Proper Names as Quantifiers: A Neo-Fregean Account of the Sense of Names[*]

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Abstract

The main burden of this paper is to present a quantificational treatment of names, by construing the sense of a name in a sentence as indicating a special type of quantification (in fact, a *constant quantification*) in character, which is supposed to impinge upon the scope of application of the associated predicate(s). In brief, a name occurring in a sentence will be treated as a constant quantifier. That is, to treat the standard formula of the form "Fa" (where "F" is a predicate and "a" a proper name) as "a_xFx" (where a is a constant quantifier, to which an object **a** in the given domain will be assigned as its reference, if there is any), and the variable x always takes the object **a,** if there is any, as its semantic value whenever it is bounded by the constant quantifier a. This account substantially follows Frege's guidelines for his semantic theory in general, which he lays out at the very beginning of *The Foundations of Arithmetic*. I shall start with a brief analysis of how his guidelines would carry greater weight with an adequate account of the sense

of names. Then I propose that the sense of a name in a sentence should be construed as a special type of quantification (in fact, a constant quantification) in character. I shall further justify the formal adequacy of this quantificational treatment of names by constructing a first order language, in which the symbols ordinarily used as name letters or individual constants will be treated as constant quantifiers, together with appropriate semantic rules for these constant quantifiers. Finally, I show how this treatment could help us to deal with some persisting problems that the use of names may give rise to.

Frege (1892/1984b) draws a celebrated distinction between the sense of a sign (especially a linguistic expression) and its reference. In particular, a proper name in a sentence of natural language is supposed by Frege to have its sense, apart from having a certain object as its reference if there is any (Since the primary concern of this paper is with proper names, for the sake of simplicity, henceforth I shall use "name(s)" instead of "proper name(s)"). To argue for the indispensability of the sense of names, Frege appeals to the difference in cognitive value between two identity statements, say "$a = a$" and "$a = b$," where a and b are distinct names but have in common the same object as their reference. Frege thereupon claims that a name must be connected (or associated) with something other than its reference; otherwise, there should be no difference between "$a = a$" and "$a = b$." This, according to Frege, is the sense of a name.[1] Unfortunately, Frege has seldom specified the cognitive value of a statement.[2] Nor has he ever explicitly accounted for what the sense of names is, or could be, except for a few brief remarks.[3] What appears to be more misleading is that Frege (1892/1894b: 158, footnote 4) seems to hold the view, later called by the critics "the descriptive account of names," or more straightforwardly and commonly, "the Fregean sense of names," that, to a name in use, a description (or a

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[1] A similar argument can be found in a letter of Frege's to Russell dated November 13, 1904, where he (Frege, 1980b: 164) writes: "[I]ndeed, the two

identity statements '7 = 7' and '$\frac{5'-211-4}{753} = 7$' do not have the same cognitive value for us."

[2] In the aforementioned letter, Frege concludes that "[T]he cognitive value therefore does not depend only on the meaning [reference]; the sense is just as essential. Without the latter we should have no knowledge at all."

[3] For example, Frege (1892/1984b: 158) briefly notes that "I should like to call the sense of the sign wherein the mode of presentation is contained. . . . The sense of a proper name is grasped by everybody who is sufficiently familiar with the language or totality of designations to which it belongs." Also, Frege (1892-5/1979a: 124) emphasizes that "[A] proper name must at least have a sense (as I use the word); . . . Thus it is *via* a sense, and only *via* a sense that a proper name is related to an object."

cluster of descriptions) may be associated as its sense.

Since the late 1960s, an overwhelming majority of philosophers of language, led by S. Kripke, K. Donnellan, D. Kaplan, H. Putnam, . . . etc., under the banner of *the new theory of reference* or *the theory of direct reference*, have deep misgivings over the Fregean sense of names: names have no sense at all; names refer to objects directly rather than by means of associated descriptions.[4] In particular, the reference of a name is determined (or fixed) via a causal chain of the use of that name in communication, rather than by a description (or a cluster of descriptions) that may be associated to the name in use. Therefore, the Fregean sense of a name, construed as a certain associated description (or cluster of descriptions), is superfluous. Nonetheless, there are several difficulties intrinsic to the new theory of reference. For one thing, the new theory offers no satisfactory explanation for the lucid difference between the identity statements "$a = a$" and "$a = b$" (a and b having the same reference). At the same time, without the notion of sense of names, it would hardly be sensible to assert any sentence containing empty names, i.e., names having no reference in the mundane world. In particular, negative existential assertions about the non-existing, say "Pegasus does not exist," would be unintelligible. And of course, all true particular existential statements, say "Bill Clinton exists," will then become merely a truism. Nor could there be any convincing way out to the failure of applications of Leibniz's law to the opaque contexts. For we need to explain why, given that $a = b$, John believes that a is F, but may not believe that b is F.[5]

In view of the persisting difficulties that the new theory of reference may encounter, some philosophers of language are

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[4] In fact, Russell (1956) already waved the notion of sense of names (more strictly, logical proper names) aside. See Searle (1968) for a further discussion on Russell's rejection of Frege's notion of the sense of names.

[5] For a brief survey of the development, main theses and difficulties, of the new theory of reference during the last few decades, see Devitt (1989); for a lengthy discussion see Recanati (1993).

sympathetic to the notion of the sense of names, though they would no longer accept the so-called Fregean sense. A variety of non-Fregean senses of names have been proposed. For example, Devitt (1989: 211) maintains that a name has a non-Fregean (i.e., non-descriptive) sense which is to be identified with the type of causal chain (referred to as a certain type of *d*-chain, a causal network) which determines its reference. Alternatively, Addis (1989: 242) suggests that Fregean senses would seem to be natural signs—"a natural signs is an entity that is *intrinsically intentional*, that is, by its very natural as the entity it is, *points to* or is *about* or *of* or *intends* something else."

It is not my intention here to investigate what Frege's original view of the sense of names is, or could be, be it descriptive or not. Neither shall I consider all the pros and cons of the rejection of the sense of names, or be concerned with prevalent non-Fregean senses of names. The main burden of this paper is to present an account of the sense of names, which is essentially in a Fregean framework. Of course, by "a Fregean framework," I do not mean the alleged descriptive account of names. Rather, I simply want to emphasize that my account substantially follows Frege's guidelines for his semantic theory, which he lays out at the beginning of *The Foundations of Arithmetic* (1884/1980a). I shall start with a brief analysis of how his guidelines would carry weight with an adequate account of the sense of names. Then I propose that the sense of a name in a sentence should be construed as a special type of quantification (in fact, a *constant quantification*) in character, which is supposed to impinge upon the scope of application of the associated predicate(s). A name occurring in a sentence will therefore be treated as a constant quantifier. I shall further justify the formal adequacy of this quantificational treatment of names by constructing a first order language, in which the symbols ordinarily used as name letters or individual constants will be treated as constant quantifiers, together with appropriate semantic rules for these constant quantifiers. Finally, I show how this treatment could help us to deal with some persisting problems that the use of names

may give rise to.

I. Frege's Guidelines for an Adequate Account of the Sense of Names

In the Introduction to *The Foundations of Arithmetic* (Frege, 1884/1980a: x), Frege lays out three fundamental principles as the guidelines for his semantic enquiry:

1. always separate sharply the psychological from the logical, the subjective from the objective;
2. never ask the meaning of a word in isolation, but only in the context of a proposition;
3. never lose sight of the distinction between concept and object.

It strikes me that these principles already envisage a promising approach to a satisfactory account of the sense of names. So let me start with a brief review of these principles to see how it works out.

As is well known, Frege sets out on his semantic enquiry with a naïve assumption that we have thoughts that are objective and communicable; moreover, thoughts which can be expressed by linguistic expressions, especially declarative sentences, of our natural language.[6] When a (declarative) sentence is used to express a thought, the thought expressed is taken as the sense of that sentence. Now, granted that thoughts are objective, the sense of a name in a given sentence, being a certain constituent of the sense of that sentence, must be something objective. That is to say, the

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[6] Yet, it is not clear whether Frege holds the view that all thoughts should be, and can be, encoded in a linguistic (or quasi-linguistic) form. Dummett (1981a) maintains that only those that can be encoded in linguistic form count as thoughts; by contrast, Fodor (1975) suggests that some thoughts may not be expressible. But, it seems more likely for Frege to hold Dummett's view because, as Carl (1994) points out, Frege intends to ensure the objectivity of thoughts by virtue of the objectivity of language in use.

sense of a name could never be subjective or psychological, like *ideas*, or mental constructions or subjective intention of some individuals.[7] So the first problem to account for the sense of names, as the first principle of the guidelines suggests, is how do we characterize the objectivity of the sense of names?

For Frege, a straightforward way to characterize the sense of names is to appeal to an analysis of the role that names play in the logical structure of sentences. As a matter of fact, this line of reasoning merely follows the second principle, nowadays known as the Context Principle, hereafter "CP" for short. Although Frege did not specify what the context involved should be, as far as an inquiry into the meaning of a word is concerned, it would be beyond reasonable doubt to say that the context considered should contain as part at least the sentence in which the very word occurs.[8] For given that a sentence can be said to have a sense only when it is used to express a thought, we may then say that a linguistic expression, especially a name, can be said to have a sense only when it occurs in a sentence that expresses a thought. It would have missed the point to ask what the sense of a word, say "Socrates," *per se* is. Instead, we should, and could only, ask what the sense of the word "Socrates" in a certain sentence (e.g., "Socrates is a philosopher") is, provided that the sentence expresses a thought; otherwise, the given word is merely a vacuous sign. Adhering to CP, one can see that there should be some connection between the sense of a name and the sense of a sentence wherein the name occurs. It is then appealing that an

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[7] See Bar-Elli (1996, 2001) for an intentionalist account of Frege's notion of sense.

[8] For a somewhat detailed discussion concerning the notion of a context involved, see Evans (1993: 213-214), where he briefly points out that "in virtue of the contexts in which the man found himself the man's dispositions were but bent towards one particular . . . whose states and doings alone he would count as serving to verify remarks in that context using the name." In brief, we have to bear in mind "the way context can be determinative of what gets said" (Evans, 1993: 215).

adequate specification of this connection may pave a promising way to a satisfactory account of the sense of names.

It should be noted that, during the last few decades, several controversial issues concerning the Context Principle have raised. For one thing, although it is widely agreed, as Hans Sluga (1980: 94) remarks that CP is primarily a methodological principle for the analysis of sentences of ordinary language, CP itself still accepts several distinct readings. For example, Crispin Wright suggests that CP asserts the priority of syntactic over ontological categories: "the question whether a particular expression is a candidate to refer to an object is entirely a matter of the sort of syntactic role which it plays in whole sentences. (1983: 51)" But some commentators (e.g., Sluga, 1980; Demopoulos, 1995: 7) insist that CP is primarily concern with the relative priority of the semantic categories of truth and reference. Consequently, one can find a variety of formulations of CP in the exegetical literature: formulations that may have different implications and impacts on related issues.[9]

Another well-known debate has to do with the issue of whether Frege gave up CP after the publication of *The Foundations of Arithmetic* in 1884. To my knowledge, it was Michael Resnik (1967) who first claimed that Frege does not adhere to CP after 1884. Michael Dummett (1981a), Wright (1983), and recently, Stuhlmann-Laeisz (2001) echo this line of thought.[10] By contrast, a

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[9] For a detailed discussion, and comment, on a variety of formulations of CP, see Dummett (1981b: chap. 19), Bar-Elli (1996: chap. 5-6), and Stuhlmann-Laeisz (2001); Burge (2005) also offers six versions of CP. I am very grateful to an anonymous referee for drawing my attention to these issues and the philosophical implication that follows.

[10] Dummett (1981a) proposes that CP must be interpreted weakly and rejects its supposed epistemic implications. He further claims that Frege abandoned CP after he came to develop his semantics based on the sense-reference distinction. See Sluga (1980) for a further comment. Stuhlmann-Laeisz (2001: 264), after showing the pros and cons, concludes that "[Frege] accepts the contextual idea as a need in a particular methodological situation. But in general Frege rejects the idea, and no case does he accept it as a virtue."

group of philosophers insist that Frege does not abandon CP, for example Sluga (1980), Gregory Currie (1982), Peter M. Simons (1995), Demopoulos (1995), Bar-Elli (1996, 2001) and more recently, Tyler Burge (2005).[11]

These issues are rather complicated and interconnected with other issues. For instance, there is a close kinship between CP and the well-known context definition. Sometimes, CP, interpreted as a principle governing reference, suggests that our reference to mathematical entities, or more generally abstract entities of all sorts, can be achieved only if we have established the truth of the sentence wherein the name in question occurs. But the proponents of Platonism would maintain that we can refer to abstract entities, especially numbers, independently of our knowledge of such truth conditions. Sticking to Platonism, it is a natural inclination to hold that our knowledge of reference precedes knowledge of truth. One should not be surprised to find that those, typically Dummett, who have campaigned for the view that Frege abandoned CP later, prefer to treat Frege's theory of thought as a version of Platonic realism, according to which thoughts, taken as abstract entities of some kind, enjoy a certain mode of being and inhabit in a third realm.[12] However, recently Carl (1994, 2001), and others have strongly argued that as far as his theory of thought and even his

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[11] Currie (1982: 160), when commenting on a passage from Frege (1893/1967: §161), claims that Frege is still faithful to a kind of CP. Simons (1995) shows that his reconstruction of Frege's theory of real numbers actually provides an instance of application of CP, and this in turn illustrates that Frege did not abandon CP in the form stated in The Foundation of Arithmetic. Demopoulos (1995: 7) insists that CP is still very much "a part of Grundgesetze, if in Grundlagen the point of the principle is that truth takes precedence over reference, then in the later work, its point is that reference to truth (to the True) takes precedence over reference to other objects." Burge (2005: 15-16), after pointing out that Frege believes in at least six "context principles," argues that "all six principles are, with relatively minor qualifications, sound."

[12] Burge perhaps is an exception when he (Burge, 2005) holds that Frege is committed to a Platonic realism.

philosophy of mathematics are concerned, Frege seems more likely to be a neo-Kantian, rather than a Platonic realist. By now, no decisive answer to the question of whether, for Frege, CP goes hand in hand with context definition only in philosophy of mathematics, has been proposed. Likewise, the issue whether or not Frege is a Platonist, remains open to dispute.

Moreover, although Dummett (1981b: 360, 380) and Wright (1983, chap. 1) have long campaigned for the view that CP in Frege (1884/1980a) should be understood to concern reference, it seems to me that there is no good evidence showing that Frege would not apply it to sense. It is somewhat surprising, as Bar-Elli (1996) remarks, to notice that there are good reasons for believing that the main concern of CP regards the notion of sense, its application to reference being derivative from its application to sense. I shall therefore no longer dwell on any further discussion on which version of CP is that which Frege originally proposed. Nor will I address further on whether late Frege still adheres to CP, or whether Frege has restricted application of CP only to philosophy of Mathematics, rather than to philosophical issues in general.

At the moment, it is widely observed that Frege appears to stick to the centrality of sentences insofar as his doctrines of thoughts, judgments, inferences, and use of language are concerned. Nor does Frege ever lose sight of their centrality in his semantic treatment of the structure of language (Burge, 2005: 22). Later Dummett (1991: 229-233) also notes that Frege (1967) maintains his belief in the primacy of sentences with respect to sense. It seems perfectly reasonable to take as starting-point a certain primary version of CP, which states that only in the context of a sentence used to express a certain thought, and relative to an analysis of the logical structure of sentences, does a word in that sentence designate something, if there is any, either an object or a concept.

Since we do not yet have any account of the sense of names, we may simply assume that our understanding of sentences as expressing certain thoughts is merely a certain way of presenting

objects and related concepts. Since the fixation of an object to a name is to be determined by its sense, the sense in question must have something to do with the related concept and the relation between objects and concepts thus represented in sentences. In this paper, I simply focus, taking CP as a methodological guideline, on how the sense, if there is any legitimate use of that very term, of names should be construed by virtue of an analysis of the relations between objects and concepts, as they are so presented, in accordance with the logical structure of sentences and then show how to manifest the specified relation.

Intuitively, Frege seems to take for granted that a thought is by and large *about something* which is what the use of a name (in that sentence used to express the very thought) is supposed to signify, or re-identify. When there is such an object, we may take it as the reference of the given name. Presumably, this is the main reason for Frege to insist that the reference of a name in a sentence is determined via its sense.[13] In other words, to say that the reference of a name in a sentence is to be determined via its sense is no more and no less than to assert that the sense of a name in a sentence suffices to ensure that the name is used to signify what the thought is about. For example, when one asks what the reference of "Socrates" in the sentence "Socrates is a philosopher" is, one is not merely asking what it is (or who he is) for which the name "Socrates" stands; rather, one is asking what the thought *Socrates is a philosopher* is about.

Our foregoing analysis indicates that the primary concern of Frege's notion of sense of names is not only with the relation between a name and its reference, but, perhaps more significantly, with the relation between a given thought and the object that the thought is said to be about. One should therefore not be surprised to find that Frege (1884/1980a: §62) notes that in speaking of the

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[13] Surprisingly, both Dummett (1981a) and Evans (1982) strongly argue against this view and think that this is a serious mistake of Frege's semantics.

sense of a name, our problem becomes this: "[T]o define the sense of a proposition in which a number word occurs." After all, to understand the sense of a word in a sentence we have to understand the sense of the given sentence as a whole.[14]

This line of thought implies that the primary function of a name in a sentence is not to stand for a certain object if there is any, but to manifest the *aboutness* of the thought expressed by the given sentence, namely, to manifest the relation between the thought and whatever the thought is about. This is the gist of Frege's notion of the sense of names.

So far so good, however, the notion of *aboutness* of thoughts is rather vague, and could be misleading. Consider a simple thought, i.e., one that is expressed by a simple sentence with a name as its grammatical subject and a monadic predicate as its grammatical predicate, e.g., "*Socrates is a philosopher*." It is tempting to announce that the thought in question is *about* an object, i.e., Socrates. But, as Frege has stressed, a thought is by and large about something more than just a certain object alone. For Frege, one can meaningfully think of, or talk about, a certain object only via a certain concept under which the given object is supposed to fall. We are in no position whatsoever to think of, or talk about, the very person Socrates unless we already have a certain concept, say *being a philosopher*, under which the very object can be said to fall, or not to fall. For a concept, as Frege (1892/1979b: 90) understands it, is essentially predicative; it is therefore to be viewed as what the grammatical predicate in a sentence stands for. (Frege, 1892/1979b: 91) Accordingly, whenever a thought is expressed, or grasped or communicated, what the sentence asserts (if the communication is successful) is not merely about what object it is that the speaker thinks of, or talks

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[14] Russell seems to follow this view. As Bar-Elli (1998: 175-178) points out, on Russell's theory of descriptions, denotation is no longer regarded as a primitive logical relation, but as determined by the logical structure of the proposition as a whole.

about, but also spontaneously about what concept it is, under which the very object falls. "It need not then surprise us that the same sentence may be conceived as an assertion about a concept and also as an assertion about an object; only we must observe that what is asserted is different," so Frege (1892/1979b: 108) concludes.

It is noteworthy, though, as Frege (1891/1984a: 140) stresses, that concepts are incomplete, or unsaturated; while an object itself is complete so that it could make an incomplete concept turn into a complete thought, provided that the very object falls under the given concept. All in all, a thought, taken as a whole, is supposed by Frege not only to be about an object and a concept, but, more significantly, also about a certain *object's falling under the specified concept*. That is, a thought is said to be about an object, a concept and the "falling under" relation between an object and the specified concept. We may thereby take the very relation as what the sense of a name in that sentence intends to manifest. Frege (1892/1979b: 91) seems to realize this when he emphasizes that a (simple) thought is supposed to say something more important, other than a certain object and a concept: in speaking of a thought, "we are saying that something falls under a concept." Now, instead of saying that the primary function of a name in a sentence is to manifest the *aboutness* of the thought expressed by that sentence, we can say that the use of a name in a sentence is to manifest an object's falling under a concept. And once the very object in question is taken as the reference of the name involved, it would be perfectly sensible to take the function of the sense of a name in a sentence as intending to manifest the very object's falling under a concept.

At this point, we should remind ourselves that we should never confuse objects with concepts. Perhaps, this is the main reason why, in addition to the two fundamental principles we have discussed, Frege further puts a third principle—never to lose sight of the distinction between concept and object. According to Frege, when a name is taken as a (logical) subject of a given sentence, it

intends to refer to an object—the reference of a name is something that can never be a concept, but only as an object—while a concept should be always treated as the reference of a predicate (or a "concept-word" in Frege's terminology) (1892/1979b: 100). Of course, Frege is fully aware of the possibility that in some circumstances, the grammatical subject of a given sentence may intend to signify a concept which is said to fall under (more specifically, within) some other concept, such as "*Being a philosopher* is admirable" or "Whiteness is a cool colour." To cope with such a possibility, Frege maintains that in such cases, we have to take the very subject, as a whole, as a name, rather than a concept-word, of a second-level object which is supposed to fall under a second-level concept. That is to say, the grammatical subject "being a philosopher" should no longer be treated as a concept-word to stand for a certain first-order concept; rather, it is to serve as a name of an object of second-level (or second-order). "We must not let ourselves be deceived because language often uses the same word now as a proper name, now as a concept-word, like 'metropolis'," so Frege (1892/1979b: 109) remarks.

Admittedly, Frege is right in drawing the sharp distinction between the use of a (concept-) word to signify a first-order concept and the use of a (concept-) word to stand for a concept taken as a second-order object. An object is always something complete, be it first-order or second-order, whereas a first-order concept is incomplete. Hence, linguistic expressions (especially names) used to stand for objects and concept-words used to signify concepts belong to different categories. Any adequate account of the sense of names should not deviate from this principle.

It is somewhat interesting to note that Frege takes ordinary proper names occurring in some special contexts as signifying some concepts, including typically empty names, names in existential statements, and names in contexts containing phrases for propositional attitudes. Consider the sentence:

(1) Pegasus does not exist.

which contains an empty name—"Pegasus," granted that there is no Pegasus. Yet we are apt to accept (1) as a true and meaningful statement. Frege proposes that the grammatical subject (i.e., the word "Pegasus") in (1) should be viewed as a linguistic expression signifying a concept, e.g., *a flying horse*. For Frege, what (1) asserts is no more and no less than asserting that

    (2) The concept that the word "Pegasus" stands for is
        not exemplified.

One can thereby assert (1) without presupposing the existence of problematic non-beings.[15] This would justify Frege's thesis that a sentence containing empty names may have a sense but lack of a definite truth-value.

Analogously, with a rejection of existence as a first-order concept, Frege maintains that ordinary genuine names in existential sentences must be treated as signifying concepts. Although the question concerning whether or not existence (or the verb "exists") is a predicate (of first-order) remains open to dispute, it is widely agreed that existence (or the verb "exists") does not contribute any attribute (or property) to the object to which the name involved refers. Therefore, Frege has to countenance the view that particular existential sentences, like "Socrates exists," are nonsensical. However, particular existential sentences are by and large as meaningful as any predicative sentence, such as "Socrates is a philosopher." Frege therefore maintains that existence should be understood as a second-level concept under which some object of second-level falls. Accordingly, to make an existential statement containing certain ordinary name sensible, the best we should do is to rephrase the existential statement into a sentence in which the

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[15] Presumably, this treatment of empty names foreshadows Russell's quantificational analysis of definite descriptions. For Russell, a sentences containing some (empty) definite descriptions as grammatical subjects can be used to express object-independent propositions. We can then have object-independent thoughts.

name becomes part of predicates so as to designate a concept:

> Not only is it linguistically inappropriate to say "there is Africa" or "there is Charlemagne"; it is also nonsensical. We may indeed say "There is something which is called 'Africa'," and the words "is called 'Africa'" signify a concept. (Frege, 1984c: 282)

Here, it is not my intention whatsoever to argue for or against Frege's treatment of empty names and his conception of existence as a second-order concept. However, a brief remark would be helpful. It seems to me that when Frege suggests that the ordinary empty name "Pegasus" may stand for the concept *being a flying horse*, he implicitly holds the view that, to an empty name, there is always some suitable concept to be associated. Presumably, this is merely a straightforward consequence of the so-called description account of sense of names, which Frege holds implicitly. According to this account, to a given name, a description (or a cluster of descriptions) can be associated as its sense. We can then in turn use the associated description(s) to stand for a concept, which can be in turn associated to the given name. In particular, when the name in question is empty, it is desirable to take what a certain associated description stands for, i.e., a certain concept, as whatever the name stands for.[16]

However, we should remind ourselves that, granted that descriptions are predicates in character, names should never be mixed up with descriptions. For one thing, from a syntactic point of view, expressions used as predicates can be easily identified; by contrast, we are in no position whatsoever to draw the distinction between empty names and non-empty ones. A name is said to be

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[16] Recently, Miller holds a similar view. Miller maintains that empty names are really predicates on the grounds that a genuine proper name, i.e., name which has a reference, is used to signify a particular (precise) individual; whereas an empty name, only exactly (precisely) one individual (1975: 340, 353). Thus, "a fictional proper name is only a disguised definite description" (1975: 345).

empty only when it is used in a sentence without any reference. It follows that whether a grammatical subject intends to stand for an object or a concept is a semantic matter. Nonetheless, Dummett (1993: 291-292) has rightly argued that semantically a name could never behave as a predicate, even when it is an empty name:

> [I]t cannot be used to show "King Arthur," or even "Ossian," to be a predicate, since it is no more possible for anyone other than King Arthur to have been King Arthur than for someone other than Socrates to have been Socrates. . . . Even if there was never any historical person to whom "King Arthur" refers, we can imagine a state of affairs in which there was; but it is as true to say that the person whom, in that state of affairs, we should use the name "King Arthur" to refer would not *be* King Arthur as to say that, in the other hypothetical case, the person we should refer to as "Socrates" would not *be* Socrates.

Dummett then concludes that "King Arthur" is used as a proper name, not as a predicate; even if it fails of its objective of referring to someone, it does not thereby cease to behave linguistically as a proper name.

Truly, to a given name, one may associate with a certain description (or a cluster descriptions) for a certain special purpose; and with regard to the specified purpose, the associated description(s) may behave in exactly the same way as the name does. But, apart from some technical terms which are given via definitions, most ordinary names should not be treated as abbreviations of descriptions. Frege himself also insists that names were not "disguised" definite descriptions, although they were like them because they had a sense and could have a reference. As a matter of fact, a description signifies not only an object but also a specified property of that object so that its reference can be fixed via the specified property; by contrast, a name could only be used to signify the identification of an object that the thought is about when the name occurs in a sentence. Consequently, a definite description can be used to fix a specified object as its reference

single-handed; while the sense of a name can determine an object as its reference only when it occurs in a sentence. Moreover, once an object is fixed via a description, the description in use always shows a certain property of that object. But, a name, apart from standing for its reference, in principle would not tell us anything about the object to which it is used to refer. After all, as Carl (1994: 175) points out, it would not make sense to speak of a plausible reduction from names to descriptions or *vice versa*.

Our foregoing analysis indicates that in some cases concept-words can be used as names to stand for concepts taken as objects of second-order, but an ordinary name, no matter whether it is a genuine name or an empty name, should not be treated as a concept-word to signify a certain concept. Consequently, we should not take any associated concept as the sense of a name.

To sum up the impact of Frege's guidelines for semantic enquiry on his notion of the sense of names, we may reconstruct a much more complicated argument for the indispensability of the sense of names in what follows.

1. We have thoughts which are objective and which can be expressed by (declarative) sentences; when a sentence is used to express a thought, the thought is taken as its sense.
2. A (simple) sentence used to express a (simple) thought asserts not only about an object and a concept, perhaps more significantly, also about an object's falling under a concept.
3. Accordingly, if we believe in the objectivity of Fregean thoughts, then a name, being part of a sentence used to express a thought, must have a sense: the sense of a name in a sentence is intended to manifest an object's falling under the specified concept that the given predicate stands for.
4. A name in a sentence should never be interpreted as a linguistic expression used to signify any associated concept—no associated concept can be taken as the sense of a name.

Therefore, to characterize the sense of a name in a sentence is no more and no less than to manifest the *falling under relation* between an object and the specified concept in terms of the logical structure of the sentence in which the name occur. Our question at this second stage is then this: How would we manifest this relation?

II. The Sense of Names as Intended Constant Quantification on the Associated Predicates

We remarked earlier that for objectivity, the most promising approach to characterization of the sense of a name in a sentence is investigating the role that the name plays in a certain logical structure of the sentence in which it occurs. We have also noted that according to Frege, the sense of a name in a sentence plays a double role: on the one hand, it paves a way to the determination of the name's reference; on the other hand, it also contributes to the sense of that sentence as a whole in that it makes an incomplete concept become a complete thought. This implies that a name in a sentence is used not only to refer to a certain object, if there is any, but also to signify the very object's falling under a concept, for which the associated predicate stands.[17] Now it is striking that to characterize the sense of a name in a sentence is no more and no less than to characterize the *falling under relation* between an object and the specified concept in terms of the logical structure of the sentence in which the name occur, and this can be in turn characterized in terms of the logical connection between the name and the associated predicate(s) in the sentence under investigation.

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[17] It seems to me that the proponents of the descriptive theory of names have paid all their attention to the former. They are mainly concerned with the question of how to fix the reference of a name in a sentence in terms of descriptions, but override the second role that names play in sentences. As a result, one could grasp the sense of a name without any reasonable analysis of the logical structure of the sentence in which it occurs. This would inevitably violate the Context Principle.

The main concern of the second part of this paper is to show how to manifest such a required logical connection.

It is worth mentioning that Searle (1967: 96) has already noted that names are "logically connected with characteristics of the objects to which they refer in a loose sort of way," when he rightly rejects the usage of names to describe characteristics of objects. Although he does not specify what the required logical connection is, or could be, nor does he ever show us how to formulate such a connection logically, he *does* envisage that if the required connection could be taken as the sense of a name in a sentence, then this connection must be able to be formulated logically, i.e. in terms of the logical structure of the given sentence.[18] Geach (1975) takes a further step by treating the sense of a predicate in a sentence as a function so that the sense of a name can be viewed as an argument to yield a thought as its value. This formulation explicitly shows, by virtue of the logical structure of sentences, how the sense of a name in a sentence makes the incomplete predicate become a complete thought. However, this treatment offers no explanation for how the sense of a name contains a mode of presentation, a way of determining its reference. After all, as Dummett (1981b: 270) insists, to grasp the sense of an expression is no more than to grasp a means of determining its referent.[19]

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[18] Recently, several philosophers adopt a similar approach. For example, Burge (2005: 102) remarks that "an inquiry of the meaning of a word (in retrospect, presumably, its sense and its reference) is to be carried out in the context of an analysis of its role in a sentence." Bar-Elli (1998: 179) also points out that the predicative force and the propositional "glue" are not ascribed to any of the constituents, but only to the logical form of the proposition. Similarly, Dummett (1981a: 496) notes: Whether or not an expression is a name depends not upon any very precise knowledge of its sense, but merely on its logical role in sentences.

[19] Surprisingly, Kripke (1980) in a footnote admits that names have a sense in modal logics, and proposes that on the formal semantics for modal logic, "the sense of a term τ is usually taken to be the (possibly partial) function which assigns to each possible world w the referent of τ in w." Moreover,

Despite this, both Searle and Geach shed some light on the issue of how to characterize the sense of a name in a sentence is to manifest the logical connection between the name and the associated predicate so that the relation between the reference of the given name and the concept involved (i.e., what the given predicate stands for) can be explicitly displayed. From a logical point of view, the best and perhaps most common method to manifest such a logical connection between the name and the associated predicate is *quantification*. As is well known, quantification is in essence the application of a quantifier of a certain type, functioning as an operator on the associated predicate to indicate the quantity of things in the domain of discourse, which the given predicate can be satisfied. Now, if a simple thought is said to be about a certain object's falling under a concept, it would be perfectly sensible to think of a name in a sentence as if it intends to put forth a specified quantification on the associated predicate so that the predicate will be satisfied by the specified object, if there is any, and if so, that it can be therefore taken as the reference of the name in use. One can see that by taking a name in a sentence as a quantifier operating on the associated predicate, Frege's notion of an object's falling under a concept can be explicitly formulated in terms of the logical structure of the given sentence. This is precisely what we are searching for and I shall therefore take this functioning of a name in sentences as its sense.

More specifically, a name a in a sentence S, when associated with a predicate P, serves as a special kind of quantification on P in S so that whenever S expresses a thought σ, it enables us not only to signify the identification of the object that the thought σ is about, but also to manifest the very object's falling under the given concept that P stands for. But then, what kind of quantification it

Kripke himself agrees that this notion of sense relates to that of "giving a meaning," not that of fixing a reference. Still, it is hard to see if there is any connection between the sense of a name in a sentence and the thought that the sentence expresses.

could be that a name in a sentence puts forth?

At this stage, we may recall the Millean theory of names, according to which the primary concern of giving a name to objects (people, or things, or places, etc.) is "to assist, not in their descriptions, but only in their identification so as to make them subjects of discourse" (Mill, 1961: I, ii, 5). Viewing the use of names from this aspect, Mill is right, as Ryan (1974: 65) points out, in that "there is nothing in particular that has to be true of something to make it a proper bearer of a name—so long as it is stable enough to be labelled and re-identified as the bearer of the label, then it is what it is named." Admittedly, in ordinary discourse when two or more distinct thoughts are said to be about the same object, we are inclined to use the same word as its name to indicate that it is the very same object that falls under different concepts. Now, if a name in a sentence is treated as a quantifier, all that is required is to ensure that every occurrence of the name intends to operate on the associated predicates, different as they may be, so that they are satisfied by the very same object. Presumably, this is what Frege has in mind when he claims that the use of a name in a sentence will enable us to recognize that the object we are talking about is the same one. According to Frege, this is the crucial role that the sense of a name should play: "When we have thus acquired a means of arriving at a determinate number and of recognizing it again as the same, we can assign it a number word as its proper name. (1884/1980a: §62)" By comparing with the universal/existential quantifier, we can see that the operation of a name in a sentence understood in this way can be viewed as if it puts forth a *constant* quantification on the associated predicate(s) in that whenever a name *a* is associated with a predicate, whatever it is, the predicate is used to be predicative of the very same object to which *a* refers. So to distinguish the type of quantification that names import, I shall call it *constant quantification*. We may then take names as constant quantifiers.

III. Names as Quantifiers: A Formal Treatment in First-Order Language

From a logical point of view, the idea to treat names as quantifiers of some type is not a new one. Hodges (1977: 19) briefly proposes that logicians have been aware of the possibility of using names as a straightforward method of quantification, namely, *instantiation*.[20] Still, a quantificational treatment of names sounds outrageous due to the lack of a method to illustrate that names *behave* in a way similar to what the universal/existential quantifier in a first-order theory does, both syntactically and semantically.[21] Some might therefore wonder how this treatment could be adapted

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[20] I always feel uneasy about the adequacy of the terminology "instantiation" here because it seems to me that the term is not appropriate for representing the constancy or rigidity of names. At first glance, the term suggests that the formula/sentence $\varphi(a)$ is an instance of the formula $\varphi(x)$ or the sentence $\forall x\varphi(x)$. But, a sentence of the form $\varphi(a)$ is intended to express by and large something more than just an instance of $\varphi(x)$ or $\forall x\varphi(x)$. It also displays explicitly that what we are talking about is precisely the very object a. Moreover, when two sentences containing the same name, say $\varphi 1(a)$ and $\varphi 2(a)$, they are not merely to serve as two instances of $\forall x\varphi 1(x)$ and $\forall x\varphi 2(x)$, respectively. They are intended to show that the two sentences are about the same object. I hope that the term "constant quantifiers" could deprive us of such uneasiness. More personally, I prefer to call "instantiation quantifier" the ordinary existential quantifier $\exists x$. The reason is quite obvious. For a formula of the form $\exists x\varphi(x)$ is precisely intended to represent that there is at least one instance of $\varphi(x)$. And more importantly, the new terminology may keep the notation $\exists x$ semantically neutral to the two distinct interpretations of quantification, namely objectual and substitutional interpretation. Clearly, on the objectual interpretation, we say that $\exists x\varphi(x)$ is true if there is such and such an object a such that $\varphi(a)$ holds; while, on the substitutional interpretation, if there is such and such an instance $\varphi(a)$, for some name letter (or individual constant) *a*.

[21] It is noteworthy that Westerståhl (1998) also mentions the possibility of treating proper names as quantifier owing to the possibility of interpreting all noun phrases, i.e., Nps, in the syntactic structure of sentences in a unified way. But, he is rather pessimistic about how to give a formal treatment for names taken as quantifiers.

into a logical system. In what follows I shall show that syntactically, all that is required is to extend the usual formation rule for the universal/existential quantifiers in first-order language to cover names. Meanwhile, semantically, there should be no difficulty in adapting the use of constant quantifiers in place of individual constants to the standard semantics for predicate logic, either on objectual interpretation of quantification or on the substitutional semantics.

Let us recall that syntactically, an occurrence of a quantifier in a formula/sentence of a first-order language always affixes with a variable so that we can use an x_i-binding quantifier (e.g., $\forall x_i$ or $\exists x_i$) to turn an open formula $\varphi(x_1...x_i...x_n)$ with free variable x_i amongst n distinct free variables into one with n-1 free variables. In particular, we can use an x-binding quantifier, either $\forall x$ or $\exists x$, to turn an open formula $\varphi(x)$ with the sole free variable x into a sentence (i.e., "$\forall x \varphi(x)$" or "$\exists x \varphi(x)$"). By the same token, a name "a," taken as a (constant) quantifier, can be used as an x-binding quantifier, for any arbitrary variable x. To imitate the formulation of usual quantifiers, we may use the notation "a_x" as an x-binding constant quantifier a. We can then prefix such an x-binding quantifier notation to an open formula (e.g., $\varphi(x)$) to form a new formula/sentence of the form "$a_x \varphi(x)$)." By this procedure, names, taken as quantifiers, will behave exactly in the same way as usual universal/existential quantifiers do. The usual formation rule for "$\forall$" and "$\exists$" can be thereupon applied to names.

More formally, let $\mathcal{L}$ be a usual first-order language for predicate logic, the alphabet of which contains denumerable sets of name letters $\{a_k \mid k \in \mathbb{N}\}$, predicate letters $\{P_i \mid i \in \mathbb{N}\}$, variables $\{x_n \mid n \in \mathbb{N}\}$, and usual logical operators and auxiliary signs $\{\neg, \rightarrow, \forall, \exists, (,) , \}$. Now, on the given alphabet, we can construct a first-order language $\mathcal{L}^*$ wherein the primitive symbols a_k's will be treated as constant quantifiers. Let us use meta-symbols $v_0, . . ., v_n, . . .$ to stand for variables; $\alpha, \alpha_1, . . ., \alpha_k, . . .$, for constant quantifiers, and $\varphi, \psi, \theta, \sigma,...$, for formulae. Note that, as the language in use contains no function letters, only variables count as terms. The set

of atomic formulae of $\mathcal{L}^*$ will be defined by the following formation rule:

(*At*) For any *n*-place predicate letter P, $Pv_0,...,v_{n-1}$ is an atomic formula.

The set of formulae $\mathcal{F}$ will be defined by the following formation rules:

(i) $\varphi \in \mathcal{F}$; for any atomic formula φ;
(ii) if $\varphi \in \mathcal{F}$ and $\psi \in \mathcal{F}$, then $\neg \varphi$, $(\varphi \rightarrow \psi)$, $\forall v_i \varphi$, $\exists v_i \varphi$, $\alpha v_i \varphi$, for any constant quantifier α, are members of $\mathcal{F}$.

Note that the role that constant quantifiers play can be further characterized by virtue of the following equivalences:

(3) $\vdash$ $\alpha_{vi} \neg \varphi \leftrightarrow \neg \alpha_{vi} \varphi$;
(4) $\vdash$ $\alpha_{vi}(\varphi \rightarrow \psi) \leftrightarrow (\alpha_{vi} \varphi \rightarrow \alpha_{vi} \psi)$;
(5) $\vdash$ $\alpha_{vi} \forall_{vj} \varphi \leftrightarrow \forall_{vj} \alpha_{vi} \varphi$;
(6) $\vdash$ $\alpha_{vi} \exists_{vj} \varphi \leftrightarrow \exists_{vj} \alpha_{vi} \varphi$.

In so far as the syntax is concerned, there is no substantial difference between a usual first-order language $\mathcal{L}$ and the language $\mathcal{L}^*$ so constructed. As a matter of fact, corresponding to each atomic sentence of $\mathcal{L}$, say $P(a_1 . . . a_n)$ (for a sequence of *n* name letters $a_1, . . . , a_n$), there is a sentence of the form $a_1v_1...a_nv_n$ $P(v_1,...,v_n)$ in $\mathcal{L}^*$ for a sequence of *n* constant quantifiers $a_1,...,a_n$. Let us call a formula *an atomic constant quantified sentence*, or simply an *atomic sentence*, of $\mathcal{L}^*$, if it results by prefixing a suitable sequence of *n* constant quantifiers to an *n*-place predicate $P(v_1,...,v_n)$ so that no free occurrence of variables remains. Moreover, let "$\varphi(\alpha/v_i)$" stand for the formula resulting from $\alpha v_i \varphi(v_i)$ by deleting the v_i-binding constant quantifier αv_i and then substituting the constant quantifier α for each occurrence of v_i in $\varphi(v_i)$. Obviously, if we write "$\varphi(\alpha/v_i)$," instead of "$\alpha_{vi} \varphi$," for any atomic sentence φ, the language $\mathcal{L}^*$ will be exactly the same as $\mathcal{L}$

defined in the usual way.

We next turn our attention to appropriate semantics for $\mathcal{L}^*$. It can be shown that both the well-established objectual interpretation and the substitutional interpretation of quantification can be easily adapted to the required semantic treatment for the language $\mathcal{L}^*$. On the objectual interpretation of quantification, a quantifier is used as an operator on an open formula (or the associated predicate(s)) to indicate how many things of a certain type in the given domain would satisfy the given open formula (or associated predicate(s)). Thus, the existential quantification

(7) $\exists x(x$ is a philosopher)

(also, the universal quantification, e.g., $\forall x(x$ is a philosopher), respectively) indicates that the predicate "*x is a philosopher*" is satisfied in a given structure, provided that at least one object (or, every object, respectively) in the given domain is in the extension of the given predicate. Now if the predicate "*x* is a philosopher" is used to stands for a concept *being a philosopher*, as Frege so construed, the occurrence of the variable *x* here is used to indicate that the object, assigned as the value of *x*, whatever it is, is supposed to be an object falling under the concept *being a philosopher*. The quantifier $\exists$ ($\forall$, respectively) is used to bind the variable *x* so to assert that at least one object (or every object, respectively) in the given domain can be assigned to *x* as its value such that the very object falls under the concept expressed by the predicate "*x is a philosopher*." By the same token, when we wish to assert that a certain specified object, say Socrates, in the given domain falls under the concept *being a philosopher*, all that is required is to formulate that the variable *x* associated with the predicate "*x* is a philosopher" will take the very object as its value.

Now, we may set as an interpretation of constant quantifiers in what follows:

> (S$_{CQ}$CL) To each constant quantifier *a*, an object **a** *is associated* so that whenever *a* occurs in a formula, or subformula of some formula, as an *v*-binding quantifier, any occurrence of the variable *v* in the specified scope will accept the very object **a** as its value.

Obviously, with (S$_{CQ}$CL), we do have a truism: for any constant quantifier *a*,

(CQ) $a_x \exists y x = y$

For example, assuming that to the constant quantifier "***Socrates$_x$***," the person Socrates is associated, the sentence

(8) ***Socrates$_x$*** (*x* is a philosopher).

then asserts that the variable *x* in (8) will accept as its semantic value the person Socrates which falls under the concept *being a philosopher*. More generally, for any name *a*, taken as a constant quantifier, we may say that a constant quantification

(9) $a_x\ \varphi(x)$

is satisfied in a structure if associated to the (*x*-binding) constant quantifier *a*, there is a certain specified object in the given domain so that *x* will accept the very object as its value and the very object satisfies the open formula $\varphi(x)$. Corresponding to the informal reading of ∀—"for all objects," and that of ∃—"for some object(s)," the constant quantifier "a_x" can be informally read: "for the very object **a**."

Of course, if constant quantifiers are to be interpreted in this way, we need to define an interpretation (a structure) wherein, to each constant quantifier, a unique object in the give domain will be associated. The required semantic rule for constant quantifiers follows immediately:

(S) A formula of the form $\alpha_{vi}\varphi$ is satisfied in the given structure if φ is satisfied by the unique object associated to the constant quantifier α.

It is somewhat interesting to see that the substitutional interpretation of quantification can be easily adapted as well. All that is required is to show that a structure is merely an assignment of truth values to each (constant quantified) atomic sentence, and the required semantic rules for connectives and the universal/existential quantifiers are the same as the standard ones: e.g., $\exists v_i \varphi$ is true in a given structure if there is some constant quantifier α such that $\alpha_{vi}\varphi$ is true in the structure.[22]

The foregoing treatment suffices to show that it is formally adequate to treat names as constant quantifiers, both syntactically and semantically.

IV. Some Remarks on the Quantificational Analysis of Names

So far, I have presented a neo-Fregean notion of the sense of names by treating names as constant quantifiers. I hope that this treatment will be much more satisfactory than any other theory of names. To illustrate this, I shall in the remainder of this paper draw some brief remarks on certain philosophical significance of the quantificational treatment of the sense of names.

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[22] Nowadays, some logicians prefer to take quantifiers as higher-order predicates (As a matter of fact, this idea also goes back to Frege). For instance, the existential quantifier in a sentence, say $\exists x\varphi(x)$, is intended to indicate that the predicate $\varphi(x)$ is not empty. More generally, quantification is to be treated as a function from the given domain to the power set of the given domain. Thus, the universal quantifier is defined as a function which take the domain itself as its value; while the existential quantifier takes some subset of domain as its value. Following this line of thought, we may say that a name, taken as a constant quantifier, will take some singleton as its value.

(a) First of all, our quantificational treatment of names substantially rests upon Frege's guidelines for his semantic inquiry. For one thing, under this treatment, the sense of a name in a sentence is construed as a certain constant quantification on the associated predicate(s) that is in turn characterized by virtue of the logical structure of the sentence in which the name occurs. The characterization of the sense of names is thereby a matter of logical investigation, rather than something psychological or subjective. Moreover, our treatment is in line with the Context Principle. For just like a usual quantifier can be said to have a sense only when it is associated with a variable and then prefixed to an open formula containing some free occurrences of the associated variable, a name can be said to have a sense only when it occurs in a sentence.[23] And the quantificational treatment of names explicitly displays that a name always occurs together with some associated predicate(s).[24] In addition, one can see that under our treatment, we could never "lose sight of the distinction between concept and object" with regard to the use of names. At any rate, it is hardly possible for anyone to confuse predicates with quantifiers.

(b) More significantly, the quantificational analysis of names explicitly manifests the logical connection between a name and the associated predicate in a sentence so that it could not only signify what the object is, about which the thought expressed by the given sentence is said to be, but also signifies the very object's falling

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[23] Of course, some first-order language may accept formulae/sentences with vacuous quantifiers, i.e., formulae of the form $Qx\varphi$, where no free occurrence of x in φ. But a formula of this type says nothing more than what its immediate subformula says.

[24] Perhaps, this treatment also provides an answer to the question why sentences, say "Fa," are different from open formulae such as "Fx." Bar-Elli raises such a question: why linguistic expressions of the type say "Fa" are to be taken as sentences which can be said to be true or false but why that of the type say "Fx" are not (1998: 179)? For just as we may prefix an x-binding universal/existential quantifier to an open formula with the sole free variable x to turn it into a sentence, the same goes for a name, taken as an x-binding quantifier.

under a concept—the concept that the associated predicate stands for. It seems to me that when Frege remarks that "the sense of a name in a sentence contains the mode of presentation," the phrase "the mode of presentation" can be construed as the mode of presentation *of a certain object's falling under a concept*.[25] It is to this extent that the sense of a name in a sentence can be said to contribute to the sense of that sentence. It strikes me that if the notion of "an object's falling under a concept" is the primary concern of a thought, perhaps, we should take as our starting-point (or foundation) for semantic investigation the view that predicates will play a central role in the theory of meaning. For following this line of reasoning, it seems likely that all grammatical (logical) subjects can be treated as quantifiers of different types.

(c) Our quantificational account of names opens a promising way to some persisting problems that the use of names in ordinary discourse may give rise to. Noticeably, it provides an explanation of the difference in cognitive value between identity statements "*a = a*" and "*a = b*." Clearly, under our treatment, they should be

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[25] It is worth mentioning that by taking a name as a constant quantifier, we can not only take the imported constant quantification as its sense but also fix the intended reference via the specified quantification. The sense of a name understood in this way will be free from Kripke's criticism of Frege's notion of sense in his seminal work *Naming and Necessity* where Kripke argues that

> Frege should be criticized for using the term "sense" in two senses. For he takes the sense of a designator to be its meaning; and he also takes it to be the way its reference is determined. Identifying the two, he supposes that both are given by definite description. Ultimately, I will reject this second supposition too; but even were it right, I reject the first. A description may be used as synonymous with a designator, or it may be used to fix its reference. The two Fregean senses of "sense" correspond to two senses of "definition" in ordinary parlance. They should carefully be distinguished. (1980: 59)

One may find that Kripke's argument could be accepted if one is going to take some associated, or a cluster of, descriptions as the sense of a name. But, on our approach, Kripke's argument would miss its target.

reformulated, respectively, as sentences of the form:

(10) $a_x x = x$,
(11) $a_x b_y x = y$.

Note that (10) shows that only an x-binding constant quantifier "a" operating on identity predicate; while (11) shows that two (one x-binding and the other, y-binding) constant quantifiers "a" and "b," operating on identity predicate with two distinct free variables x and y. Accordingly, (10) asserts that free occurrences of variables associated with the identity predicate will always take as its value the object associated to the constant quantifier a; while (11) asserts that the two free occurrences of variables, x and y, associated to the identity predicate will take as their values the objects associated to the constant quantifiers a and b, respectively. From a semantic point of view, granted that the constant quantifier a has a value in a structure, the truth of (10) immediately follows from the identity law: $\forall x x = x$; but the truth of (11) requires that an object in the given domain is assigned to both a and b as their value in common, which is a matter of semantic stipulation. I think that this should explain the difference in cognitive value between "$a = a$" and "$a = b$." Moreover, the quantificational treatment of names can prevent some outrageous stipulations of the semantic values of names. For example, Searle (1967) proposed that we may put forth a certain special stipulation of the semantic value of a names so that two distinct occurrences of the same name a in an identity statement "$a = a$" refer to distinct objects; hence the given identity statement could be viewed as synthetic if it is true. Surprisingly, it is difficult to find a convincing argument against such an awkward stipulation. But on our account, "$a = a$" should be rendered as "$a_x x = x$," and if we take it for granted that on the objectual interpretation of quantification, to each free occurrence of a variable v_0 within the scope of a given v_0-binding quantifier, the same object will be assigned as its value at a given assignment (or interpretation), then Searle's proposal can be dismissed.

(d) Meanwhile, on the quantificational account of names, we may accept empty names without commitment to a problematic ontology. As is widely agreed, Russell's theory of descriptions allows us to comprehend the meaning of a sentence containing empty descriptions by reformulating the involved definite descriptions in terms of some suitable (complex) predicate together with application of the existential quantifier, without presupposition of problematic non-beings. This justifies the expressibility of object-independent propositions in natural language. By the same token, the quantificational treatment of names also enables us to use sentences containing empty names to express object-independent thoughts, namely thoughts that are about non-beings. A sentence with an empty name, understood as a quantifier, at least can be used to signify, in addition to a concept that the given predicate stands for, the *falling under* relation between the value of the name in use and the specified concept, even though there is no object that the name in use is supposed to signify. After all, as we have already remarked, the primary concern of a thought is with an object's falling under a concept: to grasp the sense of a simple sentence of the form *Pa* is no more and no less than to grasp a certain constant quantification on the associated predicate *Px*. We can thereby grasp the sense of sentences containing empty names without *any exceptional ontological commitments*. This also justifies Frege's original view that a name in a sentence may have a sense but no reference, and, *a fortiori*, the intelligibility of existential statements about non-beings. We can now speak of the non-existence of Pegasus by stating that Pegasus does not exist without presupposition of the existence of Pegasus. Following this line of thought, we need not take names in existential sentences as concept words, as Frege proposed.[26]

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[26] Of course, if this line of reasoning is acceptable, it seems to me that we need not take existence, or the verb "exists," as a second-order concept/predicate. But this is a topic beyond the scope of this paper. I have touched on the dispute over whether existence is a first or second-order predicate; for the

(e) A byproduct of the quantificational treatment of names can be found in its application to modal logic. At present, there is an ongoing dispute concerning the distinction between *de re* and *de dicto* readings of modal sentences containing names. For example, consider the modal sentence "$\Box \varphi(a)$" where a is a name (or a name letter or an individual constant) and $\varphi(a)$ is a non-modal sentence. From a semantic point of view, if we intend to ascribe the embodied necessity to the object, taken as the value of a, it is desirable to take the *de re* reading of "$\Box \varphi(a)$." However, in this case, the rigidity of names has to be presupposed so that we may claim, without any justification, that a name can be used to designate the very same object in all possible worlds. Although a majority of philosophers/logicians prefer to take names as rigid designators, the rigidity of names is purely a matter of semantic stipulation. For syntactically, with regard to the use of a name, say a, a modal sentence of the form $\Box \varphi(a)$ suggests in no way that names can be used as rigid designators.[27] Now, under our

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27 details see Yang (1999).

In a first-order modal language with identity, the rigidity of names can be formulated in terms of the following formula:

(*) ⊢ $\Box\varphi(a) \leftrightarrow \forall x(x = a \rightarrow \Box\varphi(x))$.

Or more specifically, as I proposed in Yang (1993):

(**) ⊢ $\Box\varphi(a) \leftrightarrow \forall x(x = a \rightarrow \Box\forall y(y = x \rightarrow \varphi(y)))$.

But when contingent objects are accepted, it would be illegitimate to claim that the semantic value of a, denote $|a|$, satisfies $\varphi(x)$ in a world in which $|a|$ does not exist. Hence, (*) would fail to hold. Kripke himself seems fully aware of this difficulty so as to propose a weak sense of rigidity of names: names are rigidity designators in a weak sense when a name refers to the same object in every possible world in which the very object exists. This could be formulated by the following formula:

(†) ⊢ $\Box \varphi(a) \leftrightarrow \exists x(x = a \wedge \Box \varphi(x))$.

Or analogously, as I proposed in Yang (1993):

(††) ⊢ $\Box \varphi(a) \leftrightarrow \forall x (x = a \rightarrow \Box\exists y(x = y \wedge \varphi(y)))$,]

Still, the choice between (*) and (†) remains to be a matter of semantic convention.

treatment, the language in use will no longer contain modal sentences of the form $\Box \varphi(a)$; and instead, we do have "$\Box a_x \varphi(x)$" and $a_x \Box \varphi(x)$. Again, let us take it for granted that all free occurrences of a variable v_0 within the scope of the same v_0-binding quantifier will take the same object as its value at a given assignment. The same goes for free occurrences of variables within the scope of modal operators. As Bostock (1988: 347) remarks clearly:

> A single interpretation will treat every occurrence of the variable that is bound to the same quantifier as designating the same object. Hence, if some relevant occurrence of the variable are in the scope of an embedded modal operator, a particular interpretation of that variable will treat it as designating the same object at all further worlds introduced by the embedded operator.

For clarity, let us call this "Bostock convention." Clearly, on the basis of Bostock convention with regard to the rigidity of bound variables, a formula of the form "$a_x \Box \varphi(x)$" will suggest itself that in every possible world the variable x always takes as its semantic value the object associated to the name a, taken as a constant quantifier. The rigidity of names can be thereby expressed in our language. If we insist on the rigidity of names, we may set the following as an axiom:

$$(12) \quad \vdash \quad a_x \Box \varphi(x) \leftrightarrow \Box a_x \varphi(x).$$

Of course, we may further write "$\Box \varphi(a)$" as an abbreviation of "$a_x \Box \varphi(x)$." By contrast, if we reject the rigidity of names and insist on the *de dicto* reading of "$\Box \varphi(a)$," we may take "$\Box \varphi(a)$" as an abbreviation of "$\Box a_x \varphi(x)$." But, in this case we have to withhold (12) so as to allow the possibility that the modal sentence "$\Box a_x \varphi \rightarrow a_x \Box \varphi$" may not hold, though "$a_x \Box \varphi \rightarrow \Box a_x \varphi$" holds. One can see that our treatment not only explains how a name in a sentence gets its reference, namely via the posited constant quantification, but also shows at the syntactic level how the name in use preserves its reference without the appeal to purely semantic

stipulation that names are rigid designators. This meets a requirement for a satisfactory theory of reference that Evans set: "Whatever explains how a word gets its reference also explains how it preserves it, if preserved it is" (1993: 216).[28]

(f) Apart from these, our quantificational treatment of names also provides alternative view of the functioning of names in propositional attitude sentences. Of course, a full analysis of the meaning of sentences involving propositional attitudes phrases and that of the functioning of names in contexts of this kind are rather complicated: a topic which, as it stands, is beyond the scope of this paper. However, some brief remarks are worth making. Consider an ordinary name, say, "Socrates," occurs in a subordinate clause of a propositional attitude sentence, e.g.,

(13) John believes that Socrates is a philosopher.

If we insist that what John believes is something about Socrates, on our treatment, (13) can be reformulated as:

(14) $Socrates_x$ (John believes that x is a philosopher),

in symbols,

(15) $a_x \boxtimes Px$,

where $\boxtimes$, taken as an operator, stands for the phrase "John believes that," and a, for Socrates. One can see that (15) can basically be viewed as a special type of *quantifying in de re* sentence. The failure of application of Leibniz's law to contexts of this type is precisely the same as that in the contexts of quantifying in *de re* sentences.

(g) Finally, it is perhaps somewhat interesting to compare our

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[28] It is also of some interest to note that Kripke (1980: 94) claims that "philosophical analyses of the concept of reference in completely different terms which make no mention of reference are very apt to fail." I think our treatment at least offers an exception.

treatment of names with Quine's elimination of names in favour of counterpart predicates. Following Russell's quantificational analysis of descriptions and identification of ordinary proper names with descriptions, Quine suggests that for any name *a* in a sentence of the form "···*a*---," we may replace *a* by some suitable definite description(s); and in case no suitable description(s) is available, we can always introduce to the language in use a new word, say "*a*-izes," as the counterpart predicate of *a*, which can be satisfied solely by the unique object, to which *a* is supposed to refer, whatever it is. Here, the counterpart predicate "*a*-izes" of *a* can be read as "*being a*," or "*being identical with a*." Intuitively, a counterpart predicate will behave precisely as the original name intended to do, so Quine argues. In particular, it is perfectly sensible to rephrase an existential sentence of the form "*a* does not exist" in terms of "Nothing *a*-izes." And an ordinary statement of the form "···*a*---" can be rephrases as "For some (or, for all) variable *x*, '*x a*-izes such that ···*x*---'," in symbols,

(16) $\exists x(a\text{-izes}(x) \wedge \cdots x\text{---})$

or

(17) $\forall x(a\text{-izes}(x) \rightarrow \cdots x\text{---})$.

Quine claims that this procedure supplies a way out to a variety of persisting problems, such as an appropriate semantic treatment for truth-value gaps caused by the use of empty names, the failure of application of Leibniz Law to opaque contexts, and intelligibility of existential statements for non-beings.

Some have argued that since the new added counterpart predicate, say "Socratizes," could only be used to stand for a concept, the referring role that the original name plays has to be deprived. For instance, Redmon (1978: 192-193) argues that if we rephrase the sentence

(18) Pegasus does not exist,

as "Nothing pegasizes" where pegasizing is the property, say *being a fly horse*, etc., which distinguishes Pegasus from other things, then how would we show that (18) is false? For Redmon, finding the remains of a flying horse, etc., does not falsify (18). Thus, the conditions which would show that "Nothing pegasizes" is false—finding a flying horse, etc.—do not make (18) false. The Quinean treatment of names with regard to the existence sentences must be mistaken, so Redmon concluded. Redmon apparently takes the name in question as a set of descriptions. However, it seems to me that what Quine intends to do is no more and no less than to confine the possible values of the variable attached with a counterpart predicate *a*-izes not only to the unique object that satisfies the given predicate, but also to the very object which solely and uniquely satisfies the predicate *a*-izes, if there is any. After all, it would be perfectly sensible to read a counterpart predicate *a*-izes(x) as "*being a*," or "*being identical with a*."

It strikes me that, from a semantic point of view, there is no significant difference between the Quinean treatment understood in this way and our quantificational treatment of names. Yet, there are several reasons for me not to follow Quine's footsteps. For one thing, I prefer to adhere to Frege's third principle: names should never be used to stand for concepts. Moreover, Quinean treatment looks as if there is a sense of name independent of the context in which the original name occurs. This would contradict Frege's context principle. Be that as it may, I can see no sensible reason to suspend all ordinary proper names and then introduce some extra new counterpart predicates, especially when the quantificational account of names we proposed can be easily adapted for free semantics—semantics appropriate for free logic wherein the use of constant quantifiers (names) is free from the existential assumption, if we have to deal with empty names in ordinary discourse.

Compared with the semantic rule for constant quantifiers in classical predicate logic as I put forth (on page 208), we may stipulate the required interpretation of constant quantifiers (including ordinary empty names) as follows:

(S$_{CQ}$FL) To each constant quantifier *a*, an object **a** *may be associated* so that whenever *a* occurs in a formula, or subformula of some formula, as an *v*-binding quantifier, for any variable *v*, any occurrence of the variable *v* in the specified scope will accept the very object as its value, if there is such an **a**; if no object is associated, *a* will be called an empty quantifier.

Again, with (S$_{CQ}$FL), we do have a truism: for any empty quantifier *a*,

(ECQ) $a_x \neg \exists y x = y$

We can thereby legitimately use empty quantifiers without assuming the existence of any purported/associated object, or that of extra concepts (especially those expressed by the kind of predicate "*a–ize*," as Quine proposes). That is, we can accept ordinary empty names, taken as quantifiers, without being committed to a problematic ontology. Of course, Redmon's challenge to Quine's description-orientation treatment would not apply to our theory, for even if the remains of a flying horse has been found and approved, the best we can say is that "There is a flying horse," or "A flying horses exists." (For simplicity, let us ignore the difference in tense.) Still, this would not falsify (18). To falsify (18), all that is required is to stipulate that a certain object has been associated to the constant quantifier "*Pegasus*" so that the sentence "*Pegasus$_x$* $\exists y x = y$" is true. And since in ordinary discourse, we are in no position to make such a stipulation, that is, no object can be associated to the constant quantifier "*Pegasus*," we have to accept that the sentence "*Pegasus$_x$* $\neg \exists y x = y$" (i.e., "Pegasus does not exist" in ordinary discourse) is true.[29]

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the scope of this paper. By now, I know of no satisfactory semantic treatment of empty names, including the appeal to Russell's principle of falsehood, a variety of supervaluational semantics, and Meinongian's inner/outer domains, to mention a few. I have a lengthy discussion on this issue in my (1993), wherein I propose a syntactic treatment instead. And I hope my quantificational account of names in general may further pave the way for a satisfactory semantic treatment of empty names and free logic in general.

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量限化的專名

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摘　要

本文主要目的在於利用量限 (quantificational) 的概念來說明專名的意含，我將論證：當一個專名出現在一個語句中 (用以表達一**思想**的語句)，其意含可理解爲是用以指示一種特殊的量限功能 (事實上是一種常元式的量限詞，用來限定所連結的述詞應用到某一特定且固定的對象上)。因此在標準的述詞邏輯語言中語句「Fa」 (“F” 指一述詞，“a” 指一專名) 應理解爲 “$a_x Fx$” (在此 a 係指一常元量限詞)，而在既予的論域當中，該常元量限詞將會有至多一個對象 a 如果有的話，作爲其指稱項。而每當變項 x 出現在被 a 所羈限的範圍內，x 將以 a 之指稱項作爲其語意值。

這個進路基本上是遵循弗列格在其《數學基礎》一書當中所揭示的語意理論之綱要，我將首先分析弗列格在語意學上的基本綱要對於專名意含之理論有何影響，並進而把標準的一階 (述詞) 語言改造成具有常元式的量限詞但沒有專名的一階語言及其語意學。

關鍵詞：專名、量限詞、脈絡原則、專名的意含