropriate situation as the value of the coexisting situation pronoun.

- (134) a. Pierre Bezukhov exists.  
       b. Hamlet exists.

Since fictional characters are artificially created objects in the world, *exist* is true of them in the actual world. Indeed, in some contexts, we affirmatively use (134): *Yes, Pierre Bezukhov exists. It's a character in Tolstoy's novel.*

Sometimes our intuitions are pulled in the opposite direction. We often find ourselves compelled to dissent to (134): of course, Hamlet does not exist. How is this possible? The verb *exist* often appears with an additional phrase: *in my dream, as a fictional character, in the show, etc.* Once *exist* is modified, the whole predicate does not apply to all concrete and abstract entities. It only applies to some subset of it. A use of

(135) A winning lottery ticket exists in my dream.

would be false when I never dream of a winning lottery ticket. It is not contradictory to say that many winning tickets exist, but they do not exist in my dream. Likewise, the extension of *exist* can be narrowed down by a modifier so that it only applies to some subset of ordinary concrete objects.

- (136) a. Pierre Bezukhov exists in reality.  
b. Hamlet exists as a real person.  
c. The ghost in my closet really exists.

Given my treatment of empty expressions, for example, (136b) expresses a false proposition with a situation that contains the play *Hamlet* because the fictional character Hamlet is not among the human beings. This is how we would judge some uses of (136a-c) to be false. We would thereby judge their negations to be true. To summarize, my claim is that a use of (137a) can be judged true because it can be seen as a shorthand for (137b), which is true.

- (137) a. Pegasus doesn't exist.  
b. Pegasus doesn't exist **as a real creature**.

We can provide a parallel analysis for the *there*-constructions. I suggest that, for example, *there is an F* is true at a world if and only if the world includes an *F*, whether it is a concrete entity or not. The compositional details are not important for present purposes. I will just assume that *there be* is a vacuous predicate, which fills the second argument of a generalized quantificational phrase *an/no F*. Given this assumption and the preceding discussion, both (138) and (139) are actually true because there is no real unicorn, while there are many fictional characters such as Hamlet in the world.

(138) There is no unicorn.

(139) There is a fictional character.

That also means that

(140) There is no Hamlet.

is false on the same ground. Hamlet as a fictional character exists. There is something that was named 'Hamlet' in the actual world. However, a use of (140) can be seen as a shorthand for a modified form, such as (141).

(141) There is no **real** Hamlet.

(141) is true, assuming that the adjective *real* is not true of artificial abstracta. That is why we sometimes judge a use of (140) to be true.

### 4.6.3 Strawson's contrast

I conclude this chapter by discussing a puzzling contrast observed by Strawson, which has recently attracted some attention in the philosophical and linguistic literature. Consider the uses of (142) and (143) that take place today. Assume that each speaker is performing a speech act of assertion by means of the utterances.

(142) The king of France is bald.

(143) My friend went for a drive with the king of France. (Strawson, 1954, 226)

As Strawson argues, there is something uneasy about declaring (142) to be plain false, unlike the case of (143); some might judge (142) to be 'squeamish' or conclude that the question of its truth or falsity simply 'does not arise',<sup>45</sup> whereas competent speakers would nearly uniformly consider (143) to be a false claim. There is at least a contrast between (142) and (143) that needs to be explained. There are several recent attempts to account for the contrast in a principled manner (Lasersohn, 1993; von Stechow, 2004; Yablo, 2006; Schoubye, 2009). Although I will not closely examine the extant proposals, I will argue that the proposed treatment of empty descriptions is compatible with Strawson's observations concerning empty descriptions.

First of all, following Strawson, I assume that the semantic values of (142) and (143) are both undefined because there is no present king of France. However, taking for granted that the speaker intends to be meaningful, it would be reasonable for the interpreter to pursue an alternative way to understand the utterance in question. I have argued that a use of a sentence that contains an empty definite description can be understood as a shorthand

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<sup>45</sup>See Strawson (1950, 1964).

for something else. I suggest that a use of (142) can be understood as the shorthand of (144).

(144) The king of France **in the relevant story** is bald.

The description in (144) denotes an abstract entity created by the imagination of the speaker. Thus, the semantic value of (144) is defined. Is the semantic value of (144) a true proposition or a false one? It depends on whether we take an internal or external perspective to interpret the utterance. If we take the internal perspective, then we never know whether the proposition is true or false because we never know whether the king of France in the story is bald. If we take the external perspective, then (144) expresses a false proposition because a mental entity is not a bald person.

Thus, my proposal predicts that a use of the sentences like (142) can be true, false, and neither true nor false. This shiftiness of truth-value judgments has been indeed observed by some authors. In his article von Stechow (2004) reports that a use of (142) is judged false given a context in which we have a complete list of the hairstyles of monarchs today. Anders J. Schoubye (2009) also gives us an elaborate context in which (142) is clearly false. The actuality oriented Russell deemed (142) to be false as well.

The same story applies to (143). That is, the interpreter reinterprets a use of (143) to be a shorthand for something else, which contains an expression denoting an abstract object. However, (143) primarily induces an external perspective because it includes some object in the actual world. A use of (143) today is judged false because no one can go for a drive with a mental entity.

Let me add a few more examples by von Fintel, which tend to induce falsity judgments.

(145) a. The king of France is on a state visit to Australia this week.

b. [Coming across an abandoned umbrella]

This umbrella was left here by the king of France.

c. The king of France is jogging right now. (von Fintel, 2004, 330)

All sentences seem to be externally oriented. In other words, the speaker seems to be using each to describe the actual world. Then, it is hard for the interpreter to take an internal perspective to understand the utterances in question. A mental entity cannot participate in any of the activities listed here. Thus, they are judged false with respect to the actual world.

## 4.7 Summary

In this chapter I have developed a situation-based analysis of proper names and definite descriptions. Syntactically represented situation pronouns play an essential role in accounting for implicit domain restriction as well as the independent and co-varying interpretations of complex nominals. The singular and bound uses of proper names are analyzed in terms of the general features of complex nominals. The proposed analysis has broad implications in a wide range of issues concerning proper names and definite descriptions. I have discussed how the analysis accounts for rigidity, the *de re/dicto* distinction, the bound interpretations, identity statements, propositional attitude reports, descriptive names, and seemingly non-referring names and descriptions.

## Chapter 5

### The Semantics of other Bare Nominals

#### 5.1 Introduction

In the preceding chapters I have developed an analysis of proper names that accounts for the singular, bound, and modified uses of names in English. The goal of the current chapter is to extend the developed analysis to the uses of proper names in Japanese.

Here is an overview of my analysis of Japanese proper names. Proper names in Japanese are semantically on a par with those in English. The singular and bound uses of proper names in Japanese are semantically analyzed as definite descriptions, construed as bindable referring expressions. The major difference between English and Japanese is that Japanese has no determiner that is semantically equivalent to the definite article *the* and  $\emptyset$ . I will argue that there is a non-trivial mapping between syntax and logical form with respect to Japanese bare nominal expressions. An argumental occurrence of a proper name in Japanese is constituted by one or more predicative proper nouns at the level of syntax, but a primitive semantic machinery turns the predicate into a singular referring device at the level of logical form.

There are three reasons to expand our discussion to include the uses of names in Japanese. First of all, the broad empirical coverage can be viewed as corroborating evidence for the developed analysis of proper names and definite descriptions. We have seen earlier in Chapter 2 some puzzling occurrences of names in Japanese, which pose trouble

to both names-as-individual-constants view and names-as-variables view. My analysis comprehensively accounts for the otherwise annoying Japanese data in a unified fashion.

A second reason has to do with the cross-linguistic understanding of definite descriptions or the lack thereof. In the philosophical literature within the Anglophone tradition, non-English languages have been rarely reviewed and discussed. The lack of cross-linguistic considerations does not merely highlight the practical limitation of any scientific research. It can be a serious shortcoming of a philosophical study. In “On Denoting” (1905) Russell brings our attention to the syntactic form of what he calls a ‘denoting phrase’, in contrast to his earlier work *Principles of Mathematics* (1903), where he claims that some concepts inherently and logically denote objects, with no particular discussion of structural features. Russell in 1905 suggests that a definite description is one of the denoting phrases that are distinguished from other expressions in structural terms.

- (1) By a “denoting phrase” I mean a phrase such as any one of the following: a man, some man, any man, every man, all men, the present King of England, the present King of France, the centre of mass of the Solar System at the first instant of the twentieth century, the revolution of the earth round the sun, the revolution of the sun round the earth. Thus a phrase is denoting solely in virtue of its *form*.<sup>1</sup>  
(Russell, 1905, 478, emphasis in original)

It remains common practice among philosophers to identify a definite description in purely formal terms based on its characteristic syntactic structure. We normally consider a definite description to be a definite article (i.e., *the*) followed by an NP (e.g., *present king*

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<sup>1</sup>Russell does not mean that a phrase denotes an object in virtue of its form. In other words, he does not think that the structure itself is the reason why a phrase can denote. He just *calls* an expression a ‘denoting phrase’ in virtue of its form. See (Kaplan, 2005).



of France). This practice immediately raises a question, ‘What is a definite description in articleless languages?’.

The presence and the absence of articles classify the world languages into at least three groups. First, there are many English-type languages, which have both definite and indefinite articles. Second, some languages such as Turkish have only an indefinite article. Third, there are also a number of languages that have neither definite nor indefinite article. One study shows that the third group is not a minority as indicated by Row 5 of (2).

(2) *Distribution of Articles in the World’s Languages*

Characteristics	# of languages
1 Definite word distinct from demonstrative	216
2 Demonstrative word used as marker of definiteness	69
3 Definite affix on noun	92
4 No definite article but indefinite article	44
5 <b>Neither definite nor indefinite article</b>	<b>199</b>
Total	620

(after Dryer and Haspelmath 2011, Ch. 37<sup>2</sup>)

To list a few, the third group (Row 5) includes Latin, Russian, Serbo-Croatian, Czech, Polish, Ukrainian, Slovenian, Bini (African), Sidaama (African), Quechua, Navajo, Pomo (Californian), Mohawk, Southern Tiwa, Japanese, Korean, Chinese, Hindi, Punjabi, etc. (Bošković, 2009; Dryer and Haspelmath, 2011).

Seen in this light, any structural definition of definite descriptions that appeals to the presence of a definite article is problematic because it fails to apply to such articleless languages.<sup>3</sup> What should we say about descriptions in articleless languages? Speakers

<sup>2</sup>Dryer and Haspelmath includes Japanese as having an indefinite article, i.e., belonging to Row 4, which can be debated. I put Japanese in the line 5.

<sup>3</sup>A radical alternative is to conclude that there is no such thing as a definite description in articleless languages and the speakers of articleless languages never use a definite description, which I do not consider in this work.

of articleless languages, of course, talk about the largest prime number, the Solar system, the Republican candidates, etc. Does Russell's semantic analysis of descriptions apply to articleless languages, even though his structural definition is not available? This chapter offers a rare attempt to address such a cross-linguistic question by presenting a theory of descriptions for articleless languages. I will argue that our non-Russellian analysis of definite descriptions can be naturally extended to cover Japanese, one of the world's articleless languages.

A third reason is a broader consideration concerning bare nominal expressions in general. I have compared and assimilated some uses of proper names and definite descriptions. There is another class of expressions that behave similarly to proper names. In English plural count nouns (e.g., *tigers*) and mass nouns (e.g., *water*) can appear in the surface without being supported by any other word that typically introduces a common noun (articles, quantifiers, demonstratives, and numerals). Just as proper names, they alone can be used as arguments of sentences.

- (3) Tigers are four-legged.
- (4) Retired groupies should receive social security benefits. (Carlson, 1977a, 1)
- (5) Water is H<sub>2</sub>O.
- (6) Bill threw snow at Phil.

Several constructions also suggest that bare plurals are more aligned with proper names and definite descriptions than with quantified phrases. Paul Postal (1969) reports that the *so-called* phrase is compatible with all of proper names, definite descriptions and bare plurals, but not with other complex nominals as in (7). Mass terms also seem to be

acceptable in the *so-called* construction as in (8).

- (7) a. Slim is so-called because of his slender build.
- b.  $\left\{ \begin{array}{l} \text{Cardinals are} \\ \text{The cardinal is} \end{array} \right\}$  so called because of  $\left\{ \begin{array}{l} \text{their} \\ \text{its} \end{array} \right\}$  color.
- c. \*  $\left\{ \begin{array}{l} \text{All} \\ \text{Most} \\ \text{Few} \\ \text{Some} \\ \text{These} \end{array} \right\}$  cardinals are so-called because of their color.

(Carlson, 1977a, 60)

- (8) Fool's gold is so called because it bears a visual similarity to real gold.

(Google search)

Likewise, Carlota Smith (1964) notes another construction that prefers bare plurals together with proper names.

- (9) a. Mean though Bill is, he hasn't the heart to do that.
- b. Mean though bobcats are, they are still good pets.
- c. ?? Mean though  $\left\{ \begin{array}{l} \text{several bobcats} \\ \text{all bobcats} \\ \text{those bobcats} \end{array} \right\}$  are, they wouldn't harm our dog.

(Carlson, 1977a, 60)

Bare mass terms can also be used naturally with a similar construction as follows.

- (10) Useful and familiar though water is, it is not really tame stuff. (Google search)

Proper names and bare plurals are also alike when used as vocatives. Most quantificational nominals are quite unnatural in the vocative construction, however.

- (11) a. Fred! Lend me your ears.
- b.  $\left. \begin{array}{l} \text{Friends!} \\ \text{Soldiers!} \\ \text{Veterans!} \end{array} \right\} \text{Lend me your ears.}$
- c.  $\left. \begin{array}{l} \text{??Many friends!} \\ \text{??All veterans!} \\ \text{*Some man!} \end{array} \right\} \text{Lend me your ears.} \quad (\text{Carlson, 1977a, 60})$

Mass terms again seem to pattern more with proper names in vocatives.

- (12) We saw a spring there and drank some water. Oh, water! It was so long-expected,  
sweet and cold water! (Google search)

Thus, proper names share some syntactic characteristics with other bare nominals.

Furthermore, it has long been pointed out that proper names and other bare nominals have several semantic characteristics in common (Kripke, 1980; Putnam, 1975). For example, Kripke suggests that theoretical identity statements that contain two general terms (e.g., *Water is H<sub>2</sub>O*) are, if true, examples of necessary *aposteriori*, just as identity statements that contain two proper names (e.g., *Hesperus is Phosphorus*).

I do not think of these striking similarities among bare nominals to be mere coincidence. The similarities call for a unified treatment of proper names, bare plurals, and mass terms. Nominal expressions in articleless languages such as Japanese provide an important insight at this point. Japanese bare nominals perform the functions of definite

and indefinite descriptions, and of bare mass and plural terms in English. If we can apply our analysis of definite descriptions to Japanese bare nominals in general, then we can in turn apply it to English bare mass and plural terms. I will indeed argue that bare plurals and mass terms in argument position are analyzed as a sort of definite descriptions that denote very large individuals.

In what follows, first, I review the basic data of Japanese articleless NPs (Section 5.2). Second, I present the semantics of Japanese articleless NPs, which is also applicable to English bare mass and plural terms with a small variation (Section 5.3). Third, I argue against the view that Japanese articleless NPs contain silent interpretive structure (Section 5.4). Forth, I will discuss some philosophical implications of the extended analysis of proper names (Section 5.5).

## 5.2 The Characteristics of Bare Nouns

Japanese is an articleless language, along with many other languages as noted above. Count and mass terms such as *tora* ('tiger') and *mizu* ('water') can appear on their own with no demonstrative or quantificational modifier both in argumental and non-argumental positions. I call such occurrences of NPs that superficially come with no determiner-like expression 'bare' NPs. A single word-form, seemingly the same NP, can be used to express various different thoughts. I will catalogue a variety of interpretations observed in the bare uses of common and proper nouns in Japanese. A Japanese bare noun can be used to express four different sorts of meaning; object-reference, existential quantifica-

tion, generic quantification,<sup>4</sup> and kind-reference, although the taxonomy is theory-laden and question begging—I follow the standard linguistic convention and use these four theoretical terms such as ‘kind-reference’ to describe the relevant phenomena. I am not suggesting that these four terms are theoretically basic. I will indeed argue in Section 5.3.3 that what is standardly assumed to be kind-referential sentences by linguists are analyzed in terms of non-intensional collections of things, along the lines of Burge’s theory of mass and plural terms (Burge, 1977). It is also worth noting that we can observe four different sorts of uses of bare NPs in Japanese, which is also observable in Mandarin Chinese (Cheng and Sybesma, 1999; Yang, 2001), Hindi, and Russian (Chierchia, 1998; Dayal, 2004).

### 5.2.1 Bare common nouns

For all sentences below, the translations in the inverted commas are typical readings people would find in hearing the sentences. They by no means exhaust the possible readings of the sentences used in various contexts. First, I consider the bare common nouns used as the direct objects of transitive verbs, marked by the accusative case morpheme *o*. (13) illustrates an indefinite use of the bare noun *hon* (‘book’). An utterance of (13) can be true when the speaker went to a bookstore with the intention of purchasing one or more books with no particular book in mind. The speaker can add, for example, ‘Because I need to kill some time on the plane’.

- (13) Watasi wa **hon** o kaini-itta.  
 I TOP **book** ACC buy-went

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<sup>4</sup>Sentences that express generic quantification are also sometimes called ‘characterizing sentences’ (Krifka et al., 1995)

‘I went to buy a book/books.’

(14) illustrates the definite interpretation of a bare noun, where the noun *hon* is modified by the restrictive relative clause *yoyakusiteita* (‘that he has reserved’). There is a unique book or a unique set of books that Taro came to pick up, not any other books in the library.

- (14) Taro ga toshokan ni **yoyakusiteita hon** o torini-itta.  
Taro NOM library at **reserved book** ACC fetch-went  
‘Taro went to the library to pick up the book/books he reserved.’

(15) and (16) are the examples of ‘generic’ or ‘characterizing’ sentences that are concerned with some sort of regularities, not with particular events. (15) is about the referred person’s habit of reading books in general. (16) states that Tanaka is usually in charge of any children’s book.

- (15) Aitu wa **hon** o yomu no ga suki da.  
That-guy TOP **book** ACC read NOMINALIZER NOM fond-of be  
‘That guy likes reading books.’

- (16) Tanaka-san ga omoni **kodomo-mukeno hon** o tantosi  
Tanaka-HONORIFIC NOM mainly **child-addressing book** ACC in-charge-of  
teiru.  
PERF  
‘It’s Tanaka who is mainly in charge of children’s books.’

(17) is often described in the linguistic literature as involving ‘reference to a kind’ because the main predicate seems predicated of a kind or a *genus*, not of any particular object. The sentence is also not concerned with any generalization, but with a single event. The main caveat here is that I use the term ‘kind reference’ for a descriptive convenience. I do not presuppose that our linguistic competence directly reflects the ontology of kinds.

- (17) dare ga **hon** o hatumeisita?  
who NOM **book** ACC invented?  
'Who invented books?'

The examples (13-17) overall indicate that Japanese bare NPs can play analogous roles of English definite and indefinite descriptions (e.g., *the book*, *a book*) and bare plurals (e.g., *books*). One of the main goals of this chapter is to explain how this interpretive flexibility is possible.

Now I want to note that one and the same bare NP could be used to convey different thoughts even when it is in one and the same construction. A use of (13) can be true when the speaker indeed does have a particular book in mind, just as we use a definite description to talk about a unique object. (13) can be interpreted as if it contains a definite description: the speaker went to buy the original edition of *Begriffsschrift*, which she has found at the store and promised to buy after retrieving cash.

Likewise, (14) can be used to talk about an indefinite number of books: the local library will be shut down and needs to dispose of all its collections. Taro is one of many second hand book dealers who have a contract to purchase whatever amount of books that the library allots to them. Taro has no idea how many books he would be able to purchase—the number could range from just one to a few hundreds. He anyway went to the library with his van. This circumstance is compatible with (14).

(15) contains an individual-level predicate or an expression that specifies somewhat stable state of an individual, not an action or event in which the individual participates. And it invokes a generic reading. However, it is compatible with the scenario in which the bare noun *hon* is anaphorically used to refer to the previously mentioned book. Here



is a possible setup. Back then when books were treasures, the average sailors might have never seen a book in their lives. If so, then the generic reading of (15) might be almost unthinkable in the following context:

(18) Everything was gone when the ship wrecked. We only have one book and one scroll left. I like toying with the scroll because I can't read. But that guy is literate. So '(15)'.

The generic reading is not enforced on the use of (15) despite its naturalness. Similarly, an anaphoric reading of (16) seems possible. One can be in charge of a particular set of children's books. On the other hand, an anaphoric reading of (17) is hard to obtain unless we impose a somewhat attenuated meaning, like 'to create something', on the verb *hatumeis* ('invent').

To summarize the observations thus far, bare common nouns used as direct objects can have four different readings, i.e., indefinite, definite, generic, and kind readings, and, on some occasions, one and the same sentence may be used to invoke two different readings. We have seen that an anaphoric reading—definitely talking about a previously mentioned object—is available in most cases.

Now I discuss the cases where bare common nouns are used as the subjects of sentences. Many more examples will be examined because Japanese has two distinct particles *wa* and *ga*, either one of which usually occurs with the subject of any sentence, resulting in a variety of interpretations.

Here are what S.-Y. Kuroda and Susumu Kuno call the 'neutral descriptive uses' of *ga*:

- (19) a. **Inu** ga miti o wataroto-siteiru.  
**dog** NOM street ACC want.to.cross-do.progressive  
 ‘The dog is/the dogs are going to cross the street’
- b. Tukue no ue ni **hon** ga aru.  
 table ’s top on **book** NOM is  
 ‘There is a book on the table’ (Kuno, 1973, 50)
- c. **Hon** ga tukue no ue ni aru.  
**book** NOM table ’s top on is  
 ‘There is a book on the table’ (Kuno, 1973, 50)
- d. **Sora** ga akai.  
**sky** NOM is-red  
 ‘Look! The sky is red’ (Kuno, 1973, 50)

The sentences in (19) seem to involve stage-level and existential predicates, describing objectively observable action, existence and temporal state of something. We do not have to worry about if this generalization well captures the meaning of *ga*. We are more concerned with the interpretations of bare NPs than those of the particle *ga*. Both definite and indefinite readings are attested in (19). (19a) appears to be talking about a unique dog or a unique set of dogs. (19b) is analogous to an English existential statement containing an indefinite description. Also note that the adverbial PP *tukue no ue ni* (‘on the table’) could appear after the NP (19c), which shows that an existential reading is not a special property of a certain argument position. It is hard to obtain an existential reading in (19a). But, if we substitute the main predicate with something that is temporally or epistemically distant from the utterance context, then an existential reading would be possible:

- (20) a. **Inu** ga miti o wataroto-siteita.  
**dog** NOM street ACC want.to.cross-do.progressive.past  
 ‘A dog was going to cross the street.’

- b. **Inu** ga miti o wataroto-siteita yoda.  
**dog** NOM street ACC want.to.cross-do.progressive.past seeming.be  
 ‘It seems like a dog was going to cross the street.’

A use of an NP plus *ga* can also generate a generic and a kind-referential reading in limited circumstances. (21a) depicts what Kuroda and Kuno call the exhaustive-listing *ga*, and (21b) the behavior of *ga* in an embedded construction:

- (21) a. **Saru** ga ningen no senzo desu.  
**monkey** NOM man 's ancestor is  
 ‘It is the monkey that is the ancestor of man.’ (Kuno, 1973, 51)
- b. **Jagaimo** ga vitamin C o fukumu koto o boku wa  
**potato** NOM vitamin C ACC contain NOMINALIZER ACC I TOP  
 sitteiru.  
 know  
 ‘I know that potatoes contain vitamin C.’

(21a) attributes human ancestry to nothing but the monkey species. A use of (21a) implies that no other candidate can be the human ancestor. This characteristic of *ga* has a somewhat similar effect as a focused element in many English sentences (cf. **John** *kissed Mary*). As in (21b), the subject of an embedded clause tends to have the *ga* particle instead of *wa*. (21b) seems to make a nutritional generalization about potatoes, not commenting on any particular event or potato.

Another point to note is that the topic marker *wa* is not necessary for a generic interpretation. Krifka et al. (1995, 118) note that, in Japanese, the subject nominal is marked by *wa* when it gets a generic interpretation, whereas it is marked by *ga* in the case of existential reading, which does not hold generally, as we just saw.

Therefore, four different readings, i.e., indefinite, definite, generic and kind ones, are observed in the subject uses of Japanese bare common nouns with the *ga* particle. The pattern is slightly different from the one in Mandarin Chinese reported by Lisa Lai-Shen Cheng and Rind Sybesma (1999) because they claim that Mandarin bare NPs in preverbal positions cannot have indefinite interpretations. Of course, that does not mean that all four readings are always available to every occurrence of an NP plus *ga*. The availability of a reading seems dependent on the choice of a main predicate.

Now I turn to the other particle *wa*. We can again observe all four readings in some or other constructions that involve the NP-*wa* sequence. The particle *wa* is said to play two different roles: marking topics or themes, and making contrasts. The topical use of *wa* is typically either kind-referring, generic, or definite:

- (22) a. **Kyoryu** wa zetumetu-sita.  
**dinosaur** TOP extinction-did  
 ‘Dinosaurs went extinct.’
- b. **Kuzira** wa honyu-doubutu desu.  
**whale** TOP mammal is  
 ‘Speaking of whales, they are mammals.’ (Kuno, 1973, 44)
- c. **Musuko** wa party ni kimasita.  
**son** TOP party to came  
 ‘Speaking of my son/sons, he/they came to the party.’

The contrastive use of *wa* seems to allow an indefinite reading of a bare noun.

(23) is an appropriate answer to the inquiry ‘Do you have anything to read, a book or magazine?’:

- (23) **Hon** wa soko ni arimasu ga, **zassi** wa arimasen.  
**book** TOP there at is but, **magazine** TOP isn’t

‘There is a book over there, but no magazine.’

To summarize, Japanese bare common nouns allow four different readings, whether they are used as the subjects or objects of sentences, with either particle *wa* or *ga*. An occurrence of a bare NP, abstracting away from its environment, is superficially ambiguous. Of course, that does not mean that the Japanese people are always confused—disambiguation occurs and communication flows. The question is *where* the disambiguation occurs. In Section 5.4, I will deny the view that it occurs at the level of syntax. Now I turn to proper nouns in Japanese, which exhibit the same pattern with bare common nouns.

### 5.2.2 Proper nouns

I have defended the predicate thesis of proper names. Proper and common nouns belong to the same category of noun, and one or more proper nouns constitute NPs, which are used as proper names. Based on the predicate thesis, we can predict that Japanese proper names can be used to express four different interpretations just as common nouns. This prediction is indeed born out.

As the singular use of a proper name shows, Japanese bare proper names can be definitely used to talk about particular individuals. See the examples in Chapter 1. It is also possible to indefinitely use a proper name with no assumption about uniqueness. Indefinite uses of proper names are probably not very common because there are not many circumstances in which nothing but the existence of an individual with a certain name is the main topic of the conversation. But we can certainly entertain such a scenario.

Suppose that there is an obsolete custom known by few: it is a privilege for a young child to meet with someone whose surname is ‘Kotobuki’, which literally means longevity. Perhaps driven by anachronism in his family, a young man, Taro, is desperate looking for a Kotobuki. He wishes to see, at least, one Kotobuki, and if possible a couple of them as if he finds security in numbers. As Taro’s remarks, what follows are all acceptable:

- (24) a. Watasi wa **Kotobuki** ni awanakutewa naranai. Hitori demo ii,  
 I TOP **Kotobuki** with meet must. one-CL even fine,  
 hutari nara nao-yosi.  
 two-CL if better  
 ‘I must see a Kotobuki. One of them is fine. Two would be better.’
- b. **Kotobuki** wa/ga chikaku ni inai darou ka.  
**Kotobuki** TOP/NOM near at is-neg will question  
 ‘Is there any Kotobuki nearby?’
- c. Kono machi ni **Kotobuki** ga iru kamosirenai.  
 this town at **Kotobuki** NOM is may  
 ‘There may be a Kotobuki in this town.’
- d. **Kotobuki** o mitsuketa. Nanto kono machi ni yonin mo ita.  
**Kotobuki** ACC found. EXCLAMATION this town at four-CL even is  
 ‘I found Kotobukis. Surprisingly, there are four of them in this town.’

No occurrence of the name *Kotobuki* in (24a-d) can be seen as referring to a particular individual.<sup>5</sup> The sentences therein seem to existentially quantify over individuals whose name is ‘Kotobuki’. These examples can be easily accommodated by assuming that names such as *Kotobuki* belong to the category of predicates along with common nouns because, as we have seen above, bare common nouns permit existential interpretations.

<sup>5</sup>Arguably, the bare proper noun in the first half of (24d) is definitely used, designating the set of persons named ‘Kotobuki’ in the town.

As we have seen in Chapter 2, a proper name in Japanese can also be used to make a generic assertion. I repeat the demographic statement about the distribution of surnames in (25a). I can also think of pseudoscientific statements about the relations between names and some characteristics such as personalities as in (25b). Perhaps inevitably, such a use can be ambiguous between a generic and singular interpretation.

- (25) a. [**Saito**-wa Tohoku syusin dearu koto] -ga ooi  
 [**Saito**-TOP Tohoku birthplace is COMP] -NOM many  
 ‘Many Saitos are from the Tohoku area.’ ‘It’s common that Saito is from the Tohoku area.’
- b. **Yuko**-wa yasintekina ko -ga ooi.  
**Yuko**-TOP ambitious woman -NOM many  
 ‘Those named ‘Yuko’ tend to be ambitious.’
- c. **Keiko**-wa seikaku -ga ii.  
**Keiko**-TOP personality -NOM good  
 ‘Those named ‘Keiko’ tend to be good-tempered.’ OR ‘Keiko is good-tempered.’

In Japanese, the uses of proper nouns exhibit the same variety of possible interpretations as those of common nouns. Thus, we have substantial evidence to treat proper names as nominal predicates, along with common nouns.

### 5.2.3 Narrow scope

Researchers of bare NPs have not failed to notice that they seem to have peculiar scopal properties. English bare plurals always seem to take the narrowest scope possible with respect to scope-sensitive expressions, as in the examples below from (Carlson, 1977b).

- (26) a. Minnie wishes to talk with a young psychiatrist. ( $\exists > wish$  or  $wish > \exists$ )

- b. Minnie wishes to talk with young psychiatrists. (only *wish* >  $\exists$ )
- (27) a. Everyone read a book on caterpillars. ( $\forall$  >  $\exists$  or  $\exists$  >  $\forall$ )
- b. Everyone read books on caterpillars. (only  $\forall$  >  $\exists$ )
- (28) a. A goat didn't run across my lawn. ( $\neg$  >  $\exists$  or  $\exists$  >  $\neg$ )
- b. Goats didn't run across my lawn. (only  $\neg$  >  $\exists$ ) (Carlson, 1977b)

For example, there is a transparent reading in (26a), according to which there is a certain young psychiatrist with whom Minnie wishes to talk. Not any young psychiatrist will do. The indefinite description *a young psychiatrist* is somehow able to produce two different scopes with respect to *wish*. By contrast, the bare plural *young psychiatrists* in (26b) is not just a plural version of the singular indefinite description. (26b) only allows a narrow scope reading, according to which Minnie wishes to talk with some or other group of young psychiatrists. There is no specific group of young psychiatrists to whom she is showing interest.

Hotze Rullmann and Aili You (2006) claim that bare nouns in Mandarin Chinese also take the narrowest scope possible by presenting the Chinese sentences analogous to Gregory Carlson's examples. One needs to be cautious, however, when carrying over Carlson's observation to Chinese or Japanese because they always allow bare NPs to have the readings equivalent to the referential or anaphoric uses of definite descriptions. It is not straightforward to distinguish a transparent reading of a plural indefinite description from a reading of an incomplete plural definite description.

To verify Rullmann and You's point, I want to consider an intermediate reading of an indefinite description. Logically speaking, if we have  $\forall$ ,  $\exists$ , and  $\neg$ , then there would



be two combinations ( $\forall > \exists > \neg$ ) and ( $\neg > \exists > \forall$ ), in which  $\exists$  takes the intermediate scope. Consider (29a), which seems to have at least one intermediate reading of *some goat*, as paraphrased as (29b).

- (29) a. Every person didn't see some goat.  
 b. For any person, there is some goat that the person didn't see. ( $\forall > \exists > \neg$ )

Such an intermediate reading is also available to a Japanese indefinite description as in (30a). However, once we drop the indefinite quantificational term *nan-biki-ka-no* as in (30b), the intermediate reading suddenly disappears.

- (30) a. Subeteno hito-ga      nan-biki-ka-no yagi-o      mitei-nai  
 Every    person-NOM wh-CL-Q-*no*    goat-ACC see-not  
 'Every person didn't see several goats.' ( $\checkmark \forall > \exists > \neg$ )  
 b. Subeteno hito-ga      yagi-o      mitei-nai  
 Every    person-NOM goat-ACC see-not  
 'Every person didn't see goats.' ( $*\forall > \exists > \neg$ )

(30b) has neither ( $\forall > \exists > \neg$ ) nor ( $\neg > \exists > \forall$ ) reading—the latter would be paraphrased as 'there is no goat that everybody saw'.

Therefore, Japanese bare NPs seem to take the narrowest scope possible. This finding is a desideratum that any adequate analysis of Japanese bare NPs must meet. I will explain this property by treating bare NPs as mere predicates, non-quantificational terms.

### 5.3 The Semantics of Bare Nouns

This section presents a semantic account of Japanese bare nouns that accommodates all the relevant characteristics we have just discussed. The very nature of my basic strategy requires the comprehensive treatment of singular/plural, count/mass, and indefinite/definite nominals. I can by no means do justice to the massive literature on such wide ranging topics. However, my account substantiates the thesis that the properties of proper names naturally follow from the general architecture of the nominal domain.

The account roughly goes as follows. In spite of its interpretive variations, any use of a bare NP has a uniform linguistic meaning: all bare NPs are of the predicative semantic type. There are, however, a handful of independent semantic rules implied by the domain of discourse and type theory. Such semantic rules, though they complicate the relation between syntax and logical form, can yield the observed interpretations with no overgeneration.

I will throughout use singular quantification together with an assumption that the domain includes collections of individuals, which also count as individuals. I need reference to such plural entities to provide the semantics of mass terms (e.g., *water*) and plural count nouns (e.g., *cats*). Logic with plural quantification might as well simplify my account to a non-negligible extent, the proof of which I reserve for another occasion (cf. Schein 1993; Rayo 2002; Pietroski 2005a; Nicolas 2008).

Whatever theoretical framework one adopts, the main message that I am advocating is clear. Proper names are not very special. A variety of characteristics we find in their uses (e.g., rigidity, bindability, etc) are not the inherent properties of some distinctive

expressions, but derived from the primitive rules of interpretation in the nominal domain.

### 5.3.1 Background

I introduce two notions as the necessary background for my analysis of Japanese bare NPs.

#### 5.3.1.1 Domains with aggregates

Following Burge (1977), I assume that the ordinary notion of ‘aggregate’ is theoretically tractable and plays an important role in semantic theory that deals with not only singular constructions such as *the king of France*, but also non-singular constructions such as *the kings and queens of France*.

An aggregate never introduces an ontologically distinct category over and above what I have been referring to by ‘individuals’, ‘objects’, and ‘particulars’. We think that there are stars in the sky, and we can talk about one star or another individually; We can also talk about many stars at the same time as in (31).

- (31) The stars that presently make up the Pleiades galactic cluster occupy an area that measures 700 cubic light years. (Burge, 1977, 97)

If we literally take what *the stars* denotes to ‘occupy’ a spatial region, then we can understand the denotation as a collection of stars because we take each star to occupy a space, and expect their collection together to occupy a space as well.

I will call a collection of individuals that also counts as an individual an ‘aggregate’. An aggregate is an object that has other objects as its members. If all of its members are

physical objects occupying space and time, then the aggregate is also a physical object occupying space and time. This does not exclude a possibility in which there are some aggregates that, partially or wholly, consist of nonphysical objects.

Burge theoretically specifies the notion of aggregate in terms of Nelson Goodman's calculus of individuals (Leonard and Goodman, 1940; Goodman, 1966). I follow the subsequent work by linguists, such as Godehard Link (1983) and Fred Landman (1989), and introduce a few additional primitive notions into the semantic system presented in Chapter 4. But I believe that none of my theses about natural language and their philosophical implications essentially relies on any formal detail.

I stipulate that the discourse domain is a set containing both atomic objects and aggregates that have atomic objects as their members. An aggregate is an individual consisting of one or more atomic objects, which is individuated by its 'members'. For example, if Snoopy and Odie are atomic objects, then Snoopy+Odie is an aggregate, where Snoopy is a 'member-component of' ( $\prec$ ) the aggregate Snoopy+Odie. It is worth emphasizing that an aggregate is not a mereological fusion. Thus, Snoopy's tail is not a member-component of ( $\not\prec$ ) the aggregate Snoopy+Odie.

An atomic object has nothing but itself as its member. The notion of 'atomic object' has nothing to do with the fundamental entities in the universe. Atomic objects are usually conceived of with respect to a particular noun. Imagine a domain that contains just two dogs: Odie and Snoopy. Now consider the noun *dog*, which applies to Odie and Snoopy. With respect to *dog*, Odie and Snoopy are atomic because none of their parts are dogs. Odie's tail is not a dog. Snoopy's ear is not a dog. Tails, ears, and other things in the domain are smaller parts of Odie and Snoopy, but they are not atomic with respect to *dog*.

As we saw in Chapter 4, the domain is partially ordered by a ‘part-of’ relation ‘ $\sqsubseteq$ ’. In addition to a mereological relation, the domain is also partially ordered by the member-component relation  $\prec$ . The ‘join’ operation ‘+’ is an operation that takes any nonempty subset of the domain and maps it onto the smallest element of the domain such that every element of the subset is its member. For example, the join operation maps  $\{a, b\}$  onto  $a + b$ , which is the smallest aggregate in the domain that has both  $a$  and  $b$  as its members. So I use a saturated join function to stand for its value, an aggregate. An object  $a$  is atomic with respect to a noun  $N$  if and only if, for anything  $b$  such that  $b$  is (an)  $N$  in the domain, if  $b \prec a$ , then  $b = a$ .

A domain containing three atomic objects and their aggregates can be visualized as follows:

- (32) a.
- |                                 |
|---------------------------------|
| $a + b + c$                     |
| $a + b \quad a + c \quad b + c$ |
| $a \quad b \quad c$             |
- b. i.  $a \prec a$
- ii.  $a \prec a + b$
- iii.  $b \prec a + b$
- iv.  $a + b \prec a + b + c$
- ...

(32a) represents the elements of the domain, where  $a$ ,  $b$ , and  $c$  are atomic and  $a + b + c$  is the largest element. The member-component-of relation holds among the elements as in (32b).

Now imagine that (32a) represents all the dogs there are. That is, (32a) is a subsect of a larger domain, and the atomic elements *a*, *b*, and *c* in (32a) exhaust all dogs in the domain. (32a) distinguishes dogs from the rest of objects in a number-neutral fashion. Anything falls under (32a) just in case we count it as a dog or an aggregate of dogs.

The count noun *inu* ('dog') in Japanese is a number-neutral predicate. It applies to anything that we count as a dog or dogs regardless of their number. I claim that the lexical meaning of *inu* can be described in terms of (32a), so *inu* is true of each dog and also of each aggregate of dogs. The following examples show that *inu* is number-neutral:

- (33) a. Are-wa **inu** da.  
That-TOP dog be  
'That is a dog.'
- b. Arera-wa **inu** da.  
Those-TOP dog be  
'Those are dogs.'
- c. Aitura-wa **inu** da.  
They-TOP dog be  
'They are dogs.'
- d. Ippiki-no **inu**-ga hoeta.  
one.CL-no dog-NOM barked  
'One dog barked.'
- e. Senbiki-no/ooku-no **inu**-ga isseini hoeta.  
thousand.CL-no/many-no dog-NOM at.once barked  
'A thousand/many dogs barked at once.'

Note that none of the occurrences of *inu* in (33) is number marked, although it is used to talk about many different numbers of dogs. I suggested that this is because *inu* indiscriminately applies to atomic and aggregate dogs.

### 5.3.1.2 Type-shifting and how to represent maximality

Following Barbara Partee and others,<sup>6</sup> I assume that a limited number of independent semantic rules play an important role in a semantic analysis of NPs. The following explains what I mean by an ‘independent semantic rule’. First, there is no element in a syntactic representation that encodes such a rule. Second, it changes the category of the meaning of an expression and sometimes adds content to the basic meaning. Third, it is not a pragmatic consideration such as an inference based on Gricean maxims and the cooperative principle of conversation. Independent semantic rules open the possibility of a one-to-many relation between syntax and logical form of natural language.<sup>7</sup>

I assume that ‘type-shifting’ functions theoretically capture the essence of, at least, some of the independent semantic rules required to explain the uses of bare NPs. Our semantic theory appeals to some notions in type theory. Expressions and also objects in the domain are associated with semantic types. For example, if we treat the adjective *red* as an expression of type  $\langle e, t \rangle$ , then it is associated with an entity of type  $\langle e, t \rangle$ , which is a function from  $e$ -typed objects (i.e., ordinary entities) to  $t$ -typed objects (i.e., truth-values). This suggests that we classify the entities in the domain into several categories according to their semantic types; some subsets of the domain consist only of the entities

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<sup>6</sup>See (Partee and Rooth, 1983; Partee, 1986b; Chierchia, 1998; Tomioka, 2003; Dayal, 2004).

<sup>7</sup>The possibility just mentioned must be discussed a little more carefully. For Partee and Rooth originally introduced a type-shifting rule as a ‘redundancy’ rule that insures that ‘each “low-type” verb has predictable *homonyms* of higher type’ (Partee and Rooth, 1983, 339, my emphasis). A redundancy rule can be seen as introducing a derived homophonous word into a syntactic representation, and hence never complicates the mapping between syntax and logical form. Redundancy rules are concerned rather about disambiguation or the complexity of the lexicon. Partee (1986b) also suggests that type-shifting rules are compatible with Montague’s even stronger homomorphism requirement between syntactic categories and semantic types (See fn.1 in Partee, 1986). I take her considerations to indicate that the mere introduction of type-shifting rules would not necessarily complicate the syntax-logical form mapping. I will discuss why the semantics of Japanese bare nouns need to introduce a non-trivial mapping between syntax and logical form later.

of a certain type, and they thereby easily stand out (e.g,  $D_{\langle e \rangle}$ ). We can think of various mapping relations between the entities in such homogeneous subsets. Such a function is type-shifting because it maps an entity of a certain type onto another of a different type.

Thus, our semantic theory by its design entails a variety of type-shifting rules. That does not show that, however, all such rules are available to natural language semantics. In general, I consider the relation between logic and natural language semantics very unclear.

I appeal to a widely-used definiteness operation that encodes the notion of maximality, which is just a variant of the *iota* operation. The *iota* operation is a partial mapping from  $D_{\langle e,t \rangle}$  to  $D_{\langle e \rangle}$ , mapping any singleton set onto its member (Partee, 1986b), which is described in our metalanguage with the inverted ‘ $\iota$ ’. I used *iota* as the lexical meaning of the definite article *the* for simplicity. Apparently, *iota* cannot handle plural constructions. Following Sharvy (1980, 612), I use a *mu* to express in our metalanguage the largest object that satisfies  $F$  as follows:<sup>8</sup>

$$(34) \quad \mu x(Fx)$$

Sharvy defines ‘ $\mu x(Fx)$ ’ as an incomplete symbol, which is designed to be an extension of Russell’s quantificational theory of definite descriptions. I have, however, criticized and didn’t adopt a quantificational approach to the semantics of definite descriptions in Chapter 4. I use ‘ $\mu x(Fx)$ ’ as a complete expression of type  $\langle e \rangle$ . ‘ $\mu$ ’ is an operator that forms a term when combined with an open sentence. The truth-conditions of a sentence

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<sup>8</sup>In the linguistic literature, the non-inverted ‘ $\iota$ ’ is often implicitly redefined as encoding maximality and used in the place of Sharvy’s ‘ $\mu$ ’. Some theorists use ‘ $\sigma$ ’, following (Link, 1983). This comment may seem all terminological. But to distinguish the singular *iota* and a non-singular variant is important for my analysis because I consider the silent determiner  $\phi_\iota$  in English encodes *iota*, not its plural variant.



that contains ‘ $\mu x(Fx)$ ’, such as (35a), can be represented as follows:

- (35) a.  $G(\mu x(Fx))$   
 b.  $\exists x([Fx \wedge \forall y(Fy \rightarrow y \sqsubseteq x)] \wedge Gx)$

The first two conjuncts within square brackets are to be understood as a presuppositional content. Sharvy makes sure that  $x$  is the largest  $F$  in terms of the ‘part-of’ relation: ‘ $\forall y(Fy \rightarrow y \sqsubseteq x)$ ’ implies any  $F$  is part of  $x$ — $x$  is all  $F$  that there is.

Now we can define  $iota_m$  as a partial function that maps any set onto its largest element, if there is such a thing.

- (36)  $iota_m: \lambda F_{\langle e,t \rangle} : \exists x(Fx \wedge \forall y(Fy \rightarrow y \sqsubseteq x)) . \mu x(Fx)$  (Extensional version)

The English definite article *the* encodes  $iota_m$  as its lexical meaning. All singular cases discussed in the previous chapter are subsumed as a subset of the uses of  $iota_m$ .<sup>9</sup> For any  $x$ ,  $x \sqsubseteq x$ . If there is just one atomic object that is uniquely  $F$  in the domain, then that object is  $\mu x(Fx)$ . I will explain how  $iota_m$  is employed to account for the attested readings of Japanese bare NPs.

### 5.3.2 Object Reference

Let us first consider a referential or anaphoric use of a bare NP.

- (37) a. i. Ippikino inu to neko -ga heya-ni haittekita.  
 one.CL dog and cat -NOM room-into entered.  
 ‘A dog and cat entered the room.’

<sup>9</sup>That is, the lexical meaning of *the* is (an intensional version of)  $iota_m$ , which is distinct from the non-plural  $iota$ . As mentioned in Chapter 3 and 4, there is no singular use of a plural proper name. *Smiths* cannot be used to refer to, say, the two contextually salient Smiths. So I take  $\emptyset_7$  to encode the uniqueness of  $iota$ , not the maximality of  $iota_m$ .

- ii. Neko-wa boku-no hiza-no ueni suwarikonda.  
 Cat-TOP 1p.sg-'s lap-'s on sat.down  
 'The cat crawled up on my lap.'

- b. i.  $\exists x \exists y (\text{dog}(x) \wedge \text{cat}(y) \wedge \text{entered}(x) \wedge \text{entered}(y))$
- ii.  $\text{crawled-up}(\lambda x \text{cat}(x))$

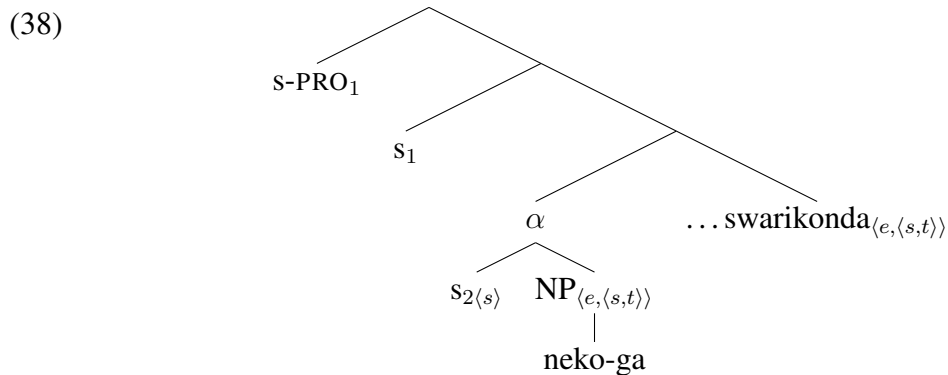
The occurrence of *neko* in (37a.ii) is used to refer to the previously mentioned cat.

An analysis of bare NPs must produce something similar to (37b.ii).

I propose that a bare NP in Japanese lacks a determiner, but everything else is analogous to English DPs. Since I posited a situation pronoun inside a DP in Chapter 4, I assume that a situation pronoun also coexists with a Japanese NP. I also retain the basic semantic types introduced in Chapter 4. A situation pronoun is of type  $\langle s \rangle$ . All nouns, adjectives and verbs are of type  $\langle e, \langle s, t \rangle \rangle$ , which has a situation argument slot.

For example, the occurrence of *neko* ('cat') in (37a.ii) is formally analyzed as follows:

low:



The NP *neko* co-occurs with an unbound situation pronoun. But there is no unpronounced determiner introducing the NP. This configuration on its own yields no proposition even after a variable assignment assigns values to all variables. The semantic value of the constituent  $\alpha$  is clearly undefined.

However, the  $iota_m$  operation rescues us to obtain a proposition from the utterance made. The following is the  $iota_m$  rule within our situation semantics, which is equivalent to the meaning of the definite article.

$$(39) \quad \textit{iota}_m: \lambda F_{\langle e,t \rangle} . \lambda s : \exists x(F(x)(s) \wedge \forall y(F(y)(s) \rightarrow y \sqsubseteq x)) . \mu x(F(x)(s))$$

(Situation version)

$iota_m$  turns a Japanese bare NP into an individual concept of some sort by changing its type to  $\langle s, e \rangle$ , which can be combined with a situation pronoun of type  $\langle s \rangle$ . The outcome is an individual of type  $\langle e \rangle$ . That is, a bare NP in Japanese or the constituent  $\alpha$  as a whole can be a definite description at the level of logical form. The phrase  $s_2 \textit{neko}$  together with  $iota_m$  denotes the largest cat in the relevant situation, i.e., the previously mentioned cat. Since  $iota_m$  is what the definite article encodes as its lexical meaning, this analysis guarantees that Japanese bare NPs have anaphoric and referential readings just as English definite descriptions.<sup>10</sup>

Consequentially, since the singular and bound uses of proper names in Japanese are bare NPs, an argumental occurrence of a proper name in Japanese can be analyzed in the same way as the bare NP *neko* above. Our analysis of English proper names and definite descriptions developed in Chapter 4 is now extended to Japanese proper names and definite uses of common nouns.

<sup>10</sup>I do not have anything special to say about the semantic significance of the case morphemes such as *ga* in this example. I here simply treated them as semantically vacuous. Here is a possible analysis of the case morphemes. The morpheme *ga* and other case particles clearly correlate to the thematic roles that the denotations of the attached nominals perform. It might as well be the case that the case morphemes turn referential expressions into predicates of events. For example, the nominative *ga* can be assigned the function from an entity to a function that maps an event onto Truth if and only if the given entity is the agent of the event. One problem to be solved for this analysis is that Japanese has a few verbs that create the ‘double-nominative construction’, in which *ga* is attached not to an agent, but to a theme of the relevant event.

Maximality As a piece of evidence for the use of *iota<sub>m</sub>*, I cite the examples to show that the anaphoric use of Japanese bare NPs tend to be maximally interpreted.

- (40) a. Sanninno onnanoko ga koen e yattekita.  
3.CL girl NOM park to came  
'Three girls came to the park.'
- b. **Onnanoko** wa utaidasita.  
**girl** TOP sing.began  
'The girls began to sing.'
- c. ?? Hitorino onnanoko wa damarikokutta mamdeatta.  
1.CL girl TOP silent remained  
'One girl remained silence.'

(40a) sets up the scene in which three girls came to the park to play. (40b) contains a bare NP, whose interpretation is now under consideration. As is clear from the previous discussions, (40b) could be about some other girl mentioned elsewhere. If there is no other contextual information, however, the bare noun *onnanoko* in (40b) seems to be anaphoric to *sanninno onnanoko* in (40a). In such a circumstance, crucially, *onnanoko* is used to refer to all three girls without leaving out any. Why does this have to be the case? Just one or two girls, not all three, could have started singing. I claim that the anaphoric interpretation of (40b) involves some form of maximality encoded in our linguistic knowledge. One might suggest that the maximality of (40b) stems from Gricean reasoning. The speaker should have used a partitive construction or something else if she wanted to report that some but not all girls started singing. Otherwise, the interpreter would settle down at what has been explicitly stated, i.e., 'three girls'. This suggestion, however, does not work because it is difficult to cancel the maximality as shown in (40c).

Therefore, maximality must be semantically registered in some way or other. The use of *iota<sub>m</sub>* accounts for why this is the case.

### 5.3.3 So-called Kind-Reference

#### 5.3.3.1 What is a kind?

I will argue that we should consider what is referred to as ‘kind’ in the linguistic literature to be an aggregate of objects, not literally an abstract kind. A number of studies on generics have put forward the thesis that bare NPs and some other expressions denote abstract kinds (Carlson, 1977a; Krifka et al., 1995; Chierchia, 1998, a.o.). For example, Manfred Krifka says that ‘kinds seem to be ontologically prior to specimens’ (Krifka, 1995, 399). Surprisingly, however, we have seldom seen explicit discussions on abstract kinds in the generics literature.

Carlson’s discussion of kinds in the late seventies, which has initiated the talk of kinds among linguists, seems to be confused. Carlson introduces quantification over stages or temporal parts of objects in order to build a semantics of particular objects. Carlson (1977a, 68-9) also likens a stage of an object to be an instantiation of a kind. Multiple stages are related to a single object. He suggests that multiple objects that share some property are also related to a distinct object, which he calls a ‘kind’. Thus, he says, ‘[a] set of objects, too, may be related to a kind in the same way a series of stages is related to an object’ (Carlson, 1977a, 69).

But what is this relation that connects not only objects and their stages, but also kinds and their instantiations? Usually, a stage or temporal part of an object is, literally, a

part of an object. In light of the stage ontology, an object is a four-dimensional mereological sum of many stages that exist in spacetime.<sup>11</sup> This ‘part-of’ relation does not quite square with the instantiation relation we usually associate with a kind and the objects that are the instantiations of that kind. If we literally extend the mereological talk to the semantics of generics, then ‘kinds’ must be conceived of as four-dimensional mereological fusions of particular objects that perhaps share some essential properties.

Perhaps Carlson does not consider the part-of relation relevant at all when he discusses the relation between objects and their stages. He says that ‘[a] stage is conceived of as being, roughly, a spatially and temporally bounded *manifestation* of something’ (Carlson, 1977a, 68, my emphasis). He also later paraphrases ‘manifestation’ as ‘realization’ and ‘exemplification’ (Carlson, 1977a, 70). These terms are not usually understood as expressing the part-whole relation. If we literally follow Carlson’s suggestions, then I am not only a series of spatiotemporal entities (stages), but also an abstract entity existing outside any spatiotemporal coordinate because I am also a multi-realizable non-particular.

At any rate my point is that Carlson’s initial discussion leaves it unclear whether we really have to introduce abstract kinds as the denotations of some classes of expressions.<sup>12</sup>

Gennaro Chierchia’s discussion of kinds is also not decisive as to whether we necessarily have to introduce abstract kinds into our semantic theory (Chierchia and Turner, 1988; Chierchia, 1998). He only says that kinds ‘can be represented as individual concepts of sort’ (Chierchia, 1998, 350). What sort of individual concept does Chierchia have in mind? It is a total function from possible worlds to aggregates of objects ( $\langle s, e \rangle$ ),

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<sup>11</sup>See (Heller, 1990) for a general discussion and defense of four-dimensional ontology.

<sup>12</sup>Of course, our ontology, and thus, our domain might include abstract entities. That is different from a theoretical decision to systematically associate abstract entities with a class of expressions.

which is, of course, not what we usually understand as a natural kind. Chierchia is fully aware of this, and thus says, ‘[k]inds are whatever your favorite worldview says that they are’ (Chierchia, 1998, 350).

It is misleading to say that Chierchia and his followers<sup>13</sup> analyze bare NPs as denoting abstract kinds. What is essential for their view is that they present a unificatory analysis of the various uses of bare NPs: bare NPs always have the denotations of the same type. I agree with them in that we can provide a unified analysis for all different uses of bare NPs. But my analysis is different from theirs in its typological details.

Before introducing the semantics of bare nominals based on the notion of aggregate, I like to present one consideration that argues against the thesis that bare nominals denote abstract kinds.

Paradigmatic ‘kind-referential’ sentences are never about abstract kinds, but about concrete animals and molecules. Consider a few examples that are typically considered sentences involving kind-reference and kind predicates.

(41) Gold is rare.

(42) Dogs are widespread.

(43) Salt occupies space. (Burge, 1977)

(44) If all atoms with atomic number 79 ceased to exist, **gold** would cease to exist, although a slot would remain open in the periodic table. (Hull, 1978, 349)

Chierchia analyzes (41) and (42) based on kind reference as follows:

(45) Gold is rare.  $\Rightarrow$  RARE( $k_{\text{gold}}$ )

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<sup>13</sup>Dayal (2004) extends Chierchia’s analysis to Hindi, and Yang (2001) to Mandarin Chinese.

(46) Dogs are widespread.  $\Rightarrow$  WIDESPREAD( $k_{\text{dog}}$ ) (Chierchia, 1998, 363)

These logical forms or semantic representations are, however, not illuminating what's intuitively said. By using (41), the speaker, of course, is not making a metaphysical claim that a certain abstract kind or a universal 'goldhood' is to be considered rare—although such a claim would be true because there would be no more than one goldhood, if there is such a thing at all. The speaker instead asserts that the amount of gold is not abundant. The same comment applies to a use of (42) as well. I do not know whether doghood is widespread—perhaps it is ubiquitously present. At any rate that is not, for sure, what I would mean by (42). Such predicates as *rare* and *widespread* are predicates of objects that occupy spacetime. Similarly, the denotation of *gold* in (44) must also be some amount of concrete gold molecules, not an abstract element, which is presumably non-perishable.<sup>14</sup>

Chierchia's analysis indeed captures these intuitions. According to Chierchia, the sort of individual concepts that can model abstract kinds provide aggregates relative to possible worlds, and the so-called 'kind-predicates' are, relative to possible worlds, predicated of such aggregates. Given a circumstance of evaluation, his 'kind'-term denotes the totality of objects in that possible world, and the utterance is judged true or false depending on whether the totality falls under the extension of the predicate with respect to that world. Thus, to be precise, Chierchia appeals to individual concepts and aggregates of objects in his semantics of bare NPs. But then, what is the point of introducing abstract kinds into our semantics of bare NPs? Why do we want to say that the logical form a 'kind-referential' sentence is something like (45)?

What I will show below is that we do not have to follow the exact same steps

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<sup>14</sup>I will discuss other types of 'kind-referential' predicates below.



that Chierchia and others have taken to derive the truth-conditions of ‘kind-referential’ sentences. Instead of starting from  $\langle s, e \rangle$ , I would like to start with a predicate,  $\langle e, \langle s, t \rangle \rangle$ , before deriving the totality of objects  $\langle e \rangle$ . The results would be equivalent to Chierchia’s, which can be viewed as an extension of Burge’s treatment of mass and bare plural nouns.

The type-shifting rule  $iota_m$  determines the largest element that a predicate applies to. For example,  $iota_m$  derives from the value of  $inu$  (‘dog’) the function from possible situations to the largest aggregates of dogs. Recall that a situation is merely a part of a possible world; possible worlds and situations are not of different kinds. When the assigned value of a situation pronoun coexisting with a bare NP is a possible world, the bare NP together with  $iota_m$  produces the totality of the objects, to which the noun applies with respect to the possible world. Thus, the totality of the actual dogs would be the result of the application of  $iota_m$  to  $inu$  (‘dog’) with respect to the actual world.

Note that a possible world includes all its temporal slices. The totality of the actual dogs consists of all dogs in the past, the present, and the future. That is a four-dimensional aggregate, which stretches across spacetime. I claim that the sentences that are said to involve ‘kind-reference’ are sentences that involve such four-dimensional aggregates of objects.

### 5.3.3.2 English mass terms and bare plurals

Let us consider whether such four-dimensional aggregates are appropriately predicated of by so-called kind predicates. I want to discuss the ‘kind-reference’ in English first before turning to Japanese cases. The kinds-as-aggregates view should work equally well for

both English and Japanese. Agreeing with Chierchia, I do not think that our semantic investigation answers the question, ‘What is a natural kind?’. I am not here defending nominalism about natural kinds by claiming that we do not need an abstract entity as the denotation of a bare noun. Nor do I defend a more specific philosophical thesis that species are mereological sums (Hull, 1978; Ghiselin, 1987; Brogaard, 2007). I will wait for another occasion to see if my semantics of ‘kind-referential’ sentences would lend any support to such theorists.

I assume that the DP analysis is correct for English (Chapter 3). Bare mass and plural nouns are, despite their appearances, the complements of some phonologically unrealized determiner: I named it ‘ $\emptyset_{\text{mass/pl}}$ ’. In order to distinguish  $\emptyset_{\text{mass/pl}}$  from the definite article *the*, I assume that  $\emptyset_{\text{mass/pl}}$  encodes a variant of *iota<sub>m</sub>*, which might be something like the following:

$$(47) \quad \lambda F_{\langle e, \langle s, t \rangle \rangle} . \lambda s : \forall s' (s \sqsubseteq s' \rightarrow s = s') \wedge \exists x (F(x)(s) \wedge \forall y (F(y)(s) \rightarrow y \sqsubseteq x)) \wedge \exists z (Pl(z) \wedge F(z)(s)) . \mu x (F(x)(s))$$

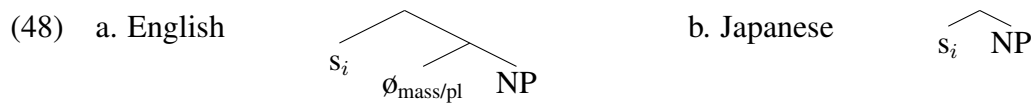
where the first conjunct of the presuppositional content ‘ $\forall s' (s \sqsubseteq s' \rightarrow s = s')$ ’ ensures that the DP is not concerned with any situation smaller than a possible world; Also ‘ $\exists z (Pl(z) \wedge F(s)(z))$ ’ excludes the possibility of being combined with a singular predicate that only applies to atomic objects. *Pl* is true of any aggregate. That is why *Cat is on the next door* sounds funny unless we take *Cat* to be a mass noun or proper noun, which would be happily taken as the complement of  $\emptyset_r$ , the determiner for proper names.

Following Uli Sauerland (2003),<sup>15</sup> I assume that the denotation of a plural noun includes atomic objects. That is, the meaning of *dogs* is the same as the meaning of number-

<sup>15</sup>Also see (Chierchia, 2010), where he recants his former position.

neutral *inu* in Japanese. Mass and plural nouns are thereby compatible with  $\emptyset_{\text{mass/pl}}$ . This assumption creates a question as to why we cannot say *There are dogs on the mat* when there is just one dog on the mat. But I also assume that there is some way to handle the question.<sup>16</sup>

An argumental bare mass or plural term in English has a different structure than that of a Japanese bare NP.



It is purely optional whether a Japanese bare NP is interpreted as denoting the totality of objects. Depending on what value  $s_i$  receives, (48b) can be used to talk about a single object, a unique aggregate in a specific situation, or the largest aggregate of some sort in the world. On the other hand, an occurrence of a bare nominal in English is more structurally constrained as in (48a). If a common noun is not preceded by an overt determiner such as *the*, then it is selected by  $\emptyset_{\text{mass/pl}}$  and denotes the totality of the objects that the noun applies to with respect to a certain possible world. Now let us discuss some sentences to see the plausibility of this proposal.

**Spatiotemporal predicates** First of all, four-dimensional aggregates of objects seem to be suitable objects for spatiotemporal predicates as in (49) and (50) as well as *widespread*, *common*, and *rare*.

(49) Bengal tigers are distributed over south-central Asia. (Burge, 1977)

(50) Black rats are thought to have arrived in Australia with the First Fleet, and subsequently spread to many coastal regions in the country. (Wiki)

<sup>16</sup>Chierchia (2010, fn.17) suggests that a form of implicature blocks such a use.

(49) contains a present-tensed predicate that describes the spatial property of the present part of an aggregate. A single tiger nor an abstract entity cannot be said to be ‘distributed over south-central Asia’. (49) is used to assert that the aggregate of Bengal tigers today are located across some region. (50) is concerned with a broader part of an aggregate. The predicate in (50) is not merely concerned with the present slice of the aggregate of black rats, but also with some extended slice. The aggregate of black rats changed its spatial location and also got thicker over time.

**‘Extinct’, ‘generate’, etc.** Predicates concerning species and those related to creation also fit nicely with four-dimensional total aggregates of objects. The adjective *extinct* currently does not apply to a single living creature (e.g., *#Mary is extinct*); Instead it mostly applies to families and species. However, *extinct* is still predicated of fires, lights, and things comparable to a fire, such as a hope. It also used to be synonymous with *dead* and apply to an individual person (*The Pope being dead, and Valentine extinct*. OED). These facts would make more sense if we analyze *extinct* as a predicate true of some individuals in the domain. The exact meaning of the word has changed over time, but its semantic type remains the same. I suggest that the following lexical meaning sufficiently characterizes our uses of the word today.

$$(51) \quad \llbracket \text{extinct} \rrbracket = \lambda x : H(x) . \lambda s . \forall y (y \prec x \rightarrow \text{DEAD}(y)(s))$$

where  $H(x)$  means that  $x$  is an aggregate whose members share some property and no nonmember has that property: ‘extinct’ is undefined for an arbitrary set of things. The basic idea is that things are extinct when all of their members are dead. The predicate *extinct* is used only for homogeneous and exclusive groups of things. So I assume that

its argument  $x$  has to satisfy some selectional property specified by  $H$ , which can be understood in the following way. An aggregate is  $H$  if and only if there is some (perhaps essential) property  $F$  such that all and only members of  $x$  are  $F$ . The predicate *extinct* signifies that any member of  $x$  that has a certain property is dead or disappeared. In other words, *extinct* is correctly predicated of the subject when any member of the subject disappeared or is not present.

(52) Dinosaurs became extinct.

(53) The Slytherin family was extinct in the male line. (Harry Potter Wiki)

(54) The fire is extinct.

(55) [Pointing at the pictures of three particular dinosaurs.]

#These three dinosaurs became extinct.

My proposal entails that a use of (52) asserts that the total aggregate of dinosaurs completely disappeared some time in the past. The total aggregate of dinosaurs kept shrinking to the extent that it no longer has any member today. We indeed consider (52) true just in case no dinosaur (any member of the aggregate) is alive today. The presence of even a single dinosaur makes it false. Likewise, for a use of (54) to be true, the whole mass of fire in the relevant situation must be gone completely. (55) would sound funny if the interpreter takes the denotation of the description *the three dinosaurs* to be the particular three individuals. This is another result of having specified the meaning of *extinct* as above. Perhaps the three dinosaurs are dead, but it does not guarantee that the entire species has gone. The selectional feature of *predicate* requires the subject  $x$  to be a homogenous and comprehensive aggregate of objects. The three individual dinosaurs cannot constitute

such a comprehensive aggregate. An utterance would be natural if the interpreter takes it to be about the three 'kinds' of dinosaurs, i.e., the three whole groups of dinosaurs, which is the taxonomic use of a definite description I will return momentarily.

(56) Horses are indigenous to eastern Chile. (Carlson, 1977b)

(57) Brown bears evolved into polar bears.

Now, similarly, a use of (56) describes where the totality of horses has its initial point. (57) sketches a process of speciation, which involves a great number of particular bears. It should be noted that the process of speciation does not directly involve abstract natural kinds, if there are such things at all. A natural kind perhaps never turns into something else nor undergoes any form of change. What evolved are those particular animals, not an abstract entity. This is one of the reasons why some philosophers of biology doubt that species are natural kinds (Hull, 1978; Ghiselin, 1987).

(58) Lead has been generated from lighter matter. (LaPorte, 2004)

(59) If all atoms with atomic number 79 ceased to exist, gold would cease to exist, although a slot would remain open in the periodic table. (Hull, 1978, 349)

Likewise, what is asserted by a use of (58) is that the instances of lead were created from the instances of different elements. It is not about the kind or the essence of lead. The essence 'lead' presumably exists regardless of their instances. Certainly we can talk about 'leadhood' and 'goldhood'. So I am not suggesting there is no such a thing. But when we use a mass term as *gold* in (59), we are talking about the instances of such an element. That is why it makes sense to say 'gold would cease to exist', which would be impossible if *gold* were denoting something imperishable.

**Bare plurals as direct objects** A bare plural in a direct object position behaves differently from a bare mass term, and also from a definite singular description. Bare mass terms and definite singular descriptions are acceptable as the objects of the verbs such as *invent* and *discover*, whereas bare plurals are less acceptable (60-62).

(60) The Americans invented the chewing gum / chewing gum.

(after Krifka et al. 1995)

(61) Shockley invented the transistor / ?transistors.

(Krifka et al., 1995, 70)

(62) The French settlers in Mauritius exterminated the dodo / ?dodos.

(Krifka et al., 1995, 71)

Also note, however, the difference seems to disappear if bare plurals are used in passive constructions.

(63) Transistors were / the transistor was invented in 1947.

Below I will argue that definite singular descriptions (e.g., *the transistor*) can denote what bare plurals denote, i.e., the total aggregates of objects. So the difference is not captured in terms of semantic values on my proposal. However, I am also not sure if we should describe the differences between the grammatical subjects and objects in terms of semantic values. Perhaps, the differences should be understood at the level of information structure, the discussion of which goes beyond the scope of this dissertation.

**Property attribution, classification, etc.** First, consider the cases where mass or plural terms are used as the subjects of the sentences. Predicates such as *being warm-blooded*,

*being white* seem to be number-neutral as in *These animals are warm-blooded*. The following examples are easily accounted for by the proposal under consideration because such predicates can be true of aggregates.

(64) Horses are warm-blooded.

(65) Snow is white.

(66) Gold is a precious metal.

(67) Water is wet.

My proposal suggests that (67) seems true to us because we think that any member of the total aggregate of water, i.e., any water is wet.

Second, consider the copula sentences that contain two occurrences of mass and plural terms.

(68) Whales are mammals.

(69) Muddy water is water.

The copula *be* in this type of cases cannot be seen as the *be* of identity because we can hardly paraphrase them by explicitly referring to the identity relation. The sentences below strike me as false.

(70) Muddy water is the same thing as water.

(71) Muddy water is one and the same thing as water.

Following Burge, I consider bare mass or plural terms in the predicate positions to be mere predicates, which is also entailed by the proposed analysis if we assume that the predicate positions are not DPs.



(72) Blue styrofoam is styrofoam. (Parsons, 1970)

If we are evaluating a use of (72) with respect to the actual world, then the predicate *styrofoam* is true of any amount of actual styrofoam. The DP *blue styrofoam* denotes the aggregate of all actual styrofoam that is blue. Thus, (72) is true.

Definite singular descriptions and taxonomic interpretations English and some other languages with articles contain the construction sometimes called the singular definite generic, where a singular definite description is used to make a general statement about a certain species, as in (73) and (74).

(73) The Irish economy became dependent upon the potato. (Krifka et al., 1995)

(74) The dolphin is a whale. (Krifka et al., 1995, 74)

Krifka et al. (1995) and Dayal (2004) discuss the singular definite generic together with other sentences that contain other determiners, which seem to concern sub-species or taxonomic hierarchies.

(75) Every whale (from the pygmy whale to the blue whale) is protected by law.  
(Krifka et al., 1995, 74)

(76) Some (kinds of) lions are in danger of becoming extinct. (Dayal, 2004, 427)

Dayal argues that these sentences can be explained without any complication by introducing quantification over sub-kinds. Her analysis roughly goes as follows. The lexical meanings of the definite article *the* and the other determiners remain as usual. But the nouns denote properties of sub-kinds, and hence, the DPs quantify over or denote sub-kinds. I adopt the same basic strategy while construing sub-kinds as individual

aggregates.

Dayal suggests that common nouns such as *whale* and *lion* are ambiguous between concrete predicates that are true of particular objects, and abstract predicates true of abstract sub-kinds.<sup>17</sup> For example, the noun *whale* is normally just true of this or that whale. But when it is used in an utterance like (74) or (75), it is construed as a predicate true of species, not of concrete animals. The noun *whale* in (75) determines the set of whale sub-species {the pygmy whale, the humpback whale, ...}, not a set of particular whales. A use of (75) is, thus, true if and only if every one of such whale species is protected by law. If we assume that an individual variable quantifies over sub-species, which is an abstract entity, then the lexical meaning of the quantificational determiner *every* does not have to be complicated. The same analysis applies to the singular definite generic such as *the dolphin* in (74).

A first problem with this particular proposal is that we have no intention to protect an abstract entity in this context of utterance. When we depend upon the potato or campaign for the whale protection, we have particular plants or animals in mind, not a presumably imperishable entity. Of course, the semantic values of an utterance do not have to completely align with our intuitions. But this is a downside of Dayal's analysis.

A second problem with Dayal's proposal is that a sub-kind predicative noun (e.g., *lion* in a taxonomic reading) is context sensitive even after disambiguation. Dayal suggests that *lion* in a taxonomic context determines the set of lion species. That means, however, a kind predicate such as *lion* is usually not a singleton, which creates a prob-

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<sup>17</sup>Dayal also mentions an alternative possibility in which each determiner that allows a taxonomic reading is ambiguous.

lem for Dayal. The definite singular description *the lion* with a taxonomic reading has to denote the entire lion species, not just a sub-species. For a singular definite generic (e.g., *the lion*) to denote a unique kind, the extension determined by the predicate *lion* must be a singleton. Notice that none of abstract entities is larger than the others. Or it is simply a category mistake to talk about the size of an abstract, non-spatial entity. Thus, according to Dayal's analysis, *the lion* denotes the lion species because *lion* determines a singleton set. However, as noted earlier, the taxonomic reading of *lion* can determine a non-singleton set. When the same taxonomic noun *lion* is used with other quantificational expression such as *many* or *three* the noun *lion* must determine a non-singleton set. Otherwise, we would not be able to get the interpretations available to the taxonomic sentences above. Therefore, taxonomic nouns such as *lion* change their meanings depending on which level of the hierarchy of a kind we are talking about. This form of meaning change is not theoretically explained.

I can avoid these two problems by simply assuming that taxonomic nouns are predicates of aggregates, not of abstract kinds. Furthermore, the kinds-as-individual aggregates view explains the same set of data that Dayal explains. Therefore, my analysis of taxonomic interpretations is superior to Dayal's analysis.

The taxonomic hierarchies of natural kinds or species that Dayal has in mind directly apply to the aggregates in the world. That is, we can hierarchically classify the aggregates in accordance with our interest, world view, scientific theory, etc. The aggregate of all mammals includes the aggregates of all dogs, whales, dolphins, lions, etc. The aggregate of all whales includes the aggregates of the 'kinds' of whales, i.e., blue whales, humpback whales, etc. Following Dayal, I treat a common noun such as *whale* as either

ambiguous or polysemous. It is sometimes a predicate true of this or that whale. It is sometimes a predicate true of well-defined, possibly naturally carved aggregates.<sup>18</sup> The taxonomic noun *whale* is true of the aggregate of all blue whales, the aggregate of all humpback whales, and so on, as well as the aggregates of all whales. The semantic type of a taxonomic noun is not different from that of a regular noun. It can be combined with a determiner as usual.

The singular definite generic *the lion* denotes the entire lion species, not merely African lions, because it denotes the largest aggregate that the taxonomic noun *lion* applies to with respect to a possible world. The same noun with the same meaning can be used with other quantificational expressions to produce taxonomic interpretations. The extension *lion* determines with respect to a possible world contains all aggregates of lion sub-species. If you think that every one of such aggregate will soon disappear, then you would agree that every lion will be extinct soon.

**Theoretical identity statements** Some of us have intuitions that theoretical identity statements such as (77) and (78) are necessarily true.<sup>19</sup> Some, including Kripke (1980, 140), have suggested that they are necessarily true because they are analogous to ' $a = b$ ' where ' $a$ ' and ' $b$ ' are rigid designators.

(77) Pure water is identical to H<sub>2</sub>O.

(78) Heat is identical to molecular motion.

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<sup>18</sup>This fits with our intuitions because we think of the term *whale* to be a 'name' of species.

<sup>19</sup>Not all of us have such intuitions. Joseph LaPorte (2004, 43) reports that 'water is H<sub>2</sub>O' does not even seem to him to be true, let alone discovered to be necessarily true.

I have expounded how definite descriptions can be rigid designators. I have also proposed that mass and plural terms in argument positions are a variant of definite descriptions. Thus, my analysis indeed predicts that the occurrences of mass terms in (77) and (78) can be rigid designators. (77) and (78) thereby can have a necessity reading.

First of all, let us see how we can construe the identity relation between two aggregates of things. On the aggregate approach, since an aggregate is individuated by its members, not its spatiotemporal location, the identity relation can be expressed as follows:

$$(79) \quad \llbracket a \text{ is (identical to) } b \rrbracket = [\forall x : x \prec a][\exists y : y \prec b](x = y) \wedge [\forall w : w \prec b][\exists z : z \prec a](w = z)$$

That is, two aggregates are identical when their member constituents are identical. For example, the aggregate Hesperus+Cicero is identical to the aggregate Phosphorus+Tully because Hesperus is Phosphorus and Cicero is Tully.

Now let us consider (78). Suppose that both DPs in the sentence have a situation pronoun of the same index, which I schematically represent as follows:

$$(80) \quad \text{Heat}_1 \text{ is identical to molecular motion}_1.$$

If the index of s-PRO in the VP is not 1, then the situation pronouns in the DPs are used deictically. Assuming that the speaker is describing the actual world, the DP *heat*<sub>1</sub> denotes the aggregate of everything we count as heat in the universe, while *molecular motion*<sub>1</sub> denotes the aggregate of everything we count as molecular motion. The speaker is identifying the aggregate that *heat*<sub>1</sub> denotes with the aggregate that *molecular motion*<sub>1</sub> denotes. That is, given (79) each member-component of the heat aggregate is molecular

motion, and each member-component of the molecular-motion aggregate is heat.

If the speaker is right, then the proposition expressed is necessarily true because one thing is identical to itself in all possible worlds, and an aggregate is a mere collection of things. Each DP is a rigid designator because its value, i.e., an aggregate of things, remains the same in any circumstance of evaluation. Therefore, my analysis explains why general terms are sometimes rigid designators in the same way as proper names.

It is also worth noting that the aggregate approach is not susceptible to the problem for the traditional mereological approach. It has been argued that we need something intensional for the denotation of a bare nominal argument (Parsons, 1970). For example, the denotation of a bare noun in (81) cannot be a sum of things because it is false even if the sum of all wood is identical to the sum of all furniture.

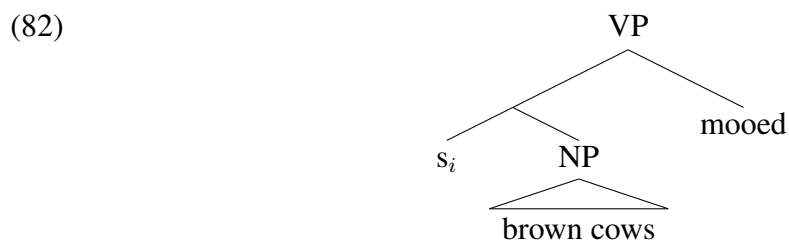
(81) Wood is identical to furniture. (after Pelletier and Schubert 1989)

Imagine a world in which all wood has been used to manufacture furniture and every piece of furniture has been made of wood. The sum of wood spatiotemporally coincides with the sum of furniture. However, such a world hardly supports the truth of (81).

The aggregate approach indeed makes a right prediction. Even if the total aggregate of wood occupies the same spatiotemporal region as the total aggregate of furniture, a member of the wood aggregate is not necessarily a piece of furniture because perhaps the piece of wood constitutes only a part of a piece of furniture (e.g., its leg). Two aggregates are identical when their constituents are also identical. Thus, the aggregates of wood and furniture are not identical. Therefore, the aggregate approach to bare nominals accounts for our intuitions concerning theoretical identity statements.

### 5.3.3.3 ‘Kind-reference’ in Japanese

The presented semantics of English bare nominals applies to the Japanese ‘kind-referential’ sentences. One major difference between English and Japanese bare nominals is that the latter are always NPs, lacking a determiner projection even in argument position. For example, a simple sentence that contains a single bare NP argument looks like the following:



Unlike English, an argumental NP is not headed by a determiner that imposes some or other interpretation on the argument. Thus, the interpretation of (82) is not as restricted as its English counterpart. A bare NP itself is a predicate of type  $\langle e, \langle s, t \rangle \rangle$ , which is type-shifted to have an individual concept as its semantic value by virtue of  $iota_m$ . The individual concept together with the value of the coexisting situation pronoun provides the denotation of the NP argument as a whole. Thus, a bare NP argument as a whole denotes the largest individual to which the descriptive content applies, which depends on the value of the coexisting situation pronoun. For example, depending on the value of the coexisting situation pronoun, the bare argument in (82) can denote either the entire four-dimensional aggregate of brown cows, or some or other specific brown cow(s) in a contextually restricted situation. Existential and generic interpretations are also derived from the same structure as we will see below.

Since Japanese nouns are number-neutral and there is no morphological distinction between common and mass nouns, a simple bare noun is used with any of the predicates we have seen above. That is, in Japanese, the bare unmodified form of a noun is used when a bare plural or definite description would be used in English.

(83) Kyoryu-ga/wa        zetumetusita.  
dinosaur-NOM/TOP extinct.became  
'Dinosaurs went extinct.'

(84) Babbage-ga    compuuta-o    hatumeisita.  
Babbage-NOM computer-ACC invented  
'Babbage invented the computer.'

(85) Netu-wa    bunsu-undo        da.  
heat-TOP molecular-motion be  
'Heat is molecular motion.'

There is no difference at the level of logical form between these Japanese examples and their English counterparts. For example, consider (85). By uttering (85), the speaker has no intention to talk just about this or that small situation. Instead, the speaker seems to be expressing her thought about any heat in the entire world. In such a context, the value of the coexisting situation pronoun of a bare NP argument is the entire world, which yields a totality of objects as the denotation of the bare NP argument. So my treatment of English 'kind-referential' sentences directly applies to Japanese counterparts.

### 5.3.4 Existential Quantification

Now I turn to the existential readings that are available to Japanese bare NPs as well as English bare mass and plural terms.



- (86) Neko-ga tonarino heya ni iru (Japanese)  
 cat-NOM next room in exist  
 ‘A cat is in the next room’; ‘Cats are in the next room’
- (87) Phil threw snow on Bill.
- (88) Dogs barked.

How could we obtain the readings found in these sentences? What currently seems plausible to me is to adopt David Hilbert’s  $\varepsilon$  notation to formally represent our perspectival shifts from the totality of entities to its member.

Just as we treat  $\iota x(F(x))$  as a primitive expression of type  $\langle e \rangle$ , I suggest that, following Hilbert and Bernays (1939), we treat  $\varepsilon x(F(x))$  as a primitive expression of type  $\langle e \rangle$  that denotes some object of which  $F$  is true.<sup>20</sup>

When used in a sentence, the truth-conditions of the term formed by the  $\varepsilon$  operator can be represented as follows:

$$(89) \quad G[\varepsilon x(F(x))] \longleftrightarrow \exists x(F(x) \wedge G(x))$$

where I stipulate that the existential quantifier always take the narrowest scope possible with respect to  $G$ . Both  $\iota x(F(x))$  and  $\varepsilon x(F(x))$  are expressions of type  $\langle e \rangle$ : their semantic values are things in the domain and they are thereby scopeless, whose apparent scopal properties, if any, are accounted for by bound situation pronouns.

Now consider the extra-syntactic rule, I call it *epsilon*, that turns an aggregate of an object into some of its member.

$$(90) \quad \textit{epsilon}: \lambda x . \varepsilon y(y \prec x)$$

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<sup>20</sup>The same approach has been suggested to account for English indefinite descriptions. The  $\eta$  (‘eta’) operator is introduced by Reichenbach (1947, 264-6), and also adopted by Lauri Karttunen (1968).

The rule *epsilon* might not be seen as a type-shifting function because it does not change the type of an expression; it simply represents our ability to think about some member of an aggregate, when the aggregate is given.

For example, the DP *snow* in (87) first denotes the totality of snow in the universe. But no one could throw such an amount of snow, which urges the interpreter to use *epsilon* to derive some manageable amount of snow. (3) expresses a proposition in which there is some amount of snow Phil threw on Bill.

The derivation of an existential reading by means of *epsilon* has the same result as Chierchia's two step derivations via two different type-shifting devices. Neither of them take existential readings to follow from the uses of quantificational devices. Both explain the scopelessness of Japanese bare NPs as well as English bare mass and plural terms.<sup>21</sup>

### 5.3.5 Generic Quantification

The proposed analysis of bare nouns is compatible with the standard treatment of generic quantification, which is basically an extension of Lewis's (1975) account of adverbs of quantifications (e.g., *always*).

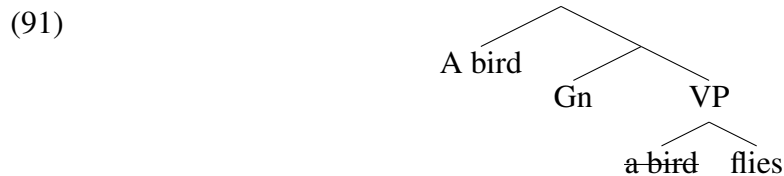
Following Chierchia (1995) and many others, I assume that *generally*, *typically*, and *usually* are unselective quantifiers in Lewis's sense. An unselective quantifier can bind different types of variables (variables ranging over individuals, times, events, and situations); they also bind more than one variables at the same time. We can express an

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<sup>21</sup>For example, Chierchia takes *snow* to lexically denote an individual concept of sort. He first applies a type-shifting principle that turns the individual concept into a property. Then, he utilizes existential closure to generate an existential quantification. Bare nouns are usually scopeless because he does not introduce a generalized quantifier. My *epsilon* also does not introduce a quantificational term.

unselective quantifier by removing the variable subscript from an ordinary, selectively-binding quantifier or noting all variables that it binds (e.g., ‘ $\forall$ ’ or ‘ $\forall x, y, s, t$ ’).

Following Chierchia, I also assume that there is a silent counterpart of *generally*, which is constructed as Gn at LF. For example, a use of *A bird flies* is understood as having the following structure:



where the subject *a bird* is originally generated as the VP internal argument.

Chierchia (1995, 194) presents a syntax-semantics mapping generalization for Gn and other quantificational adverbs, according to which the nominal element that c-commands an adverb of quantification contributes to the restrictor of the adverb, and what the adverb c-commands is its scope. The generalization also allows the content of the restrictor to be contextually enriched.

The representation below can be derived from the structure (91) based on Chierchia’s mapping generalization with a few auxiliary assumptions.

$$(92) \text{ Most } x, s [\text{bird}(x, s) \wedge C(x, s)] [\text{fly}(x, s)]$$

Let ‘Most’ stand for the quantification that *generally*, *typically*, *usually*, and Gn introduce. ‘ $C(x, s)$ ’ represents the *ceteris paribus* clause, whose content needs to be contextually understood. Perhaps it says that  $x$  has functioning wings,  $s$  contains enough atmosphere, etc. Roughly speaking, (92) states that, for most situation such that it contains a bird, the bird flies in the situation, other things being equal.<sup>22</sup>

<sup>22</sup>Possibly the contextual element ‘ $C(x, s)$ ’ needs not be represented here as part of the semantic content

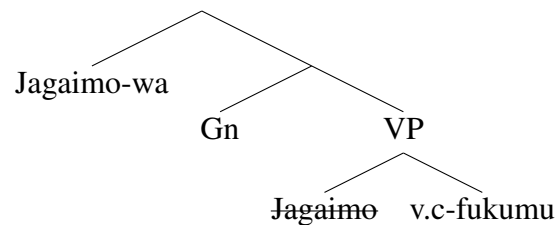
Chierchia notes several possibilities of how the indefinite phrase *a bird* introduces the bound variables. The indefinite *a bird* as it is might introduce a predicate that can be bound by ‘Most’, following the dynamic semantics traditions. If *a bird* is a restricted quantifier of type  $\langle e, \langle e, t \rangle \rangle$ , then he suggests that we can appeal to a sort of Montague’s BE, which turns a restricted quantifier into a predicate (Montague, 1973; Partee, 1986a). At any rate ‘bird( $x, s$ )’ appears in the restrictor of the quantification ‘Most’ because *a bird* c-commands Gn.

Let us now consider a simple generic sentence that contains a bare noun in both Japanese and English, whose intuitive truth-conditions are also noted as follows:

- (93) a. Jagaimo-wa (futuu) bitamin C-o fukumu. (Japanese)  
 Potato-TOP (generally) vitamin C-ACC contain  
 b. Most  $x, s$  [Potato( $x, s$ )  $\wedge$  C( $x, s$ )] [contain-v.c( $x, s$ )]
- (94) a. Potatoes (generally) contain vitamin C  
 b. Most  $x, s$  [Potato( $x, s$ )  $\wedge$  C( $x, s$ )] [contain-v.c( $x, s$ )]

Following Chierchia, I claim that (93a) and (94a) respectively have the following structures (95a) and (95b), which are only marginally different. Both yield the same quantificational structure, given Chierchia’s mapping generalization.<sup>23</sup>

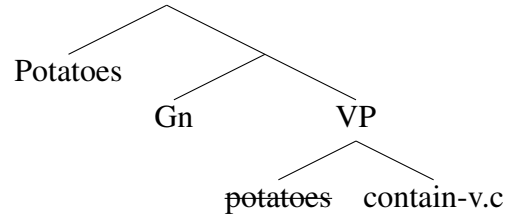
(95) a.



of an utterance. It might just reflect a proposition that is non-linguistically inferable based on common sense.

<sup>23</sup>Chierchia assumes that Gn is generated as the specifier of Aspectual Phrase. That is why Gn appears in the same position in the Japanese structure (95). Gn could be something else (perhaps a functional head), but it never affects the syntax-semantics mapping as long as it appears higher than VP and lower than the moved subject.

b.



On Chierchia's analysis, the subject *potatoes* denotes an individual concept, but he also assumes that the type-shifting rule 'U' ('up' or 'predicativization') turns it into a predicate. Thus, both structures straightforwardly map into the truth-conditions (93b = 94b).

My analysis concurs with Chierchia's theory of the generic operator. The typological details are slightly different. How does *potatoes* contribute to the restrictor meaning on my analysis? In the case of Japanese, I need no additional type-shifting rule. I have argued that a bare NP itself is a predicate, which can be bound by the quantification introduced by Gn.

In the case of English, there are at least two possibilities. First, it seems plausible to me to appeal to the non-intensional version of Chierchia's 'U', which can be defined as follows:

$$(96) \quad \cup_{\text{ex}} : \lambda x . \lambda y . y \prec x$$

If we apply  $\cup_{\text{ex}}$  to an aggregate of objects, it returns a predicate that is true of any member of the aggregate, which would be suitable for the restrictor of Gn. For example, given the total aggregate of potatoes,  $\cup_{\text{ex}}$  yields a function that assigns Truth to any potato, i.e., an ordinary predicate of potatoes.

Second, we could alternatively utilize *epsilon* described earlier. I suggest that we can paraphrase (94a) as follows:

(97) For most situation such that it contains some potato, the potato contains vitamin C in the situation.

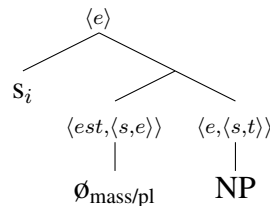
(98) Most  $s$  [ $C(s, \varepsilon x(\text{Potato } x))$ ] [ $\text{contain-v.c}(x, s)$ ]

The paraphrase seems to adequately describe the truth-conditions of a use of (94a). Since the unselective quantifier ‘Most’ is anyway regarded as capable of binding eventualities, and we know that a generic reading does not always require the quantification over individuals, the second approach might be preferable for simplicity.

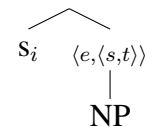
### 5.3.6 Summary

In this section I have presented a comprehensive treatment of Japanese bare nouns and English bare mass and plural terms. Both languages employ the same semantic resource, but how they employ it is different. An argumental bare NP is structurally different between English and Japanese.

(99) a. English



b. Japanese



In the case of Japanese, the derivation in (99b) crashes due to a type-mismatch.

Overall I appeal to two extra-syntactic semantic operations: *iota<sub>m</sub>* and *epsilon*. The semantic value of (99b) is derived in virtue of applying *iota<sub>m</sub>*, which is lexically encoded as *the* in English. (99b) becomes a definite description together with *iota<sub>m</sub>*.

Both object-referential and so-called ‘kind’-referential sentences are understood as involving definite descriptions. The latter is merely a subcategory of definite descriptions,

which denote the totalities of objects in the entire world. Existential statements involve a use of *epsilon*, which turns a totality of objects into its part. The proposal is compatible with the standard treatment of generic quantificational statements.

## 5.4 Argument Against Silent Determiners

My syntactic and semantic treatment of Japanese is different from that of English. Why does there have to be such a divergence? One might wonder what is wrong with introducing semantically significant silent structure within Japanese bare NPs just as we do for English bare plural and mass terms. This section attacks the potential opponent of my analysis that posit silent determiners for bare NPs in articleless languages.

### 5.4.1 Introduction: grammatical form and logical form

A use of the sentence

(100) Every boy danced with some girl.

is compatible with two different types of circumstances. One type entails the other, but not *vice versa*. The use is ambiguous in the non-technical sense.

The standard explanation for this fact is to consider the use not to be ‘ambiguous’ in the technical sense. We theoretically say that there are in fact two different sentences whose surface forms are identical.

Although a use of (100) might be ambiguous, each reading is phenomenologically perspicuous. The hearer does not have to mull it over to specify what it means. The hearer immediately sees either one of the interpretations, or flips back and forth from one

interpretation to the other. An analogy would be an *necker-cube*. The two-dimensional input is ambiguous. But it is not the case that what the subject perceives at one time is ‘ambiguous’. We see one non-ambiguous picture at one time.

Much in the same way as our vision as an information-processing system can account for the ambiguity of a *necker-cube*, the knowledge-conception of our linguistic capacities offers a plausible explanation for this linguistic ambiguity, according to which our knowledge of English imposes two different structures upon (100). Perhaps due to the operation like *Quantifier Raising* (henceforth *QR*), as in (May 1977), our linguistic knowledge disambiguates the use of (126) by providing two distinct representations, each one of which is not ambiguous.

After observing that one and the same bare NP in Japanese has four different types of interpretations, one might wonder if bare NPs are ambiguous. In other words, it might be the case that each reading of a bare noun corresponds to a distinctive structure. There are four distinct structural configurations competent speakers attribute to a single bare noun, each of which unambiguously has a specific reading.

With covert operations such as *QR* and phonologically empty items such as *situation pronouns*, one might entertain this possibility seriously. I have presented and appealed to several independent semantic rules, which complicates a syntax-logical form mapping. But why do we have to do that? We could alternatively introduce some silent elements at the level of syntax that encode the semantic rules. There seems to be no conceptual difficulty with the view that sentences are all ambiguity-free at some level of syntactic representation.



In what follows I will offer an independent argument against this approach to the semantics of bare NPs, according to which we posit some unpronounced syntactic heads that encode interpretive features (Cheng and Sybesma, 1999; Watanabe, 2006). My argument against the silent-head approach is based on the behaviors of Japanese unpronounced arguments that take bare NPs as their antecedents. The silent-head approach has difficulties in explaining the semantics of phonologically null arguments.

#### 5.4.2 Interpretive independence of null argument anaphora

I want to first present an interpretive characteristic of unpronounced arguments in Japanese, which is crucial for the argument against silent determiners that I will offer in the next subsection.

Japanese is a ‘radical’ pro-drop language, which allows any thematic argument to be left unpronounced without explicit marking. I will call an instance of implicit argument that seems to have a linguistic antecedent ‘null argument anaphora’ (NAA).

The interpretation of NAA does not have to be equivalent to that of its antecedent as shown in (101-103).

(101) Americajin-ga **cola**-o hatumeisi, Doitujin-ga [  $\emptyset$  ] syohisita.  
 American-NOM **cola**-ACC invented.and, German-NOM [  $\emptyset$  ] consumed  
 ‘An American invented cola; Germans consumed it.’

(102) IBM-ga **smartphone**-o hatumeisi, kono-hito-ga saisyoni [  $\emptyset$  ]  
 IBM-NOM **smartphone**-ACC invented.and, this-person-NOM first [  $\emptyset$  ]  
 konyusita.  
 purchased  
 ‘IBM invented the smartphone and this guy purchased one first.’

- (103) Aru Portugaljinno funanori-ga **dodo**-o saisyoni tabe, Olandajin-ga notini  
 a.certain Portuguese sailor-NOM **dodo**-ACC first eat, Dutch-NOM later  
 [  $\emptyset$  ] zetumetusa-seta.  
 [  $\emptyset$  ] extinct.become-forced  
 ‘A Portuguese sailor ate a dodo first, and the Dutch people later exterminated  
 them.’

The first clause is used to say something about cola as a kind (which is understood as the totality of cola on my proposal above).<sup>24</sup> But the second clause is not. Whatever it is the bare NP *cola* in the first clause denotes, the NAA  $\emptyset$  in the second clause has an existential interpretation, denoting some quantity of cola—Germans must have consumed only some amount of cola, not the whole kind. (102) is an analogous case where its NAA should also be existentially interpreted. (103) exhibits the opposite pattern. The antecedent bare NP *dodo* in (103) invokes an existential quantification while the NAA refers to the entire species. I will refer to the observed semantic mismatch between bare NPs and NAA as the ‘interpretive independence of NAA’. On the basis of NAA’s interpretive independence, I will present an argument against any semantic analysis of bare NPs that posits a silent determiner.

The main line of reasoning in this section goes as follows. NAA is analyzed either as a kind of ellipsis or as a kind of pronoun. Either way, the silent-head approach to bare NPs would have difficulties in explaining the interpretive independence of NAA observed above. Therefore, by *reductio*, the silent-head approach is problematic when we consider a broader context, even if it adequately captures the behaviors of bare NPs.

It is controversial what the right syntactic analysis of NAA is. NAA might be an el-

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<sup>24</sup>The main argument in this section does not presuppose my own analysis of bare NPs, and applies to the standard view that bare NPs denote abstract kinds.

ipsis phenomenon (Takahashi, 2008). Alternatively NAA might amount to unpronounced pronouns (Hoji, 1998). Perhaps Japanese null arguments consist of more than one type of phenomena, and both ellipsis and pronominal analyses are correct in different cases (Abe, 2009). I do not have to decide, however, among the possible syntactic analyses of NAA because I will argue that the silent-head approach has limitations, whatever analysis of NAA turns out to be on the right track.

### 5.4.3 Ellipsis analysis of null argument anaphora

Let us first suppose that NAA in sentences like (101-103) are elliptical. Also suppose, for *reductio*, that bare NPs include silent determiners that are responsible for their interpretations, i.e., that the silent-head approach is correct. For example, the bare NP *cola* in (101) is analyzed as follows:

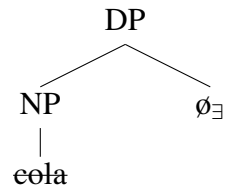


where  $\emptyset_k$  is the silent determiner whose interpretive feature somehow contributes to the kind interpretation of the phrase.<sup>25</sup>

If this is the right picture of bare NPs, then the interpretive independence of NAA is best explained as an instance of NP-deletion: NAA  $\emptyset$  is a maximal projection of a silent determiner whose constituent NP gets deleted or unpronounced. For example, NAA  $\emptyset$  in (101) can be analyzed as follows:

<sup>25</sup>For example,  $\emptyset_k$  might encode Chierchia's nominalization operation '□'.

(105)



where  $\emptyset_3$  is unpronounced and introduces an existential quantification. The overall structure (105) remains silent and has an existential interpretation whose content is related but not identical to its antecedent interpretation ('the kind cola'). The silent determiner in the antecedent bare NP is irrelevant to the choice of determiner in (105). bare NPs and NAA can have different interpretations because of the presence of silent determiners.

We can in fact find an analogous case of NP-deletion inside a quantificational phrase in English:

- (106) a. John bought [every [NP required textbook]],  
but Mary bought only [some/a few [NP ~~required textbook~~]].
- b. John bought [two [NP books]], and Mary bought [four [NP ~~books~~]].

It might seem natural to assume that what can be done in English can also be done in Japanese.

Such an assumption is, however, unfounded. Japanese does not allow NP-deletion when a quantificational or demonstrative modifier is overtly present.

- (107) \*Taro-wa [ikutukano/ichidaino kuruma] -o kai, Hanako-wa  
Taro-TOP several/1.CL car -ACC bought.and, Hanako-TOP  
[subeteno/sandaino ~~kuruma~~] -(o) katta.  
every/3.CL car -(ACC) bought.  
'Taro bought several/one car(s), and Hanako bought every/three car(s)'

- (108) \*Taro-wa [kono/korerano kuruma] -o kai, Hanako-wa [ano/arerano/  
Taro-TOP this/these car -ACC bought.and, Hanako-TOP that/those  
~~kuruma~~] -(o) katta.  
car -(ACC) bought.

‘Taro bought this/these car(s), and Hanako bought that/those one(s)’

Both (107) and (108) would be perfectly grammatical were there no ellipsis. The impossibility of NP-deletion in (107) and (108) undermines the analysis of NAA represented by (105). Therefore, the silent-head approach has no simple explanation for the interpretive independence of NAA when we assume that NAA is elliptical.

One might wonder whether the impossibility of NP-deletion in (107) and (108) is due to their particular configuration, and whether NP-deletion is possible in some other context, which would be an overt counterpart of (105). Indeed Japanese allows NP-deletion in limited circumstances even when an NP is modified by a determiner-like expression. Now I turn to such cases to see if there is any evidence for the NP-deletion in (105).

NP-deletion in Japanese seems possible only when (i) an NP is modified by a possessive *no*-phrase or (ii) an NP has a floating quantifier (FQ). I will argue that both cases are not analogous to the structure (105) and cannot support the analysis of NAA under consideration.

**Possessive *no*-phrases** The following examples (109-112) suggest that NP-deletion is possible if a stranded *no*-phrase is relational in some sense, and paraphrasable by means of an *of*-phrase in English. The individual Hanako referred to by the *no*-phrase *Hanako no* in (109) is the possessor of an implicit object. That is, what is deleted is the attitude ‘of Hanako’. *Kyoto no hakai* in (110) indicates the destruction ‘of Kyoto’; and *kinoo no ondo* in (111) must be understood as the temperature ‘of yesterday’. The nouns can be deleted in those three cases (109-111). By contrast, (112) is clearly ungrammatical, where

the *no*-phrase *ame no* plays a role of an adjective and has no relational meaning, which cannot be understood as ‘of rainy’, whatever that would mean.

- (109) [Taro no taido] -wa yoi ga, [Hanako no taido] -wa yokunai.  
 Taro ’s attitude -TOP good though, Hanako ’s attitude -TOP good.not  
 ‘Though Taro’s attitude is good, Hanako’s isn’t.’ (Saito et al., 2008, 253)
- (110) [Rome no hakai] -wa [Kyoto no hakai] -yorimo hisan datta.  
 Rome ’s destruction -TOP Kyoto ’s destruction -than miserable was  
 ‘Rome’s destruction was more miserable than Kyoto’s.’ (Saito et al., 2008, 253)
- (111) [Kyoo no ondo] -wa [kinoo no ondo] -yorimo takai  
 today no temperature -TOP yesterday no temperature -than high  
 ‘Today’s temperature is higher than yesterday’s.’ (Saito et al., 2008, 254)
- (112) \*[Hare no hi]-wa yoi ga, [ame no hi]-wa otikomou.  
 clear no day-TOP good though, rain no day-TOP feel.depressed  
 ‘Sunny days are OK, but I feel depressed on rainy days.’ (Saito et al., 2008, 253)

If the silent determiners required for the ellipsis analysis of NAA fall under the category of these relational *no*-phrases, then what they modify could be deleted, i.e., the NP-deletion in (105) would be plausible. The silent determiners can hardly be considered relational, however. For example, the determiner  $\emptyset_{\exists}$  in (105) cannot be paraphrased by any *of*-phrase. We cannot identify the other relatum for cola unlike for the deleted nouns in (109-111). Therefore, the instances of NP-deletion in (109-111) are irrelevant to the hypothesized NP-deletion required for the silent-head approach to explain the interpretive independence of NAA.

Floating quantifiers It is also possible in Japanese to delete an NP and leave a floating quantifier (FQ) behind. Japanese quantificational phrases, including numerals, need not

be adjacent to the modified nouns as example (113) indicates, where a quantificational phrase may appear away from what it modifies. NP-deletion is possible in such circumstances like (113) and (116), whereas slightly different constructions, such as (114) and (115), exclude NP-deletion, where a quantificational phrase appears either prenominally or in between the noun and its case.

(113) NP-CASE-(ADVERB)-QP

Boku-wa hon-o (campus-de) [i-satu] kai, Hanako-wa ~~hon-o~~  
 I-TOP book-ACC (campus-on) one-CL bought, Hanako-TOP book-ACC  
 (Amazon-de) [san-satu] katta.  
 (Amazon-on) three-CL bought  
 ‘I bought one book (on campus), and Hanako bought three (on Amazon).’

(114) QP-*no*-NP-CASE

\*Taro-wa iti-niti-ni [san-satu no hon]-o yomu ga, Hanako-wa  
 Taro-TOP one-day-in three-CL *no* book-ACC read though, Hanako-TOP  
 [go-satu no ~~hon~~] -o yomu.  
 five-CL *no* book -ACC read  
 ‘Taro reads three books in a day, but Hanako reads five.’

(Saito et al., 2008, 253)

(115) NP-QP-CASE

?Boku-wa [inu i-ppiki]-o turetekita ga, Hanako-wa [~~inu~~  
 I-TOP dog one-CL-ACC brought though, Hanako-TOP dog  
 ni-hiki]-o turetekita.  
 two-CL-ACC brought  
 ‘I brought one dog, but Hanako brought two.’

(116) NP-CASE-(ADVERB)-QP

Boku-wa [inu i-ppiki]-o turetekita ga, Hanako-wa ~~inu-o~~  
 I-TOP dog one-CL-ACC brought though, Hanako-TOP dog-ACC

(gakko-ni) [ni-hiki] turetekita.  
(school-to) two-CL brought

‘I brought one dog, but Hanako brought two to school.’

If the silent determiners in the ellipsis analysis of NAA are FQs, then a structure like (105) would become plausible. We have, however, good reason to deny that they are FQs.

Kimiko Nakanishi (2007) points out that FQs have peculiar semantic characteristics. One of them is that they somehow exclude collective interpretations, while their non-floating counterparts would allow both collective and distributive readings as shown in (117) and (118).

- (117) Otokonoko-ga kinoo [san-nin] booto-o tukutta.  
Boy-NOM yesterday [three-CL] boat-ACC made  
‘Three boys built a boat yesterday.’ (✓ distributive, ??collective)

(Nakanishi, 2007, 58)

- (118) [Otokonoko san-nin]-ga kinoo booto-o tukutta.  
[Boy three-CL]-NOM yesterday boat-ACC made  
‘Three boys built a boat yesterday.’ (✓ distributive, ✓ collective)

(Nakanishi, 2007, 58)

Now observe that a bare NP permits both collective and distributive readings:

- (119) Otokonoko -ga kinoo yon-dai-no booto-o tukutta.  
Boy -NOM yesterday four-CL-no boat-ACC made  
‘A/The/Some boy(s) made four boats.’ (✓ distributive, ✓ collective)



Since a noun in Japanese is number-neutral, any use of (119) might be concerned with more than one boy. A use of (119) seems true when the boys in question made the four boats together. Such a collective reading is not permitted in (117) that contains a FQ. Thus, the silent determiner that is possibly present in (119) is not a FQ. The silent determiners required for the silent-head approach do not provide the right environment for ellipsis to be well-formed. Therefore, we have no evidence for the entertained possibility of NP-deletion in a structure like (105).

#### 5.4.4 Pronominal analysis of null argument anaphora

I have argued that the silent-head approach has difficulties in explaining the interpretive independence of NAA if we take NAA to be elliptical. NAA might be, however, a sort of pronoun and have nothing to do with ellipsis. The proponents of the silent-head approach could argue that NAA is not structurally related to its antecedent bare NP and that NAA contextually receives a variety of interpretations as free variables, just as unbound overt pronouns receive a variety of interpretations. If that is the right analysis of NAA, then one might think that the interpretive independence would not threaten the silent-head approach.

Let us then discuss the details of such a suggestion. Now suppose that unpronounced pronouns constitute NAA. How could the silent-head approach explain the interpretive independence of NAA?

Kind-referential readings of NAA we saw earlier as in (103) can be accounted for by assuming that Japanese contains a small *pro*, to which a variable assignment assigns

an abstract kind as its value. I will argue, however, that existential readings available to NAA as in (101) and (102) cannot be explained in terms of silent pronouns.

In what way could a silent pronoun yield an existential quantification? One possibility is to treat it as a type-neutral variable that can receive a property as its value and to stipulate that the property gets existentially closed. This suggestion, however, defeats the purpose of the silent-head approach because existential closure must be introduced as an independent type-shifting procedure that has no lexical realization. Otherwise, we would have to introduce a silent determiner that takes a *pro* as its complement and creates an existential quantification, which is exactly the structure that I have refuted in the previous subsection.

Another possibility is to introduce a silent pronoun that is in itself existential: a context-sensitive existentially quantified NP. For example, we can think of something like the following:

$$(120) \quad \llbracket pro_{\exists} \rrbracket = \lambda F_{\in D\langle e,t \rangle} . \exists x [\Pi(x) \& F(x)]$$

(where  $\Pi$  is a contextually salient property)

If there is such a pronoun, then we can account for the existential readings of NAA in (101) and (102).<sup>26</sup>

Although the specification of the hypothesized pronoun (120) is logically possible and sufficiently covers the cases at hand, it is empirically deficient because *pro*<sub>∃</sub> overgenerates unattested readings when it interacts with scope-taking devices.

It seems natural to assume that something like *pro*<sub>∃</sub> has multiple scope possibilities.

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<sup>26</sup>(120) is what Tomioka (2003) discusses as part of a possible analysis of Japanese null arguments. He ultimately objects to (120) and adopts the type-shifting approach to Japanese null arguments.

Indeed an overtly existential expression *dareka* ('someone') interacts with other scope-taking expressions. Consider the following example, in which *dareka* appears with two other scope-taking expressions:

- (121) Sorezoreno sensei-wa [seito no **dareka**]-ga okorareta to  
 Each teacher-TOP student's **someone**-NOM scold.PASSIVE.PAST COMP  
 kiita.  
 heard

Depending on how to interpret *seito no dareka* ('some student'), (121) has three different readings as follows:

- (122) a. For each teacher  $x$ ,  $x$  heard that, **for some student  $y$** ,  $y$  was scolded. (narrowest scope)
- b. For each teacher  $x$ , **for some student  $y$** ,  $x$  heard of  $y$  that  $y$  was scolded. (intermediate scope)
- c. **For some student  $y$** , for each teacher  $x$ ,  $x$  heard of  $y$  that  $y$  was scolded. (widest scope)

(122a) is a paraphrase of the narrowest scope reading of (121), which seems true when every teacher heard just that there is some scolded student, without knowing who. Under the intermediate reading (122b), (121) seems true when every teacher learned about a different student that the student was scolded. (121) can also be used to express the thought that there is a particular student such that every teacher learned that she was scolded, as paraphrased in (122c).<sup>27</sup>

<sup>27</sup>The existential term in question *dareka* consists of the indeterminate pronoun *dare*, which can also form a wh-phrase, and the suffix *ka*. I am not suggesting that *dareka* must be analyzed as a quantificational phrase analogous to (120). As far as it explains the observed scope possibilities, any analysis would be sufficient. Indeed Yatsushiro (2009) analyzes *dareka* in terms of choice functions. My claim is that  $pro\exists$  would also have different scope possibilities whether it is analyzed as a quantificational phrase or choice function.

Now consider the sentence (123b), which is structurally identical to (121) except that it contains NAA  $\emptyset$  in the place of the overt existential expression *seito no dareka*. The NAA in (123b) takes the bare NP *seito* in (123a) as its antecedent.

- (123) a. Sorezoreno sensei-wa **seito**-ga okorareta to kiita.  
 Each teacher-TOP **student**-NOM scold.PASSIVE.PAST COMP heard  
 ‘Each teacher heard that some student was scolded.’
- b. Sikasi sorezoreno oya-wa [  $\emptyset$  ] nagurareta to kiita.  
 But each parent-TOP [  $\emptyset$  ] beat.PASSIVE.PAST COMP heard  
 ‘But each parent heard that some student was beaten.’

One can observe that it is very difficult to obtain an intermediate reading analogous to (122b) in (123a) and (123b). If the NAA in (123b) were the silent pronoun *pro<sub>∃</sub>*, then we could find an intermediate reading in (123b) as easily as in (121). Therefore, it is undesirable, on an empirical ground, to posit something like *pro<sub>∃</sub>*.

My contention is not that it is impossible for a silent pronoun to have an existential meaning. We know that overt pronouns can have existential meanings as my glosses earlier, (101) and (102), suggest. I also cite some examples from (Carlson, 1977a) below:

- (124) a. May hates **raccoons** because **they** stole her sweet corn.
- b. My brother thinks that **snakes** are nasty creatures, but that hasn’t stopped me  
 from having **them** as pets. (Carlson, 1977a, 25)

English plural pronouns in these contexts must be existentially interpreted, although their antecedents seem to have kind-referential or generic readings. It is plausible to assume that covert pronouns can have existential meanings as well, if such a pronoun exists at all.

What I am claiming is that such covert pronouns alone cannot generate existential

interpretations of NAA. The question we have is whether we can strictly follow the silent-head approach and stay away from any purely semantic procedure to account for the interpretive independence of NAA. I have argued that, with respect to Japanese, we cannot directly encode an existential quantification as the lexical meaning of a covert pronoun. I have also earlier argued that we cannot introduce an existential quantification by positing more structure. We have to appeal to an extra-syntactic rule to generate an existential quantification.

I have argued that the silent-head approach to Japanese bare NPs has difficulties in explaining the interpretive independence of NAA. Whatever syntactic analysis we adopt for NAA, the silent-head approach cannot fully account for the various interpretations available to NAA. On the silent-head approach, if NAA is elliptical, then we would have to appeal to a form of NP-deletion that is not permissible in Japanese. If NAA is pronominal, then we would have to introduce an existential pronoun, which overgenerates unattested readings.

It is not always clear how to investigate the division of labor between syntax and semantics. Although we have seen several well-developed type-shifting analyses of bare NPs, it has been far from clear what is wrong with introducing more structure into bare NPs, rather than making semantics complex. I have presented an empirical argument against such an approach to bare NPs that posits more structure to account for the available meanings.

## 5.5 Philosophical Implications: Grammatical Form and Logical Form

In this section I will argue that, regardless of the empirical success of my analysis of bare nominals, our discussion of articleless languages like Japanese has philosophical implications. If my type-shifting approach to bare NPs is on the right track, then it counts against a position in the philosophy of language, which is a Tractarian association between natural language syntax and logical form. If my analysis is not correct, then the semantics of bare NPs can be seen as a partial vindication of the association.

I will argue that the proposed analysis of bare NPs supports a mismatch between linguistic and propositional structure—the view we mainly attribute to Frege and Russell. The type-shifting approach implies that there is a one-to-many relation between syntactic structure and logical form. We have to discard the idea that structural features of natural language sentences tightly mirror the logical features of propositions.

To be more precise about what is at stake, I want to define the following Tractarian thesis.

(125) *One-to-One*

For any complete, declarative sentence, its underlying disambiguated syntactic structure and closed-class functional constituents (e.g., every, some) uniquely determine its logical form.

An ‘underlying syntactic structure’ is assumed to be dictated by the best syntactic theory available to us. Following the generative tradition, an underlying structure can be different from the superficial form of a sentence. If the sound of an utterance is many-way ambiguous, then the disambiguation can take place when an interpreter imposes a

hierarchical syntactic structure upon the perceived sound. For example, a use of (126) is disambiguated at some level of syntax, yielding two distinct underlying structures as in (127a-b).

(126) Every boy danced with some girl.

(127) a. every boy<sub>*x*</sub> some girl<sub>*y*</sub> (*x* danced with *y*)

b. some girl<sub>*y*</sub> every boy<sub>*x*</sub> (*x* danced with *y*)

The interpreter then constructs a semantic value for either one of (127a-b) based on her semantic knowledge. (127a) and (127b) yield two different semantic values that have two different logical forms. At the surface level of (126), there is no one-to-one relation between grammar and propositional structure. But, once we take into account its underlying structures, a tight relation between linguistic form and logical form emerges.

The One-to-One thesis is a pretty robust generalization, according to which such a one-to-one relation can be found everywhere. My analysis of bare NPs puts the One-to-One thesis in danger: it does not hold for Japanese utterances that contain bare NPs, and hence, the generalization fails. This outcome would be significant because the One-to-One thesis is sometimes implied or presupposed by some theorists. I will discuss two such examples: the works of Stanley and Jeffery King.

Stanley's overall picture of the interaction between natural language content and context implies the One-to-One thesis.<sup>28</sup> He states that 'all effects of extra-linguistic context on the truth-conditions of an assertion are traceable to logical form' (Stanley, 2000, p. 395), where his sense of 'logical form' is that of my 'underlying syntactic structure'.

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<sup>28</sup>The picture is developed and defended in a series of his work (Stanley, 2000, 2002a,b, 2005; Stanley and Szabó, 2000; King and Stanley, 2005).

The basic structure of his ‘truth-conditions’ is what I mean by ‘logical form’.<sup>29</sup> On the one hand, Stanley’s view implies that the underlying syntactic structure of an utterance is informative enough to determine its truth-conditions once we assign the semantic values to all constituents of the structure, including context-sensitive expressions. That is, for any underlying syntactic structure of an utterance, there is at least one proposition, and thereby one logical form, determined by the structure and assignment of semantic values to all of its constituents. Otherwise, there would be truth-conditional effects of a context that cannot be traced to an underlying syntactic structure. On the other hand, his view implies that there is only one logical form for each underlying structure. When two utterances express two formally distinct truth-conditions, we expect to find some difference at the level of underlying syntactic structure. Otherwise, again, there would be some contextual effects that are not triggered by any aspect of underlying structure.<sup>30</sup>

Now recall that we posited two extra-syntactic principles that derive different interpretations from one and the same semantic value of a bare NP. Japanese NPs are always

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<sup>29</sup>As Stanley (2000) describes, there are largely two different conceptions of logical form that have been widely used by philosophers and linguists. One of them is the traditional conception of logical form, according to which logical form is the underlying structure of a proposition in argumentation, not necessarily of a natural language sentence. Under this conception natural language syntax is not a perfect guide to the propositional structure or logical form of statements in philosophy, mathematics, and sciences. The grammatical form or syntactic structure of a natural language sentence does not transparently map onto the logical form of the proposition expressible by a use of the sentence. As noted at the outset, I use ‘logical form’ in this traditional sense.

The other conception stems from the tradition of generative grammar, according to which logical form is a certain level of syntactic representation, which is sometimes called ‘LF’, to be distinguished from the traditional sense of ‘logical form’. LF is the level of syntactic representation that is produced by the speaker’s I-language, whose constituents are relevant to interpretation, not to pronunciation. I assume that each constituent of an LF representation is an expression that receives a semantic value with respect to a context. I call logical form/LF in this (Stanley’s) sense ‘underlying disambiguated syntactic structure’.

<sup>30</sup>Certainly, it is logically possible that there is a context-sensitive constituent that changes the logical form of a sentential semantic value. For example, we can at least conceive of a variable that can mean either  $\forall$  or  $\exists$  depending on the context of use. Strictly speaking, on Stanley’s perspective, one syntactic structure can determine more than one logical form. However, I am not sure how one could empirically motivate or falsify such a variable, and Stanley also does not seem to have in mind such a variable when he argues for covert variables that provide implicit domain restriction (Stanley and Szabó, 2000; Stanley, 2002b).



mere predicates, but *iota<sub>m</sub>* can be used to derive the largest individual that fulfills the predicative content; *epsilon* can be additionally used to derive an existential reading. What is important for present purposes is that such a type-shifting principle is not a constituent of a syntactic representation. An LF representation can be used as an example of syntactic representation. Can *iota<sub>m</sub>* be a constituent of an LF representation? That is not possible by definition because *iota<sub>m</sub>* is not an item in the lexicon, and cannot be inserted in any part of a syntactic derivation. An extra-syntactic principle is not the semantic value of any constituent of grammatical structure; it is by no means a context-sensitive expression because it is not an expression to begin with. Due to the intervention of an extra-syntactic principle, it is not always the case that the semantic values of all context-(in)dependent constituents of a sentence and their structural positions uniquely determine a sentential semantic value. On this type-shifting approach, it might as well be the case that a semantic theory determines multiple propositions that have distinct logical forms from a single syntactic structure, which rejects the One-to-One thesis.

I have argued that an argumental bare NP in Japanese is a mere combination of a situation pronoun and a predicate. The derivation cannot take place because of a type-mismatch. That is, some utterances that contain a bare NP cannot have sentential semantic values unless the semantic type of the NP is appropriately modified. For the bare NP to denote a particular object, *iota<sub>m</sub>* must be employed. Furthermore, if it is used indefinitely to talk about some object that fulfills its descriptive content, then *epsilon* must be employed to obtain the denotation. Details aside, what is crucial here is that both definite and indefinite interpretations of a bare NP in Japanese are derived from one and the same syntactic structure, i.e., a mere combination of a situation pronoun and a predicate.

Depending on how many semantic principles are employed in the middle of a semantic derivation, the output semantic value is different: there are two possible values that have two different logical forms. That is not compatible with the One-to-One thesis. Therefore, if the presented type-shifting analysis of the semantics of bare NPs is on the right track, then the One-to-One thesis is falsified, which demands a substantial revision of Stanley's view on content and context.

Before moving on to discuss the role of the One-to-One thesis in King's view on propositions, I like to qualify the conclusion drawn in the last paragraph. I am assuming here, as Stanley explicitly does so, that syntactic theory posits a semantically relevant level of syntactic representation that is distinct from the surface syntax of natural language. By 'underlying disambiguated syntactic structure', I mean a representation on such an additional level of representation, such as LF. A constituent of such a representation is potentially phonetically inert, but always contributes to its semantic interpretation. For example, according to Stanley's theory of domain restriction (Stanley, 2002b), unpronounced variables over individuals are constituents of syntactic structures. In light of this assumption, I have argued that a type-shifting principle in bare nominal semantics is not represented as a constituent of the syntax. Therefore, the conclusion was that, because of type-shifting principles, there cannot be a one-to-one relationship between the general form of syntactic structures and the logical form of propositions, the latter of which are partially determined by means of type-shifting.

However, there is another view of the syntax and syntactic structure, under which my analysis of bare nominals poses no challenge to the One-to-One thesis. The view of the syntax rejects the idea of a covert level of syntactic representation, and treats the

surface syntax of natural language as a transparent interface to propositions that can be expressed by means of language use (Bach, 1976; Steedman, 2000, a.o.). There is, for example, no LF representation on which semantics derives its interpretation. The view treats a syntactic structure as a derivational process toward a semantic representation as well as a representation that is relevant to the pronunciation features. The ‘constituents’ of the syntax are the primitives of the derivational processes: they are either expressions, which combines a contribution to meaning with a contribution to form, or operations over expressions. Some of such operations are binary and combine two expressions together. Function Application would be one of such binary operations in the syntax. A type-shifting principle, such as *iota*, would be a unary operation. Under this view of the syntax, such operations within the syntax are, whether binary or unary, ‘constituents’ of the syntax. Thus, a syntactic structure, construed as a derivational process, indeed includes a type-shifting rule as its part. So *if* Stanley fully adopts this picture of the syntax, then the One-to-One thesis remains intact because a use of a type-shifting principle partially constitutes the general form of a syntactic structure. Therefore, Stanley can revise his explicit assumption about syntactic structure to retain the One-to-One thesis.<sup>31</sup>

Now I turn to another philosophical position that can be influenced by my analysis of bare nominals. The empirical denial of the One-to-One thesis is also damaging to King’s view on propositions, according to which the structure of propositions is partially identified with the structure of natural language. King in his monograph (2007, 32) states as follows:

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<sup>31</sup>At least as for covert individual variables, Stanley indeed suggests that he can accept the sketched alternative view of the syntax (Stanley 2005, 2007, ‘Postscript’).

(128) ... the sentential relation R that binds together the words in the LF representation ... is a component, literally a part, of the relation that binds together Rebecca and the property of swimming in the proposition that Rebecca swims ... In general, ... sentential relations will provide all the significant structure to the propositional relations, and hence to propositions.

According to King, within our terminology, some part of an underlying syntactic structure of an utterance is a constituent of the proposition expressed by the utterance. Furthermore, the linguistic structure that partially constitutes a proposition is supposed to illuminate the questions of why and how the proposition has truth-conditions at all and why and how it has the specific truth-conditions it has (King, 2007, 25-6; also 59-62). So the roles that King imposed on natural language syntax goes much beyond the One-to-One thesis—King’s overall thesis is indeed truly ‘Tractarian’.

It is not clear to me if King’s view on propositions requires the One-to-One thesis, or tolerates a ‘many-to-one’ mapping between syntactic structure and logical form. John Collins (2007b, Section 2) points out that there is (much) more syntactic structure than is required for propositional structure. King somehow has to distinguish substructures in syntax that are ‘propositional’ and those that are there for some other reasons (Collins, 2007b, 819). In any case, the instance of ‘one-to-many’ relation discussed above cannot be tolerated by King’s Tractarian metaphysics of propositions. Suppose that my type-shifting analysis of bare NPs is on the right track. Consider a sentence that contains an bare NP that can be used either as a definite or indefinite description. There are two propositions that can be expressed by a use of the sentence. The propositions have two

different logical forms because one is about a unique individual, but the other is not. However, according to the presented type-shifting analysis, there is no fact of the matter in the underlying structure of the sentence that distinguishes one proposition from the other. One extra-syntactic principle needs to be employed in order to produce the former proposition, whereas two for the latter. Nothing at the level of syntax explains why the utterance expresses one proposition, not the other. This clearly betrays King's expectation that grammatical structure is an essential determinant of propositional structure. King's view on propositions is presumably language-neutral, applicable to a use of any complete, declarative sentence in any human natural language. Therefore, bare NPs in Japanese, again, might constitute a serious counterexample to King's view on propositions.

## 5.6 Summary

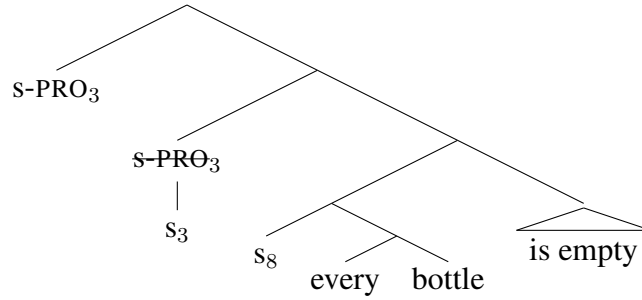
In this chapter I have presented a unified semantic analysis of bare nominals in English and Japanese, which also leads us to further philosophical implications on the nature of logical form. The analysis of proper names and definite descriptions developed in Chapter 4 is extended to other bare nominals in English and Japanese. Occurrences of plural and mass terms themselves are predicative expressions, and constitute definite descriptions when used in argument position. The predicate thesis holds not only for proper names, but also for other bare nominals. I have also presented an argument against the idea that some unpronounced syntactic heads are responsible for various interpretations of Japanese bare nominals based on the behaviors of phonologically null arguments in Japanese. The silent-head approach has difficulties in explaining the semantics of null

arguments, whatever syntactic analysis of null arguments turns out to be correct. The type-shifting approach to the semantics of bare nominals, by contrast, easily accounts for the semantics of null arguments. The overall outcome supports the traditional idea that there is a mismatch between linguistic form and logical form, and undermines the recent theses that identify syntactic structure with propositional structure (e.g., Jeffrey King and Jason Stanley).

## Appendix A

### Formal Derivations

- (1) Every bottle is empty.



- (2) *Atomic semantic values*

- a.  $\llbracket \text{every} \rrbracket^g = \lambda F_{\langle e, \langle s, t \rangle \rangle} . \lambda s . \lambda G_{\langle e, \langle s, t \rangle \rangle} . \lambda s' . [\forall x : F(x)(s)] [\exists s'' : s'' \sqsubseteq s'] (G(x)(s''))$
- b.  $\llbracket \text{bottle} \rrbracket^g = \lambda x . \lambda s . x \text{ is a bottle in } s$
- c.  $\llbracket \text{be-empty} \rrbracket^g = \lambda x . \lambda s . x \text{ is empty in } s$

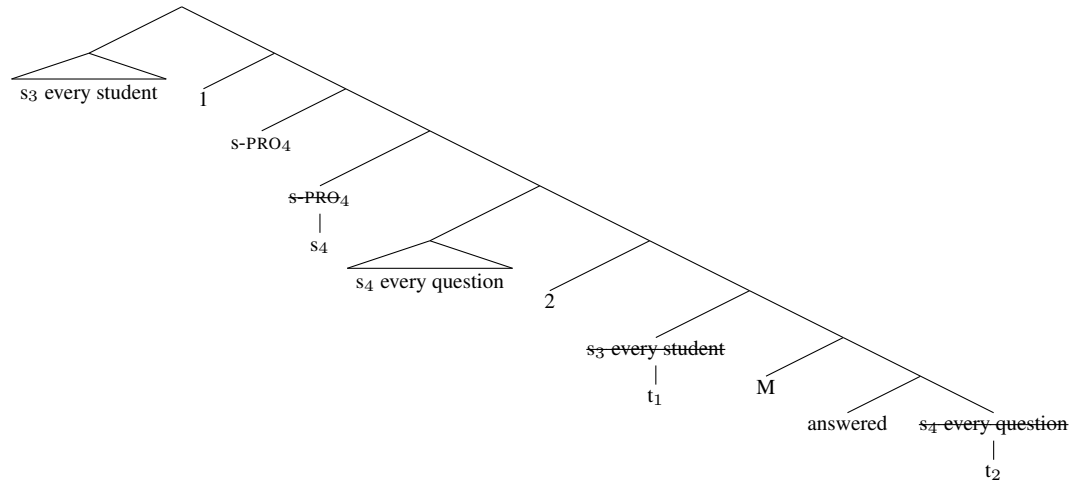
- (3) *Derivation*

- a.  $\llbracket \text{every bottle} \rrbracket^g = \lambda s . \lambda G_{\langle e, \langle s, t \rangle \rangle} . \lambda s' . [\forall x : x \text{ is a bottle in } s] [\exists s'' : s'' \sqsubseteq s'] (G(x)(s''))$  (FA)
- b.  $\llbracket [s_8 \text{ every bottle}] \rrbracket^g = \lambda G_{\langle e, \langle s, t \rangle \rangle} . \lambda s' . [\forall x : x \text{ is a bottle in } g(s_8)] [\exists s'' : s'' \sqsubseteq s'] (G(x)(s''))$  (PT, FA)
- c.  $\llbracket [s_8 \text{ every bottle}] [\text{is empty}] \rrbracket^g = \lambda s' . [\forall x : x \text{ is a bottle in } g(s_8)] [\exists s'' : s'' \sqsubseteq s'] (x \text{ is empty in } s'')$  (FA)

- d.  $\llbracket s_3 [s_8 \text{ every bottle is empty}] \rrbracket^g = \text{Truth iff } [\forall x : x \text{ is a bottle in } g(s_8)] [\exists s'' : s'' \sqsubseteq g(s_3)] (x \text{ is empty in } s'')$  (PT, FA)
- e.  $\llbracket s\text{-PRO}_3 [s_3 s_8 \text{ every bottle is empty}] \rrbracket^g = \lambda s . [\forall x : x \text{ is a bottle in } g(s_8)] [\exists s'' : s'' \sqsubseteq s] (x \text{ is empty in } s'')$  (SB)
- f.  $\lambda s . \text{ every bottle in the relevant situation is empty in } s$  (Paraphrase)

(4) Every student answered every question.

[Context: Three students each got a different set of questions.]



(5) *Atomic semantic values*

- a.  $\llbracket \text{answered} \rrbracket^g = \lambda y . \lambda x . \lambda s . x \text{ answered } y \text{ in } s$
- b.  $\llbracket M \rrbracket^g = \lambda x . \lambda s . M(s) = x$

(6) *Derivation*

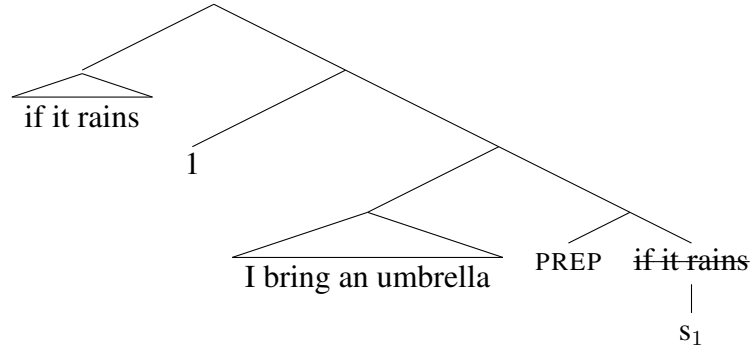
- a.  $\llbracket \text{answered } t_2 \rrbracket^g = \lambda x . \lambda s . x \text{ answered } g(t_2) \text{ in } s$  (PT, FA)
- b.  $\llbracket M \text{ answered } t_2 \rrbracket^g = \lambda x . \lambda s . x \text{ answered } g(t_2) \text{ in } s \wedge M(s) = x$  (IPM)
- c.  $\llbracket t_1 M \text{ answered } t_2 \rrbracket^g = \lambda s . g(t_1) \text{ answered } g(t_2) \text{ in } s \wedge M(s) = g(t_1)$  (PT, FA)



- d.  $\llbracket 2 t_1 \text{ M answered } t_2 \rrbracket^g = \lambda x . \lambda s . g(t_1) \text{ answered } x \text{ in } s \wedge M(s) = g(t_1)$  (PA)
- e.  $\llbracket s_4 \text{ every question } \rrbracket^g = \lambda G_{\langle e, \langle s, t \rangle \rangle} . \lambda s . [\forall x : x \text{ is a question in } g(s_4)] [\exists s' : s' \sqsubseteq s](G(x)(s'))$  (PT, FA)
- f.  $\llbracket [s_4 \text{ every question}] [2 t_1 \text{ M answered } t_2] \rrbracket^g = \lambda s . [\forall x : x \text{ is a question in } g(s_4)] [\exists s' : s' \sqsubseteq s](g(t_1) \text{ answered } x \text{ in } s' \wedge M(s') = g(t_1))$  (FA)
- g.  $\llbracket s_4 [s_4 \text{ every question } 2 t_1 \text{ M answered } t_2] \rrbracket^g = \text{Truth iff } [\forall x : x \text{ is a question in } g(s_4)] [\exists s' : s' \sqsubseteq g(s_4)](g(t_1) \text{ answered } x \text{ in } s' \wedge M(s') = g(t_1))$  (PT, FA)
- h.  $\llbracket \text{s-PRO}_4 [s_4 s_4 \text{ every question } 2 t_1 \text{ M answered } t_2] \rrbracket^g = \lambda s . [\forall x : x \text{ is a question in } s] [\exists s' : s' \sqsubseteq s](g(t_1) \text{ answered } x \text{ in } s' \wedge M(s') = g(t_1))$  (SB)
- i.  $\llbracket 1 [\text{s-PRO}_4 s_4 s_4 \text{ every question } 2 t_1 \text{ M answered } t_2] \rrbracket^g = \lambda y . \lambda s . [\forall x : x \text{ is a question in } s] [\exists s' : s' \sqsubseteq s](y \text{ answered } x \text{ in } s' \wedge M(s') = y)$  (PA)
- j.  $\llbracket s_3 \text{ every student } \rrbracket^g = \lambda G_{\langle e, \langle s, t \rangle \rangle} . \lambda s . [\forall y : y \text{ is a student in } g(s_3)] [\exists s'' : s'' \sqsubseteq s](G(y)(s''))$  (PT, FA)
- k.  $\llbracket s_3 \text{ every student } [ 1 \text{ s-PRO}_4 s_4 s_4 \text{ every question } 2 t_1 \text{ M answered } t_2] \rrbracket^g = \lambda s . [\forall y : y \text{ is a student in } g(s_3)] [\exists s'' : s'' \sqsubseteq s] [\forall x : x \text{ is a question in } s''] [\exists s' : s' \sqsubseteq s''](y \text{ answered } x \text{ in } s' \wedge M(s') = y)$
- l. Given the context of taking a qualifying exam,  $M(s') = y$  holds just in case  $s'$  contains  $y$ 's exam, on which there are  $y$ 's questions. Since  $s''$  includes  $s'$ , all the questions in  $s''$  are the questions assigned to  $y$ . There has to be such  $s'$  for each student  $y$ . Thus, we can paraphrase (6k) as follows:
- $\lambda s .$  for every student  $x$  in the relevant situation, there is some situation in  $s$  such that it includes all the questions assigned to  $x$ , and  $x$  answer every

question in that situation

(7) If it rains, I bring an umbrella.



I here assume that the antecedent can leave a trace that ranges over situations.

(8) *Atomic semantic values*

a.  $\llbracket \text{if} \rrbracket^g = \lambda p_{\langle s,t \rangle} . \lambda q_{\langle s,\langle s,t \rangle \rangle}^{\text{con}} . \lambda s . [\forall s' : s' \sqsubseteq s \wedge p(s')] [\exists s'' : s'' \sqsubseteq s] (q^{\text{con}}(s'')(s'))$

b.  $\llbracket \text{PREP} \rrbracket^g = \lambda s . \lambda s' . M(s') = s$

(9) *Derivation*

a.  $\llbracket \text{PREP } s_1 \rrbracket^g = \lambda s' . M(s') = g(s_1)$  (PT, FA)

b.  $\llbracket \text{I bring an umbrella} \rrbracket^g = \lambda s . \text{I bring an umbrella in } s$  (Assumption)

c.  $\llbracket \text{I bring an umbrella PREP } s_1 \rrbracket^g = \lambda s' . \text{I bring an umbrella in } s' \wedge M(s') = g(s_1)$

Here I need a variant of IPM, which can fuse two propositions to form a new proposition.

d.  $\llbracket 1 [ \text{I bring an umbrella PREP } s_1 ] \rrbracket^g = \lambda s . \lambda s' . \text{I bring an umbrella in } s' \wedge M(s') = s$

Here I need a variant of PA, which applies not only to individual variables, but also to situation variables. Alternatively, we could use s-PRO in the place of the numeral 1.

e.  $\llbracket \text{it rains} \rrbracket^g = \lambda s . \text{it rains in } s$  (Assumption)

f.  $\llbracket \text{if it rains} \rrbracket^g = \lambda q_{\langle s, \langle s, t \rangle \rangle}^{\text{con}} . \lambda s . [\forall s' : s' \sqsubseteq s \wedge \text{it rains in } s'] [\exists s'' : s'' \sqsubseteq s] (q^{\text{con}}(s'')(s'))$

g.  $\llbracket \text{if it rains} [\text{I I bring an umbrella PREP } s_1] \rrbracket^g = \lambda s . [\forall s' : s' \sqsubseteq s \wedge \text{it rains in } s'] [\exists s'' : s'' \sqsubseteq s] (\text{I bring an umbrella in } s'' \wedge M(s'') = s')$

h. Suppose that  $M(s'') = s'$  contextually means that  $s''$  includes an event that is causally or explanatorily related to an event in  $s'$ . Then we can paraphrase the derived proposition as follows:

For any situation in which it rains, there is some situation in which I bring an umbrella because of the raining.

## Appendix B

### Evidence for situation pronouns

Here I want to enumerate the evidence for situation pronouns. What follows takes the form of an argument to the best explanation. There is no direct confirmation of the existence of situation pronouns. By positing such variables ranging over situations at the level of syntax, we become able to handle many puzzling cases, which would otherwise remain puzzling.

### Scope paradoxes

Consider the following example, originally due to (Bäuerle, 1983):<sup>1</sup>

- (1) George believes that a woman from Boston loves every member of the Red Sox.

(Keshet, 2008)

The following scenario makes my assertion (1) true: While traveling toward Boston, George passes a bus and sees a group of athletes. He supposes at least one woman from the Boston area loves every one of them. George now believes at least one woman from Boston loves everyone on the bus. Unbeknownst to George, every RS player is on the bus. The question is how (1) receives this interpretation.

The sentence (1) contains two quantificational DPs: *a woman from Boston* and *every member of the Red Sox*, each of which has a scope. One might think that a certain

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<sup>1</sup>Among many others Keshet (2008, 31-32) and von Stechow and Heim (2011, Ch.7) discuss the example, on which my exposition depends.

scopal relation between the DPs yields the expected reading. However, this idea based on scopes cannot be verified. First, the scope of the DP *a woman from Boston* must be above the scope of the DP *every member of the Red Sox*, because George thinks that there exists, at least, one woman who loves every Red Sox member, not that for every member of the Red Sox, there exists one woman who loves him. Second, the *a*-DP must be below the propositional verb *believes* because George does not have a specific woman in his mind. His belief is not *de re*, but *de dicto*. Third, however, the scope of the *every*-DP must contain *believes*. For George does not know that those men belong to the Red Sox. He is not thinking of the men as the Red Sox players. But his belief is about the specific group of men he perceived. In short, (a) the *a*-DP must precede the *every*-DP. However, (b) the *every*-DP must precede *believes* that precedes the *a*-DP. Both (a) and (b) must hold at the same time, which is apparently impossible. Linguists sometimes call this problem a ‘scope paradox’.

- (2) a. [ a woman from Boston ] > [ every member of the Red Sox ]  
 b. [ every member of the Red Sox ] > believes > [ a woman from Boston ]

One of the solutions to Bäuerler’s scope paradox is to syntactically represent restricted domains of discourse as we have done so by introducing situation pronouns. The following structure is now possible for (1):

- (3) George believes s-PRO<sub>1</sub> [ s<sub>1</sub> [ s<sub>1</sub> a woman from Boston ] loves [ s<sub>0</sub> every member of the RS ]]

in which the two DPs have two distinct situation pronouns, and the coexisting pronoun in *every*-DP receives its interpretation contextually via an assignment.<sup>2</sup>

What does George believe according to this structural specification? The proposition expressed by the embedded *that*-clause is a diagonal proposition something like the following:

- (4)  $\lambda s . [\exists x : x \text{ is a woman from Boston } ] [\forall y : y \text{ is a member of the RS actually on the bus } ]$   
 $(x \text{ loves } y \text{ in } s)$

Although the *every*-DP appears below the *a*-DP, it has a *de re* interpretation. The situation pronoun  $s_0$  denotes the world in which George thinks about the athletes on the bus. The predicate [  $s_0$  *member of the Red Sox* ] means the set of the members of the Red Sox in that world, i.e., those who Georg sees on the bus. In some counterfactual situations, some of those men might not be baseball players; other people could be the members of the Red Sox in such situations. The others, however, are always irrelevant to the interpretation of this structure because the value of  $s_0$  remains the same. Wherever (in any counterfactual circumstance) you evaluate the structure, [  $s_0$  *member of the Red Sox* ] always means those who Georg sees on the bus. For he sees the bus in  $s_0$  and thinks about them in  $s_0$ . The members of Red Sox in  $s_{27}$ , for example, never enters the specification of the truth-conditions of (3). Therefore, the situation pronoun approach can keep the desired scopal relation between the two DPs (2, a.), while realizing the *de re* reading of the *every*-DP with no syntactic evacuation.

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<sup>2</sup>The names *George*, *Boston* and *Red Sox* must also occur with a situation pronoun on the predicate thesis. But I suppress them for simplicity.

## In between *de re* and *de dicto*

Janet Dean Fodor (1970) observes that the traditional scopal account of the *de re* and *de dicto* distinction cannot account for all possible readings of indefinite DPs:

- (5) Charlie wants to buy a coat like Bill's. (Fodor, 1970, 241)

The *de re* reading of (5) would be that there is a particular coat that Charlie wants to purchase. Charlie may or may not know that Bill also owns a similar coat. This reading is possible presumably because the DP *a coat like Bill's* has wide scope. On the *de dicto* reading of (5), Charlie desires to purchase a coat that fulfills a certain description, i.e., 'like Bill's'. He likes to copy Bill's style. For this reading, the *a*-DP takes scope below the attitude verb *want*. The standard analysis of *want* involves quantification over the subject's desire-worlds. Charlie wants a certain circumstance to be the case where he buys a coat that is similar to Bill's. The *a*-DP must be evaluated with respect to Charlie's desire worlds. Otherwise, Charlie could have ended up with a wrong coat.

Besides these two readings, Fodor points out that there is a third reading of (5), which she calls 'non-specific *de re*'. The non-specific *de re* reading of (5) indeed seems the most natural one for this specific construction. Suppose that Charlie knows what he wants to purchase. He considers certain characteristics of a coat (e.g., its color, shape, and material), and wishes to own a coat that satisfies many of those characteristics. Unbeknownst to Charlie, as a matter of fact, Bill happens to own one of such Charlie's ideal coats.

On the one hand, unlike the *de re* reading, Charlie has no specific coat to pick up. So the *a*-DP should not take scope over the attitude verb *wants*. On the other hand, unlike

the *de dicto* reading, Charlie does not have in mind the description ‘like Bill’s’. The descriptive content is the speaker’s way of describing the kind of coat Charlie wants to buy, not his own. The *a*-DP must be evaluated with respect to the actual world, not to all of Charlie’s desire-worlds because, in some of his desire-worlds, Bill would not own the kind of coat Charlie wants to have. So the *a*-DP must take scope over *wants*. But, then, (5) would have to have the *de re* reading, which is not the case on the third reading. Now we have a problem—how could the *a*-DP get the non-specific *de re* reading without appeal to scopal properties?

Positing situation pronouns solves this problem because they allow us to locally evaluate the content of the *a*-DP. The DP *a coat like Bill’s* can be evaluated with respect to the actual situation where Bill owns the right type of coat, while taking narrow scope. Our semantic system can derive a proposition like the following as the content of the embedded clause.

(6)  $\lambda s . [\exists x : x \text{ is a coat like what Bill actually owns } ](\text{Charlie buys } x \text{ in } s)$

If this proposition is true in every world that is compatible with Charlie’s desire, then the use of the sentence is true. The proposition indeed determines the all those worlds in which Charlie buys what he has in mind. Thus, the situation pronoun theory is empirically motivated because it can account for puzzling cases like (5).



## Appendix C

### Minimal situations

The notion of ‘minimal situation’ is standardly used within a situation semantic system (Berman, 1987; Heim, 1990; Elbourne, 2005; Schwarz, 2009). It is also known that, however, the notion of minimal situation causes some difficulties (Kratzer, 2007; Schwarz, 2009)

An intuitive characterization of a minimal situation goes something like the following. The minimal situation  $s$  for a proposition contains just as much stuff as making the proposition true. When we understand a proposition  $p$  as a set of situations, the minimal situations for  $p$  are a subset of  $p$  such that no smaller part of them belongs to  $p$ . In other words, there is no proper part of  $s$  in which  $p$  is true, while  $p$  is true in  $s$ . Why do we need such a minimal situation with respect to a proposition? Let us think about a use of (1), which is true in the scenario in which many donkeys appeared one by one and all of them greatly welcomed.

- (1) Whenever/If a donkey appeared, the donkey was greeted enthusiastically.

(after Kratzer 2007)

First, when we consider the antecedent in isolation, what kind of situation makes it true? The antecedent is true in any situation in which at least one donkey appeared. A situation that contains more than one such donkey of course makes the antecedent true. However, we detect a problem as soon as we consider the consequent together with the situations

in which two or more donkeys appeared. For there is not exactly one donkey in any of such situations. The definite description *the donkey* is thereby undefined, and the whole utterance fails to express a proposition.

The antecedent introduced by *whenever* or *if* must quantify over the minimal situations that make *a donkey appeared* true. Such a minimal situation contains only one donkey, and it can be used to provide a restricted domain for the description *the donkey* in the consequent. We can provide a minor modification to the lexical meaning of *if* and *whenever* we discussed in Chapter 4.

$$(2) \quad \llbracket \text{if} \rrbracket^g = \lambda p_{\langle s,t \rangle} \cdot \lambda q_{\langle s, \langle s,t \rangle \rangle}^{\text{con}} \cdot \lambda s \cdot [\forall s' : s' \sqsubseteq s \wedge s' \in \text{min}(p)] [\exists s'' : s'' \sqsubseteq s] (q^{\text{con}}(s'')(s'))$$

The minimality condition  $\text{min}(p)$  is understood as a subset of  $p$ , any element of which contains no smaller situation that is in  $p$ . With this definition, the antecedent quantifies over only minimal situations in which a donkey appeared.

But, now, consider the following.

- (3) When snow falls around here, it takes ten volunteers to remove (it).

(after Kratzer 2007)

If some snow falls in a situation, then the antecedent is true in the situation because the *when*-clause quantifies over all minimal situations that satisfy the condition expressed by *snow falls around here*. Presumably, any part of snow is snow. That means that the antecedent is true in a very minuscule situation in which snow falls (it is true as long as a bit of snow falls). Of course, we do not need ten people to remove such a small amount of snow. Or such small situations are not what we want to talk about when we utter the

sentence. So the notion of minimal situation does not work for all cases.

To avoid this problem, Kratzer (2007) and Schwarz (2009) introduce the notion of ‘exemplification’ and a metaphysical principle concerning how to count things. I am not sure if their suggestion solves the problem or worsen the condition.

The examples such as (1) and (3) strongly suggest that we are in need of event semantics. If the antecedent of a sentence does not quantify over situations, but over events, then the problem of minimality seems to disappear. For example, what kind of event does the antecedent of (3) quantify over? That is a sufficiently large event that we identify given the conditions specified by ‘falling of snow around here’. Divisibility probably does not apply to such a snow-falling event. A few snowflakes would not count as a snow-falling event, although they are spatiotemporally contained inside a snow-falling event. However, mushing up situation semantics and event semantics is not a simple task, and I need to leave it for a future occasion.

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