Designation and Existence * [1]

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Statements of the form "There is such a thing as so-and-so" I shall call *singular existence statements;* e.g., "There is such a thing as Pegasus," "There is such a thing as Bucephalus," "There is such a thing as appendicitis." The expression following the word "as," here *purports* to designate some one specific entity—perhaps an individual, as in the case of "Pegasus" and "Bucephalus," or perhaps a property or other abstract entity, as in the case of "appendicitis"; and the statement is true just in case there *is* such a thing as this alleged designated entity, in other words just in case the expression really does designate.

The four-dimensional spatio-temporal view of nature is a device for facilitating logical analysis by rendering verbs tenseless. Let us adopt this device before proceeding farther. Bucephalus, then, is a certain four-dimensional body stretching through part of the fourth century B. C. and having horse-shaped cross-sections. Now the tensed statement "There is now no such thing as Bucephalus" is translatable into tenseless idiom roughly thus: "The temporally forward end of Bucephalus lies behind 1939." In the tenseless sense of "is," to which I shall adhere, there *is* such a thing as Bucephalus; namely, a spatio-temporally remote spatio-temporal body. Again, we will perhaps agree for the moment that there is such a thing as appendicitis; though this is not a spatio-temporal body, but another and a more abstract sort of entity. On the other hand there is no such thing as Pegasus; this word purports to designate a certain spatio-temporal body which in fact does not turn up anywhere in space-time, near or remote.

Now we must distinguish between these singular existence statements, "There is such a thing as so-and-so," and *general* existence statements: "There is such a thing as *a* so-and-so," or briefly "There is a so-and-so," "There are so-and-sos." A general existence statement, e.g., "There are unicorns," "There are horses," "There are prime numbers between 5 and

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11," says that there is at least one entity satisfying a certain condition. In logical symbols, the whole appears as an existential quantification:

$$(\exists x)\ (x \text{ is a unicorn}),$$
$$(\exists x)\ (x \text{ is a horse}),$$
$$(\exists x)\ (x \text{ is a prime number} \cdot 5 < x < 11).$$

In words:

There is *something which* is a unicorn.
There is *something which* is a horse.
There is *something which* is a prime number
and *which* is between 5 and 11.

Whereas the singular existence statement calls the alleged existent by name, e.g., "Pegasus," the general existence statement does not; the reference is made rather by a variable "x," the logistical analogue of a pronoun "which," "something which."

Note that a general term, such as "horse" or "unicorn," is capable also of turning up in a singular existence statement. Just as the word "appendicitis" designates a specific disease (which is abstract), and the word "Bucephalus" designates a specific horse (which is concrete), so we may regard the word "horse" as designating a specific property, an abstract combination of characteristics. Then the singular existence statement "There is such a thing as *horse*" (not "*a* horse") will mean, not that there are horses, but that there is the abstract property in question. The same holds for the word "unicorn"; and we may thus be inclined to affirm the singular existence statement "There is such a thing as unicorn" though denying the general existence statement "There is such a thing as *a* unicorn," "There are unicorns."

The distinction between singular and general existence statements thus does not correspond to the distinction between the concrete and the abstract; the entity whose existence is affirmed by a singular existence statement may be concrete (e.g., Bucephalus) or abstract (e.g., horse), and the entity or entities whose existence is affirmed by a general existence statement may likewise be concrete (e.g., horses) or abstract (e.g., prime numbers).

Now a curious problem is raised by the denial of a singular existence statement; e.g., "There is no such thing as Pegasus." If the word "Pegasus" designates something then there *is* such a thing as Pegasus, whereas if the word does not designate anything then the statement would appear to lack subject-matter and thus to fall into meaninglessness. Actually, this problem rests only on failure to observe that a noun can be meaningful in the absence of a designatum. The noun "Pegasus" *is* meaningful. If asked its meaning, we could reply with a translation into other words: "the winged horse captured by Bellerophon." The word "Pegasus" can be regarded

as an abbreviation of this phrase; and the statement that there is no such thing as Pegasus then becomes, according to Russell's theory of descriptions, a statement to the effect that if Bellerophon captured any winged horses at all he captured two or more. Many words form essential parts of intelligible statements—truths and falsehoods—without being *names of* anything; such is the status of prepositions and conjunctions and adverbs, we will perhaps all agree, and it is the status likewise of many nouns, notably "Pegasus." Grammar and lexicography tell us, independently of questions of existence, that the word "Pegasus" is a noun and that it is equivalent to the phrase "the winged horse captured by Bellerophon"; it is left to history and zoölogy to tell us further that the word "Pegasus" is not a *name* in the semantic sense, i.e., that it has no designatum.

The understanding of a term thus does not imply a designatum; it precedes knowledge of whether or not the term has a designatum. If I say, e.g., that there is no such thing as hyperendemic fever, you will not agree; you will not understand. You will still refrain from asking me what hyperendemic fever *is*, for I have warned you that there is no such thing; but at least you will ask me to explain my terms. Questioned, I perhaps explain that I intend the words "hyperendemic fever" merely as an abbreviation for the phrase "the disease which killed or maimed four-fifths of the population of Winnipeg in 1903." Now that you know what I mean, an inquiry into Winnipeg history will lead you to agree that there is no such thing as hyperendemic fever.

The latter example shows incidentally that factual considerations can entail the repudiation not only of an alleged individual, e.g., Pegasus, but also of an alleged abstract entity. In contrast to these factually grounded cases, consider next the doctrine that there is no such thing as *up*. In repudiating an entity "*up*" we do not change our views as to the truth or falsehood of any ordinary factual statements containing the word "up." But we do claim that nothing, neither a spatio-temporal body nor even a property or other abstract entity, is *designated* by the word "up"; the word is meaningful, it forms an essential part of various statements, but it is not a noun, much less a name of anything.

Now the nominalist goes further than "up" in his repudiation of abstract entities. He would say, in the same spirit in which we have repudiated *up*, that there is no such thing as appendicitis. At the common-sense level from which we considered hyperendemic fever, one would rush to the defense of appendicitis; hyperendemic fever does not exist, but appendicitis certainly does. Still, just how does the nominalist err in treating appendicitis as we have treated *up?* He agrees that many people are appendicitic, and that the word "appendicitis" is meaningful and useful in context; yet he can maintain that the word is not a *name* of any *entity* in its own right, and that it is a noun at all only because of a regrettable strain of realism which pervades our own particular language. On the same grounds,

the nominalist will go back and do a more ruthless job than we have done in the matter of unicorns; he will say that there is not merely no such thing as a unicorn but also no such thing as *unicorn*—no abstract entity, so-called property, such as this word has been said to designate. He keeps the word "unicorn" merely as a contextually meaningful word like "up" —a syncategorematic expression which *names* nothing, abstract or concrete. The general term "horse" will fare no better; there are many denoted entities in this case, indeed—many horses—but no *named* or designated entity, no abstract property *horse* according to the nominalist.

But now the whole question of existence is beginning to appear gratuitous. If the nominalist who renounces such abstract entities as horse, unicorn, and appendicitis does not thereby foreswear any of the ordinary uses of these words, nor take issue on any factual questions of zoölogy and medicine, then what does his renunciation amount to? Any appeal to nature, such as was involved in the case of Pegasus and hyperendemic fever, seems now to have become irrelevant. What is left but a bandying of empty honorifics and pejoratives—"existent" and "non-existent," "real" and "unreal"?

We are tempted at this point to dismiss the whole issue between nominalism and realism as a metaphysical pseudoproblem. But in thus cutting the Gordian knot we cut too deep into the level of common sense. We are all inclined, I suppose, to regard the word "up" or the suffix "ness" or the signs of punctuation as syncategorematic expressions, meaningful in context but *naming* nothing. The mere capacity to turn up in a sentence does not make a string of marks a name. Now if we allow ourselves this much freedom in repudiating designata, on what grounds can we take issue with the nominalist? On what grounds, indeed, can we take issue with someone who even outdoes the nominalist and repudiates *everything*, the concrete as well as the abstract, by construing all words indiscriminately as syncategorematic expressions designating nothing? We seem to have a continuum of possible ontologies here, ranging from a radical realism at the one extreme, where even a left-hand parenthesis or the dot of an "i" has some weird abstract entity as designatum, to a complete nihilism at the other extreme. Singular existence statements "There is such a thing as so-and-so," together with their trivial variants such as "So-and-so designates," begin to assume the air of a logically isolated class of statements—logically independent of the rest of discourse, verifiable or falsifiable at caprice, and thus void of meaning. If we are to avert this consequence, we must find some relationship of logical dependence between the singular existence statement and the rest of discourse.

Let us return to the singular existence statement "There is such a thing as appendicitis." This can indeed be affirmed or denied without affecting our attitude toward the usual statements containing the word "appendicitis"—for example, "Appendicitis is dreaded." Continuing to affirm the

latter statement, the nominalist can yet maintain that the word "appendicitis" figures syncategorematically therein, like "is" or "pend," and that there is no designated object "appendicitis." The singular existence statement does not affect the truth value of the statement "Appendicitis is dreaded." However, it does prove to have other effects. If the word "appendicitis" designates an entity, then the statement "Appendicitis is dreaded" is a statement *about* that entity. It affirms the dreadedness thereof, and implies the consequence that *something* is dreaded:

$$(\exists x)\ (x \text{ is dreaded}).$$

If on the other hand the word "appendicitis" is syncategorematic and designates nothing, then the statement "Appendicitis is dreaded" is not about an entity "appendicitis," any more than it is about an entity "*pend*" or "*is*"; it does *not* have the consequence:

$$(\exists x)\ (x \text{ is dreaded}).$$

The singular existence statement "There is such a thing as appendicitis" does, therefore, have an effect on general existence statements. If we affirm the singular existence statement, we must regard any general existence statement "$(\exists x)\ (\ldots x \ldots)$" as following from the corresponding statement "$\ldots$ appendicitis. . ." which contains "appendicitis" in place of "x." If we deny the singular existence statement "There is such a thing as appendicitis," on the other hand, we do not countenance such inference. Let us refer to this form of inference—putting "x" for "appendicitis" in a statement and prefixing "$(\exists x)$"—as the operation of *existentially generalizing* with respect to the word "appendicitis." To say that there is such a thing as appendicitis, or that "appendicitis" designates something, is to say that the operation of existentially generalizing with respect to "appendicitis" is *valid;* i.e., that it leads from truths only to truths.

This conclusion would seem to hold in general. A word W *designates* if and only if existential generalization with respect to W is a valid form of inference. The word "appendicitis" used in the foregoing example happens to be of an abstract sort, but this is not essential. Consider again the word "Pegasus," construed as an abbreviation of the phrase "the winged horse captured by Bellerophon." If Pegasus does not exist, in other words, if it is not true that one and only one winged horse was captured by Bellerophon, then according to Russell's theory of descriptions there will be various true statements which can be turned into falsehoods by existentially generalizing with respect to the word "Pegasus." For example, the statement:

Nothing is identical with Pegasus

is true whereas the result of existential generalization:

$$(\exists x)\ (\text{nothing is identical with } x)$$

is false.

Our earlier apprehension, namely, that all singular existence statements might prove logically isolated and thus affirmable or deniable at caprice, is thus overcome. Perhaps we can reach no absolute decision as to which words have designata and which have none, but at least we can say whether or not a given pattern of linguistic behavior *construes* a word W as having a designatum. This is decided by judging whether existential generalization with respect to W is accepted as a valid form of inference. A *name*—not in the sense of a mere noun, but in the semantic sense of an expression designating something—becomes describable as an expression with respect to which existential generalization is valid.

Under the usual formulation of logic there are two basic forms of inference which interchange names with variables. One is existential generalization, whereby a name is replaced by a variable "x" and an existential prefix "$(\exists x)$" is attached:

$$\ldots \text{Paris.} \ldots$$

$$\therefore (\exists x)\ (\ldots x \ldots)$$

The other, which may be called *specification,* is the form of inference whereby a variable is replaced by a name and a *universal* prefix is dropped; it leads from a *universal quantification:*

$$(x)\ (\ldots x \ldots),$$

that is:

For all choices of x, $\ldots x \ldots$

to:

$$\ldots \text{Paris.} \ldots$$

Now if existential generalization is valid with respect to a given term, say "Paris," then specification is likewise valid with respect to that term. For, suppose "$\ldots$ Paris. . ." is false. Then its denial:

$$\sim(\ldots \text{Paris.} \ldots)$$

is true. From this, by existential generalization, we get:

$$(\exists x) \sim(\ldots x \ldots),$$

i.e.:

$$\sim(x)\ (\ldots x \ldots),$$

thus concluding that "$(x)\ (\ldots x \ldots)$" is false. The falsehood of "$\ldots$ Paris. . ." is thus seen to entail that of "$(x)\ (\ldots x \ldots)$". Therefore the truth of "$(x)\ (\ldots x \ldots)$" entails that of "$\ldots$ Paris. . .".

Hence, instead of describing names as expressions with respect to which

existential generalization is valid, we might equivalently omit express mention of existential generalization and describe names simply as those constant expressions which replace variables and are replaced by variables according to the usual logical laws of quantification.

Contexts of quantification, "(x) (. . .x. . .)" and "$(\exists x)$ (. . .x. . .)," do not indeed exhaust the ways in which a variable "x" may turn up in discourse; the variable is also essential to the idioms "the object x such that . . . ," "the class of all objects x such that . . . ," and others. However, the quantificational use of variables *is* exhaustive in the sense that all use of variables is *reducible* to this sort of use. Every statement containing a variable can be translated, by known rules, into an equivalent statement in which the variable has only the quantificational use. All other uses of variables can be explained as abbreviations of contexts in which the variables figure solely as variables of quantification. And *names*, we found, are describable simply as the constant expressions which replace these variables and are replaced by these variables according to the usual laws. In short, names are the constant *substituends* of variables.

A variable "x" is ordinarily thought of as associated with a realm of entities, the so-called *range of values* of the variable. The range of values is not to be confused with the range of *substituends*. The names are substituends; the named entities are values. Numerals, names of numbers, are substituends for the variables of arithmetic; the values of these variables, on the other hand, are numbers. Variables can be thought of roughly as ambiguous names of their values. This notion of ambiguous name is not as mysterious as it at first appears, for it is essentially the notion of a pronoun; the variable "x" is a relative pronoun used in connection with a quantifier, "(x)" or "$(\exists x)$."

Here, then, are five ways of saying the same thing: "There is such a thing as appendicitis"; "The word 'appendicitis' designates"; "The word 'appendicitis' is a name"; "The word 'appendicitis' is a substituend for a variable"; "The disease appendicitis is a value of a variable." The universe of entities is the range of values of variables. To be is to be the value of a variable.

Supposing that we know where to draw the line between the *concrete* or individual and the *abstract*, we can now make some sense of the distinction between a *nominalistic* and a *realistic* language. Words of the abstract or general sort, say "appendicitis" or "horse," can turn up in nominalistic as well as realistic languages; but the difference is that in realistic languages such words are substituends for variables—they can replace and be replaced by variables according to the usual laws of quantification—whereas in nominalistic languages this is not the case. In realistic languages, variables admit abstract entities as values; in nominalistic languages they do not.

As a thesis in the philosophy of science, nominalism can be formulated thus: it is possible to set up a nominalistic language in which all of natural

science can be expressed. The nominalist, so interpreted, claims that a language adequate to all scientific purposes can be framed in such a way that its variables admit only concrete objects, individuals, as values—hence only proper names of concrete objects as substituends. Abstract terms will retain the status of syncategorematic expressions, designating nothing, so long as no corresponding variables are used.

Indeed, the nominalist need not even forego the convenience of variables having abstract entities as values, or abstract terms as substituends, provided that he can explain this usage away as a mere manner of speaking. Quantification involving a new sort of variables, which ostensibly admit a new sort of entities as values, can often be introduced by a contextual definition—a mere convention of notational abbreviation. Elsewhere I have cited, by way of example, a convention of notational abbreviation introducing quantification upon variables which have statements as their substituenda. When such an abbreviation is adopted we are able to talk *as if* statements were names having certain abstract entities—so-called propositions—as designata. In so doing we do not commit ourselves to *belief* in such entities; for we can excuse our new form of quantification as a mere abridged manner of speaking, translatable at will back into an idiom which uses no statement variables and hence presupposes no propositions, no designata of statements. Under such a procedure propositions become explicitly *fictions*, in this sense: there are no such things, from the standpoint of our unabbreviated official language, but we talk as if there were by dint of an eliminable shorthand.

Similarly, if the nominalist can devise contextual definitions explaining quantification with respect to any other alleged entities of an abstract kind,[2] he becomes justified in speaking *as if* there were such entities without really forsaking his nominalism. The entities remain fictions for him; his reference to such entities remains a mere manner of speaking, in the sense that he can expand this sort of quantification at will into an official idiom which uses only variables having proper names of individuals as substituends. But if the nominalist can not supply the relevant contextual definitions, then his nominalism forbids his use of variables having abstract entities as values. He will perhaps still plead that his apparent abstract entities are merely convenient fictions; but this plea is no more than an incantation, a crossing of the fingers, so long as the required contextual definitions are not forthcoming.

[2] For work in this direction see my "Theory of Classes Presupposing No Canons of Type," *Proc. Nat. Acad. Sci.*, Vol. 22 (1936), pp. 320–326.