

Generality

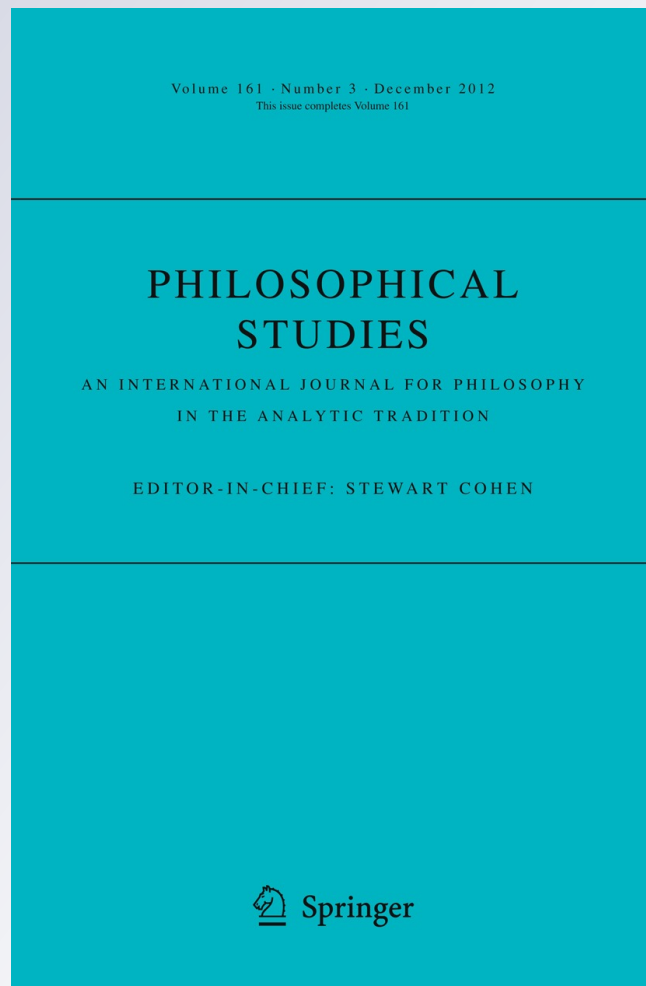
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Abstract A distinction is drawn among predicates, open sentences (or open formulas), and general terms, including general-term phrases. Attaching a copula, perhaps together with an article, to a general term yields a predicate. Predicates can also be obtained through lambda-abstraction on an open sentence. The issue of designation and semantic content for each type of general expression is investigated. It is argued that the designatum of a general term is a universal, e.g., a kind, whereas the designatum of a predicate is a class (or its characteristic function) and the designatum of an open sentence is a truth-value. Predicates and open sentences are therefore typically non-rigid designators. It is argued further that certain general terms, including phrases, are invariably rigid designators, whereas certain others (general definite descriptions) are typically non-rigid. Suitable semantic contents for predicates, open sentences, and general terms are proposed. Consequences for the thesis of compositionality are drawn.

Keywords General term · Predicate · Open sentence · Designation · Rigid designator · Compositionality

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Many philosophers, logicians, and linguists have a habit of labeling general terms—terms like ‘horse’ and ‘brown-eyed girl’—*predicates*. Sometimes instead (or in addition) an open sentence (open formula, sentential matrix), like ‘ x is a horse’, is labeled a *predicate*. Like many habits, these are best dropped. The expressions of first-order logic that are cataloged as *n-adic predicates* combine with an *n*-ary sequence of (open or closed) singular terms to form an (open or closed, respectively) sentence. Taking this feature as our criterion for predicatehood, the word ‘horse’ is no predicate. The word combines with the name ‘Seabiscuit’ to form nothing that is English. The predicate, properly so-called, is not the word but the phrase ‘is a horse’. Frege held that the word ‘horse’ (unlike the phrase ‘the concept horse’) in some sense stands in need of completion, and designates (stands for) something “unsaturated.” Whatever he had in mind, he would have been far closer to the facts had he said that the phrase ‘is a horse’ stands in need of completion. It designates a function, and Frege is to be credited with this insight. With all due respect, the word ‘horse’ is complete by itself. It does not stand for horses taken collectively, but for their kind. More accurately, the word designates the biological kind *Equus caballus*, or *Horse*, a subspecies of the family *Equidae*.

A kind is a universal, the same sort of thing as a property, except that whereas something has, or fails to have, a property, a thing is an *instance*, or not, of a kind. (This may be shortened by saying instead that a thing is simply *of a given kind*.) We may suppose that by reinterpreting the ‘ \in ’ of set theory to mean the relation of a thing to a kind of which it is an instance, something along the lines of the resulting reinterpreted Zermelo-Frankel axioms will be true of kinds with at least one very notable exception: the axiom of extensionality. Thus, for example, for any pair of kinds, k and k' , there exists a third kind, *Instance of either k or k'* . For any kind k and property P , there exists the P -restriction on k , *Instance of k that also has P* , and so on. In *Reference and Essence* (Amherst, NY: Prometheus Books: 1981, 2005)—hereafter *R&E*—I defined notions of *metaphysical extension* and *metaphysical intension* for universals (pp. 46–47), on an analogy to the semantic extension and semantic intension of a predicate. The semantic extension of a monadic predicate Π with respect to a possible world w (and a time t), is the class of things to which Π correctly and literally applies with respect to w (and t). The semantic intension of Π (with respect to a time t) is the function that assigns to each possible world w' , the extension of Π with respect to w' (and t). For example, the extension of the phrase ‘is a horse’ with respect to the actual world is the class of horses; the semantic intension is the function that assigns to each world the class of things that are horses in that world. Analogously, the metaphysical extension of a universal U in a possible world w (at a time t) is simply the set or class of U ’s instances in w (at t). The metaphysical intension of U (at a time t) is then the function that assigns to each possible world w' , U ’s metaphysical extension in w' (at t).

According to Saul Kripke’s intended notion, a term τ designates an object x *rigidly* (and is therefore a *rigid designator* of x) if τ designates x with respect to every possible world in which x exists and does not (in the same use) designate anything else with respect to any possible world. The word ‘horse’ rigidly designates the kind *Horse*. Moreover, ‘horse’ *obstinately* rigidly designates the kind

Horse. That is, the word designates the same kind with respect to every possible world.

As objects go, the kind *Horse* is saturated, as saturated as any one of its instances. Maybe the function designated by the authentic predicate 'is a horse' can be called unsaturated; the kind, *Horse*, cannot be. With respect to a possible world w and a time t , the predicate designates a function, $is-a_{w,t}\{\text{horse}\}$, which assigns truth to things that are horses at t in w , falsity to things that are not.¹

The word 'horse' is not a predicate; it is a *term*. It is often called a *name*, and with justification. It is not a *singular term* (a term with the semantic function of standing for a single individual); it is *general*. The grammatical categories of *proper noun* and *common noun* are suggestive of the semantic distinction between singular and general term. In a terminology that is not standard but is decidedly superior for the semantic categories, 'Seabiscuit' is an *individual term* whereas 'horse' is a *kind term*. A count-nominative monadic predicate results from prefixing a count noun τ with the 'is' of predication together with the indefinite article 'a', to obtain 'is a τ ' (e.g., 'is a horse'). A mass-nominative monadic predicate 'is τ ' results from prefixing a mass noun τ with the same predicative copula 'is' but without the article 'a' ('is water'). An adjectival monadic predicate 'is τ ' results from prefixing an adjective τ with the same predicative copula 'is' ('is blue').² An intransitive verb, like 'lives', is a full-fledged monadic predicate all by itself—no copula, no article, no fuss, no muss.

Given that 'horse' stands for the kind *Horse*, the plural term 'horses' presumably stands for a kind whose instances are pluralities (groups) of horses. If each of $x_1, x_2, x_3, \dots, x_n$ is an individual instance of the kind *Horse*, then where $n > 1$, those same things taken collectively, rather than individually, are an instance of the kind, *Horses*. Just as four horses jointly exemplify the property of towing a coach though no single member of the team individually exemplifies the property, the team members are jointly an instance of the kind *Horses* though no single team member is.

An open sentence is something else again—neither a general term nor a predicate, but a third type of expression. The open sentence 'x is a horse' results from forming the predicate corresponding to 'horse' and filling the predicate's argument position with the particular variable 'x'. An open sentence does not stand for a function from things to truth-values. It does not stand for a function from things to propositions. It does not stand for a function. Under an assignment of a value to its free variable 'x', it stands for a truth-value, either truth or falsity, depending on the species (if any) of the assigned value.³

¹ I owe to David Kaplan the insight that the word 'horse' functions as a kind name rather than a predicate whereas the phrase 'is a horse' functions as a predicate rather than a name. Cf. his "Afterthoughts" (1988a) to "Demonstratives" (1988b).

² The adjectival term τ may be an adjective phrase, as for example, 'sleepless in Seattle'.

³ Does 'x is a horse' stand for anything *absolutely*, i.e., not relative to a value-assignment? One could say (as some do) that the open sentence stands for a function from value-assignments to truth-values. This manner of speaking is misleading at best. It is better to say that an open expression designates only under an assignment of values to variables (or at least of values to the formula's free variables).

There is a way to form a function-expression from an open sentence. One can prefix the open sentence ' x is a horse' with the variable-binding phrase ' x is a thing x such that'. This is accomplished formally by Alonzo Church's lambda operator. The expression ' $(\lambda x)[x$ is a horse]' is a predicate, which stands for a function from things to truth-values. The predicate expresses as its semantic content (with respect to a time t) a particular concept—that of being a thing x such that x is a horse (at t)—which is determined by the corresponding function from things to propositions.

Not all open sentences are simple predications like ' x is a horse'. Some are negations, like ' x is not a horse'. Some are conjunctions, like ' x is a horse and x runs fast'. Some are disjunctions, some are conditional, some are quantificational. Analogously, not all predicates are simple. The lambda operator generates compound predicates from compound open sentences. It is even possible to form an open predicate, for example, ' x is a thing x such that if y is a donkey, then x is a horse'.

Analogously again, not all general terms are simple. If 'horse' is a general term, then so is 'work horse' and so is 'race horse'. If 'horse' is a term for a kind, then 'race horse' is a term for a more restrictive kind, and 'race horse that has won the Kentucky Derby' is a term for an even more restrictive kind. Some general terms designate a natural kind—a kind that is demarcated by the natural structure of the natural world, without human (or other intelligent) intervention. Some general terms designate a non-natural kind. Some of these designate a man-made kind. Whereas 'horse' is a natural-kind term, 'race horse that has won the Kentucky Derby' designates a man-made kind.

It may be taken that the predicative copula 'is', with or without an accompanying indefinite article 'a', designates with respect to a possible world w and a time t a particular function on kinds. I shall call this function ' $is-a_{w,t}$ '. The function $is-a_{w,t}$ assigns to a kind k the characteristic function of the class of k 's instances in w at t —where this characteristic function is the function that assigns truth to any instance in w at t of k and assigns falsity to any non-instance.

Some kinds are sufficiently restrictive that there is in fact one and only one instance. For example, the kind *Author of Waverley* has exactly one instance: Sir Walter Scott. Assuming that definite descriptions are contentful terms and not quantificational locutions, the definite article 'the', in its use as a definite-descriptions operator, designates with respect to a world w and a time t a particular function $the_{w,t}$ on kinds, where $the_{w,t}(k)$ is the unique instance of k in w at t , if k has a unique instance in w at t , and is undefined otherwise.

Assuming that definite descriptions are terms, some are general terms rather than singular. In fact, very many definite descriptions are general terms. Examples include: 'the color of the sky', 'the species to which Tony belongs', 'the substance that covers most of the Earth', and 'the chemical compound whose molecules are made up of two hydrogen atoms and one oxygen atom'. These terms function as mass nouns rather than count nouns. Like other mass nouns (and like adjectives) they combine with the predicative copula (the so-called 'is' of predication) without an intervening article to form the corresponding predicate.⁴

⁴ Cf. my "Naming, Necessity, and Beyond" (2003); and "Are General Terms Rigid?" (2005).

The issue of what is designated by a count noun, by a monadic predicate, and by an open sentence is relatively straightforward (albeit controversial). A count noun, like 'horse', designates a kind, the corresponding predicate 'is a horse' the characteristic function of the class of the kind's instances, the corresponding open sentence 'x is a horse' the corresponding truth-value, depending on the value assigned to the variable. This general pattern extends to mass nouns. The word 'water' designates a chemical compound, the predicate 'is water' the characteristic function of the class of water samples, the open sentence 'x is water' a truth-value.

The pattern extends also to common-noun phrases. The phrase 'brown-eyed girl' designates a kind of girl, *Brown-eyed girl*. The predicate 'is a brown-eyed girl' designates with respect to a world w and a time t a function, $is-a_{w,t}(\textit{Brown-eyed girl})$, which assigns truth to things that are of that kind in w at t and falsity to things not of that kind. The open sentence 'x is a brown-eyed girl' designates (under an assignment of a value to 'x') a truth-value. The phrase 'author of *Waverley*' designates a kind of author, *Author of Waverley*; the predicate 'is an author of *Waverley*' designates the function that assigns truth to things of that kind and falsity to things not of that kind; the open sentence 'x is an author of *Waverley*' designates (under an assignment) a truth-value; and the definite description 'the author of *Waverley*' (assuming it is a non-quantificational designator) designates the only instance of the kind *Author of Waverley*. Analogously, the phrase 'substance that covers most of the Earth' designates a kind of substance, where a substance may be regarded as itself a kind of bit of matter. Water is the only instance of the kind *Substance that covers most of the Earth*. The definite description 'the substance that covers most of the Earth' thereby designates water.

The issue of what are the semantic contents of predicates and of open sentences is also relatively straightforward (albeit also controversial). The semantic content of 'x is a horse', under an assignment s of a value to the variable 'x' (and with respect to a time t), is a particular singular proposition, viz., the proposition that s_x is a horse (at t), where ' s_x ' is a name for the value $s('x')$ that s assigns to 'x'. In general, the content of an open sentence with respect to an assignment of values to its free variables (and with respect to a time) is a singular proposition concerning the very values assigned to the free variables.

The issue of what is the semantic content of a predicate is more delicate. It is important to attempt to answer this question, however. The issue has implications for the principle of *compositionality*, according to which the semantic content of a compound expression (e.g., of a phrase or a sentence) is a calculable function of the semantic contents of the component expressions and their manner of grammatical composition. According to *strong compositionality*, the semantic content of a compound expression is not merely a function of, but is in fact a composite entity *composed of*, the semantic contents of the component expressions.

I take it that the semantic content (with respect to a time t) of the predicate 'is a horse' is a particular *concept*—in more or less the ordinary sense of 'concept' (which Frege's sense of '*Begriff*' is not). It is, namely, the concept of being a horse (at t). I shall refer to this concept by means of the italicized phrase, '*being a horse (at t)*'. In general, the semantic content of a predicate is a particular (temporally indexed) concept. Which concept? This question is easy to answer on a case-by-case

basis, but difficult, if not impossible, to answer adequately once and for all. I offer the following. Where ϕ_α is an open sentence in which the variable α occurs free, (with respect to a time t) there is semantically associated with occurrences of ϕ_α in which its otherwise free occurrences of α occur bound (e.g., with the occurrence of ' $(Fx \wedge Gx)$ ' in ' $(\exists x)(Fx \wedge Gx)$ ') a particular Russellian propositional function, viz., the function that assigns to any potential value of α the proposition expressed by ϕ_α under the assignment of that value to α . I call this propositional function the *bondage content* of ϕ_α with respect to α . Then where Π is a (simple or compound) monadic predicate, its semantic content (with respect to a time t) is the concept corresponding in a certain way to the bondage content (with respect to t) of an open sentence $\lceil \Pi(\alpha) \rceil$ with respect to its free variable α (where α may be taken to be the first variable that does not occur in Π).

Regrettably, I have little to offer by way of explanation of the particular manner of correspondence—save that the concept corresponding in this way to the propositional function \hat{x} (x is a horse & \hat{x} has won the Kentucky Derby) is that of being a horse that has won the Kentucky Derby. This is not much but it is enough to illustrate that predicates threaten strong compositionality. The concept in question is undoubtedly determined by the semantic contents of the expressions ' x is a horse', 'won', 'the Kentucky Derby', etc. However, lacking an adequate account of the structure of concepts there is little reason to suppose that the relevant concept is *composed* of these semantic contents. (I feel that here we approach the limit of what philosophy, at least in its current state, is able to provide. I would be pleased to be shown otherwise.)

The question of what is the semantic content of a general term is significantly more difficult. There are three distinct categories of general terms to be considered: (i) general definite descriptions like 'the color of the sky'; (ii) single-word general terms like 'horse'; and (iii) general-term phrases like 'brown-eyed girl' and 'unmarried man'.

The case of general definite descriptions is, at one level, relatively straightforward. Unlike predicates, definite descriptions, whether singular or general, are governed by strong compositionality. As with singular definite descriptions (assuming they are content-ful singular terms), the semantic content of a general definite description, $\lceil \text{the } \tau \rceil$, is a composite entity composed of the semantic content of the definite article together with the semantic content of the attached common-noun phrase τ . The question of semantic content for a definite description thus bifurcates into a pair of questions: (1) What specifically is the semantic content of the definite article (in its use as a definite-descriptions operator)? (2) What is the semantic content of a common-noun phrase? For present purposes I shall take it that the semantic content of the definite article is something like the *operation* of assigning to any kind k its unique instance. The second of our questions is about to be addressed.

What is the semantic content of a single-word general term? In his contemporary classic, *Naming and Necessity* (Cambridge, MA: Harvard University Press, 1972, 1980), Kripke makes a compelling case that a single-word natural-kind term like 'horse' functions as a proper name of the designated natural kind. In particular, Kripke argues compellingly that the semantic content of a single-word natural-kind

term is not the same as that of a general definite description. For example, although the word 'water' designates the same thing as the description 'the substance that covers most of the Earth', the former rigidly designates what the latter designates non-rigidly. But the semantic content of the word 'water' is also different from that of the general description 'the chemical compound whose molecules are made up of two hydrogen atoms and one oxygen atom' even if the latter is rigid. For one knows a priori that water is water, whereas the proposition that water is the chemical compound whose molecules are composed of two hydrogen atoms and one oxygen atom is evidently knowable only a posteriori.⁵

A designator is *Millian* if its semantic content is just its designatum. A Millian term is *directly referential*, in that it does not get at its designatum through the graces of a descriptive content which represents the designatum, but instead directly. I take it that single-word natural-kind terms are Millian names of natural kinds. In general, the semantic content of a single-word natural-kind term is just the natural kind that the term designates.

In his insightful paper, "The Meaning of 'Meaning,'" Hilary Putnam remarked that the same sort of arguments extend also to single-word artifact terms like 'pencil' and 'chair'.⁶ David Kaplan took Putnam's observation a step further. He wrote, "almost all single words other than particles seem to me to be rigid designators."⁷ I shall take this line a few steps further. It seems to me that every single-word general term is a Millian designator of a universal of some sort—if not a kind, then a category, or a color, a status, etc.—so that *the semantic content of a single-word general term is just the designated universal*. In short, every single-word general term is, it seems to me, a Millian name of a kind or other universal. I believe this generalization extends even to a word like 'bachelor', which seems to function as a name for a certain kind, the kind *Unmarried man*.⁸

It might seem that this last speculation precludes the prospect that 'bachelor' is a synonym for the phrase 'unmarried man'. But this depends on the answer to the question of what is the semantic content of a common-noun phrase. Consider, for example, the phrase 'brown-eyed girl', which designates a certain kind of girl. What is the term's semantic content? One might suppose that the phrase has the content of a general definite description. Which description? One proposal is 'the kind of which something is an instance if and only if it is a girl whose eyes are brown'. This will not do. For it is possible—just possible, but possible—that the kind *Brown-eyed girl* should coincide exactly in metaphysical extension with some other kind, e.g., *Girl whose first name has only one syllable and whose last name has exactly two*

⁵ In *R&E* I raised the question, but remained neutral, whether kinds having the same metaphysical intension are ipso facto the same kind (p. 53, n. 9). Teresa Robertson has formulated an interesting puzzle in "A Puzzle about Kinds" (unpublished). Robertson's observations have helped to persuade me that there are numerically distinct kinds that exactly coincide in metaphysical intension. (*R&E* adopted an artificial use of 'designate', which I do not now favor, according to which a general term, τ , designates each of the kinds, categories, etc. whose metaphysical intensions coincide with the semantic intension of the corresponding predicate \ulcorner is τ \urcorner).

⁶ Putnam (1975).

⁷ Kaplan (1973).

⁸ Cf. my "Are General Terms Rigid?" at footnote 23.

syllables. This kind is different, of course, from *Brown-eyed girl*. Most obviously the two kinds differ in actual metaphysical extension, and therefore in metaphysical intension. But if the two kinds had coincided in metaphysical extension, as they might have done, the proposed description would be improper. And this implies that even if the phrases ‘brown-eyed girl’ and ‘the kind of which something is an instance if and only if it is a girl who has brown eyes’ in fact designate the same kind, they differ in content.

Very well, one might propose instead a modal description, perhaps ‘the kind k such that necessarily, something is an instance of k if and only if it is a girl whose eyes are brown’. This proposal assumes that there is only one kind with the metaphysical intension of *Brown-eyed girl*. But this is highly questionable. The critical question is whether it is possible for there to be distinct kinds, k and k' , such that it is impossible for something to be an instance of one and not of the other. (See footnote 5.) Although initial intuition might favor a negative answer, reflection applies considerable pressure favoring a positive answer. Consider the kinds *Argument that is classical-model-theoretically valid in first-order logic* and *Argument whose conclusion is deducible in QS from its premises*, where *QS* is an appropriate deductive apparatus for classical first-order logic. Nothing could be an instance of one of these kinds and not of the other. Yet the value and interest of Gödel’s completeness theorem appears to derive precisely from the fact that any argument of the former kind is also an instance of the latter. If the kinds in question are the very same, the value and interest of the completeness theorem is rendered utterly mysterious. It is trivial that anything of any kind k is an instance of that same kind k .

That distinct kinds may share the same metaphysical intension is also demonstrated through consideration of logically consistent but metaphysically impossible worlds.⁹ In fact, the question of whether there are distinct kinds with the same metaphysical intension is closely related to a particular question in the philosophy of logic: How are subjunctive conditionals with impossible antecedents to be evaluated? Consider the complex gerrymandered kind, *Girl whose eyes are brown and who is such that John Lennon is a member of the Beatles if the band exists*. Supposing (as I believe) that it would have been metaphysically impossible for the Beatles to exist as a band without John Lennon having been a member, our gerrymandered kind coincides in metaphysical intension with *Brown-eyed girl*. Yet it would seem that they are different kinds. For if *per impossible* the Beatles had formed without John Lennon—the band could not have so formed, but if it *had*—the kinds in question would differ in metaphysical extension. There are logically consistent, metaphysically impossible worlds in which: (i) there is at least one girl with brown eyes; and (ii) the Beatles formed without John Lennon. This apparent modal fact entails that the co-intensional kinds, *Brown-eyed girl* and *Girl whose eyes are brown and who is such that John Lennon is a member of the Beatles if the band exists*, are distinct. Or consider the co-intensional kinds, *Gold atom with 74 protons in its nucleus* and *Silver atom with 79 protons in its nucleus*. It is a simple task to sort atoms into these two kinds or their complements in various

⁹ Cf. my “The Logic of What Might Have Been” (1989).

metaphysically impossible worlds, with some gold atoms cataloged as being of the first kind and not the second and some silver atoms cataloged as being of the second kind and not the first.

More to the point, while a common-noun phrase, like 'brown-eyed girl', is clearly "descriptive" in some sense, it does not seem to function exactly in the manner of a definite description. The phrase clearly semantically gets at the kind *Brown-eyed girl* in some manner that goes through the very defining characteristics that make it the kind that it is—the properties of being a girl and of having brown eyes—but evidently not, or not merely, by describing the target kind as *the kind k such that ...*. I used to believe that common-noun phrases were governed by strong compositionality, thereby assimilating common-noun phrases to general definite descriptions.¹⁰ I shall here propose a significantly different analysis, which assimilates common-noun phrases instead to single-word common nouns.

There are numerous descriptive terms that are nevertheless directly referential. Perhaps the least controversial example (because it is artificial) is a singular term formed from Kaplan's fabricated indexical operator, '*dthat*'. A term $\ulcorner dthat[\text{the } \tau \urcorner$ is, by stipulation, a directly referential variant of its contained description $\ulcorner \text{the } \tau \urcorner$:

Dthat: Where τ is a common-noun phrase, the semantic content/designatum of the singular term $\ulcorner dthat[\text{the } \tau \urcorner$ with respect to a context c is the thing designated by $\ulcorner \text{the } \tau \urcorner$ with respect to c , provided that $\ulcorner \text{the } \tau \urcorner$ is "proper" with respect to c ; $\ulcorner dthat[\text{the } \tau \urcorner$ is content-less and designatum-less otherwise.

A '*dthat*'-term functions much like a Millian name whose designation is fixed by the bracketed description. (Kaplan hypothesized that the natural-language demonstrative 'that' functions similarly, except that the description $\ulcorner \text{the } \tau \urcorner$ is replaced by a demonstration. I have argued that the hypothesis is off the mark.¹¹) The important feature for the present purpose is that although the term is directly referential, in that the semantic content is just the designatum, the term nevertheless semantically gets at its designatum through some semantic value of a contained expression and that semantic value is obtained compositionally. (The designatum of a definite description $\ulcorner \text{the } \tau \urcorner$ is semantically determined by a rule that looks at a semantic value of τ .)

Another type of expression that semantically gets at its designatum/content through a contained expression, the pertinent semantic value of which is semantically determined compositionally, and yet appears to be itself directly referential, is the 'that'-clause, like 'that London is pretty'. A 'that'-clause typically designates a proposition. The contained sentence 'London is pretty' is governed by compositionality, and this provides a semantic route to the designated proposition. Yet the 'that'-clause does not designate in the manner of a definite description. Instead the word 'that' (in this use) is a device of *indirect quotation*, forming a directly-referential term not for the sentence in its scope but for the sentence's semantic content:

¹⁰ Cf. *R&E*, pp. 42–48, and *passim*; Salmon (1986/1991).

¹¹ Kaplan (1978); and my "Demonstrating and Necessity" (2002); also in Davidson (2007).

'That'-clause: Where ϕ is a sentence, the semantic content/designatum of the 'that'-clause $\ulcorner \text{that } \phi \urcorner$ is the proposition expressed by ϕ .

A third type of expression that semantically gets at its designatum/content through a contained expression whose pertinent semantic value is determined compositionally and yet appears to be itself directly referential is the gerund-noun phrase, like 'being taller than Socrates'. The phrase seems to function as a directly-referential term for the property corresponding to the concept semantically expressed by the root predicate, 'is taller than Socrates'. In general, a gerund (at least typically) designates a property, and the root predicate provides a semantic route to—and in this sense, it describes—the designated property. In the general case the gerund form of a predicate Π is apparently governed by a rule like the following:

Gerund: The semantic content/designatum of the gerund form $\ulcorner \Pi \text{ing} \urcorner$ of a monadic predicate Π is the property (or activity, or state, etc.) determined in a particular manner by the semantic content of Π .

A fourth type of expression that might serve as a model for a compound common-noun phrase is the natural-language complex demonstrative $\ulcorner \text{that } \tau \urcorner$, for example the phrase 'that darn cat' as used to designate a particular cat.¹² Such a phrase is also descriptive yet directly-referential. Complex demonstratives are governed by a rule like the following:

Demonstrative: Where τ is a common-noun phrase, the semantic content/designatum of the complex demonstrative $\ulcorner \text{that } \tau \urcorner$ with respect to a context c is the thing demonstrated by the demonstration provided in c , provided that demonstratum is an instance of the kind designated by τ with respect to c ; $\ulcorner \text{that } \tau \urcorner$ is content-less and designatum-less otherwise.¹³

I propose that we view general common-noun phrases on the same model as 'that'-clauses and gerund-noun phrases. In particular, I propose that a common-noun phrase like 'brown-eyed girl' be seen as functioning analogously, perhaps in a manner like that of a particular '*dthat*'-term:

dthat [the kind appropriately determined by the propositional function \hat{x} (x is brown-eyed & \hat{x} is a girl)].

To illustrate I have proposed a new variable-binding operator, the *theta-abstraction* operator, which is governed by the following semantic rule:

Theta: Where ϕ_α is an open sentence in which the variable α occurs free, both the designatum and the semantic content of the expression, $\ulcorner (\theta\alpha)[\phi_\alpha] \urcorner$, in which α occurs only bound, are the kind appropriately determined by the

¹² As should be obvious (notwithstanding modern-day attempts to assimilate the two), the demonstrative use of 'that' is very different from the 'that'-clause-forming use, certainly as far as their logic is concerned.

¹³ Cf. my "Demonstrating and Necessity." It is controversial that demonstratives are directly referential, but it should not be.

Russellian propositional function semantically associated with (or designated by) bound occurrences of ϕ_x .¹⁴

A theta-abstract $\lceil (\theta x)[\phi_x] \rceil$ might be read: \lceil thing x such that: $\phi_x \rceil$. For example, the Millian designatum/content of the phrase ‘thing that is both brown-eyed and a girl’ (which phrase might be abbreviated ‘brown-eyed girl’) is the kind appropriately determined by the propositional function \hat{x} (x is brown-eyed & \hat{x} is a girl).¹⁵

On the assumption that a common-noun phrase functions exactly like a θ -abstract expression, a compound phrase like ‘brown-eyed girl’ is, like a single-word count noun, a Millian general name, albeit one (unlike a single-word noun) whose designation is fixed by a description that is recoverable from the phrase itself. This account has the consequence that ‘bachelor’ and ‘unmarried man’ are both Millian names of a certain kind of person, and hence fully synonymous although not in the manner commonly thought.

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¹⁴ Cf. my “A Theory of Bondage” (2006).

¹⁵ For reasons related to this, Alonzo Church’s lambda-abstraction operator, as it occurs in $\lceil (\lambda x)[\phi_x] \rceil$ where ϕ_x is an open sentence, is susceptible of a contextual definition. The latter is defined to be just this: $\lceil is-a\{(\theta x)[\phi_x]\} \rceil$. It thus emerges that the theta-abstraction operator is a more basic variable-binding operator than the predicate-abstraction lambda operator. The predicate-abstraction use of $\lceil (\lambda x)[...] \rceil$ amounts to $\lceil is-a\{(\theta x)[...]\} \rceil$. Cf. *R&E*, p. 51.