Descriptions in a Language with No Articles

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1 Theory of Descriptions and Japanese

Russell’s theory of descriptions is now more than 100 years old. Despite its age, it is still an influential theory and has defenders even today. For example, it has been argued that Russell’s theory is a precursor of a general treatment of noun phrases in natural language that is given in generalized quantifier theory (Neale [1990]). At any rate, as Russell’s treatment of “denoting phrases” seems to show that the standard formalism of modern logic can be used successfully in the analysis of natural language expressions, it remains a paradigm for a researcher who wishes to use the standard formal tools in understanding the structure of natural language.

The most famous part of Russell’s theory, which gives rise to the title “theory of descriptions”, is concerned with indefinite and definite descriptions. Roughly speaking, the former is a singular noun phrase with an indefinite article, and the latter is a singular noun phrase with a definite article. This fact immediately raises a problem whether it can be applied to a language which has a radically different structure from English, in particular, to a language which has no grammatical distinction between singular and plural nor definite and indefinite articles.

One such language is Japanese. If we try to translate the famous sentence of Russell, namely

(1) The present King of France is bald.

into Japanese, we get the following.

(2) Genzai no Furansu no kokuou wa hage-da.

present of France of king(s) topic-marker bald

Although the Japanese sentence has a noun phrase which corresponds to “the present King of France”, it has no definite article, nor any clue to whether it is singular or plural.

Conversely, if you are shown a Japanese sentence

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by itself, then there are at least four possibilities of translating this sentence into an English one.

(3a) A student laughed.
(3b) A number of students laughed.
(3c) The student laughed.
(3d) The students laughed.

Apart from a conversational context, there is no way to tell whether the occurrence of a Japanese noun “gakusei” in (3) is a definite description or an indefinite description. And, even when we know the context where (3) is uttered, frequently we can’t be sure whether the topic of the sentence is a single student or a number of students.

Is there any way to apply the theory of descriptions to a language like Japanese? Or, more generally, are the standard formal tools developed in modern logic universal enough to be applicable to a wide range of languages including the languages like Japanese whose structures are radically different from English?

2 Mass and Count

It might be said that there is no singular-plural distinction among Japanese noun phrases because all Japanese nouns are mass nouns.

For a language like English, the distinction between a count noun and a mass noun is comparatively clear. Count nouns like “student” have both a singular form and a plural form; they can be modified by counting phrases like “three”; they occur with the quantifiers “each”, “every”, “many”, “few” and the indefinite article “a”. On the other hand, mass nouns like “water” have no singular/plural distinction; they can be modified by measurement phrases like “liters of”; they occur with the quantifiers “much” and “little”.

It seems that every feature listed above is not applicable to Japanese. In the first place, as we remarked, Japanese has no systematically encoded singular/plural distinction: we use the same form of a noun whether it is true of a single thing or many things; there is no agreement of number between a subject and a verb. In the second place, we use the same quantifier *takusan* meaning both “many” and “much”; similarly, another quantifier *sukoshi* means both “few” and “little”; it goes without saying that there are no indefinite articles in Japanese.

The only remaining clue seems to be what sort of modifying phrases a noun is susceptible, that is, whether a noun is susceptible to counting phrases or measurement phrases. However, a Japanese phrase that expresses quantity has the same syntactic form whether it means “three students” or “three liters of
water”, namely, a numerical expression followed by a classifier. In Japanese a numeral cannot modify a noun directly without the help of a classifier. So, if we wish to say that there are three students, we have to say something like “there are three persons of student”.

Such obligatory uses of a classifier in Japanese once suggested to Quine the idea of construing a Japanese noun as a mass term which does not have an individuative power by itself (Quine [1969]). However, I think Quine’s idea is not feasible (Iida [1998]). For, we can discern a relatively clear distinction among Japanese nouns, if we pay a closer attention to the functions of the classifiers that accompany them. Roughly put, whereas there is only one sort of classifier that is used standardly for a noun such as the one meaning student, for a noun like the one meaning water, there are several sorts of classifiers none of which can be called standard. This reflects the fact that, whereas there are only one way of counting students, there are several different ways of counting (measuring) water such as “three glasses of water”, “three bottles of water”, and “three barrels of water”. In semantic terms, this means that, whereas a classifier accompanying a noun such as the one meaning water has a distinct semantic value which affects the truth condition of the sentence in which it figures — “There are three glasses of water” and “There are three bottles of water” are different in truth condition—, a classifier accompanying a noun such as the one meaning student has no distinct semantic value. The reason why the latter sort of classifiers does not have a distinct semantic value is that the noun it accompanies has an individuative power by itself. Even a native speaker of Japanese sometimes makes a mistake in choosing the right classifier. For example, the right classifier for rabbits is the same one for birds and not the one for cats and dogs. So, people tend to make a mistake in choosing the classifier in counting rabbits. But, even when someone uses the wrong classifier for counting rabbits, there is no danger of misunderstanding the number of rabbits mentioned.

Therefore, pace Quine, we can single out a class of Japanese nouns as count nouns and treat the others as mass nouns. Although it is important to see what would be the satisfactory account of the descriptions containing mass nouns like “the water in that glass”, in the remaining part of this paper I will concentrate on the descriptions formed from count nouns.

3 Singular and Plural

To my claim that Japanese has no grammatical distinction between singular and plural, some might object that Japanese has a noun suffix “tachi” expressing plurality as in the following example.

(4) Gakusei tachi ga warat-ta.
student plural suffix nominative-marker laughed

However, unlike the English plural suffix “–s”, the use of this suffix is very much limited; it can be used only for the nouns applicable to persons. The important thing is that a Japanese noun can refer to a plurality without using
any extra device; “gakusei” without the suffix “tachi” can mean a number of students as well as a single student.

Together with the fact that Japanese verbs do not have singular-plural conjugations, this means that generally predication in Japanese is not singular. This raises a problem if we wish to have a formal representation of a Japanese sentence in the orthodox language of modern logic, because it is constructed on the assumption that all predications are essentially singular. Fortunately, we now have several well-developed systems of plural logic in which predication is essentially plural (Hossack [2000], Yi [forthcoming], McCay [forthcoming]).

When I say predication is plural, I don’t intend to imply that it is non-singular. Among plural predications, there are singular predications like “is a student” as well as non-singular ones like “are students”. A singular predicate like “is a student” can be true of more than one thing, but not at the same time, that is, what satisfies this predicate are only single students, although there may be several such students. In contrast to this, plural predicates can be true of more than one thing at the same time. And, among them, non-singular predicate like “are students” are satisfied only when they are true of more than one thing at the same time. Let us represent a singular predicate “is a student” by “STUDENT(x)” where x is a singular variable, and a non-singular predicate “are students” by “STUDENTS(X)” where X is a plural variable. If we devise a predicate “STUDENT*(X)” which is just like “STUDENTS(X)” except that it is also true of single students like “STUDENT(x)”, it can be regarded as representing a Japanese noun which covers the extensions of both an English singular noun “student” and a non-singular noun “students”. (It might be better to call a predicate like “STUDENT*(X)” “number-neutral” instead of “plural”. However, in the plural logic, “plural” is used in the way that singularity is just a special case of plurality. After all, what we have is “plural logic” and not “number-neutral logic”.)

In much of linguistic literature, it is customary to give a semantics of plural constructions in natural language in terms of some surrogate objects like sets and mereological sums which represent plurality (Link [1998], Landman [2000]). However, it is an undeniable fact that, when we utter a sentence “John and Mary are students”, we are talking about John and Mary and not about some single thing such as a set consisting of John and Mary. Thus, if we wish to give a semantics of a sentence containing plural predication, we had better to adopt some form of plural logic as the logic of our metalanguage. For a language like Japanese, there is every reason to adopt such a metalanguage.

4 Definite and Indefinite

Let us go back to our (3).

(3)  Gakusei ga warat-ta.
     student(s) nominative-marker laughed
If I am not mistaken in the claim that predication in Japanese is essentially plural and Japanese nouns and verbs cover both singular and non-singular cases, then there should be no ambiguity in (3) owing to the difference in number. A Japanese noun “gakusei” is not ambiguous when it is applied to a single student or a group of students. It is just as an English word “sheep” is not ambiguous when it is applied to a single sheep or to a flock of sheep.

However, there still remain two interpretations for (3), namely, one which construes “gakusei” something like an indefinite description and the other which construes it something like a definite description. Might not the possibility of such radically different interpretations of (3) show that it is at least two-way ambiguous?

On the surface, (3) is a combination of a noun and a verb; a particle after the noun is a case marker which indicates which argument of the verb the values of the noun fulfill. In the present case, the verb is an intransitive one, and requires only one argument. Thus we may represent (3) as a combination of two plural predicates having the same variable like this:

\[
\text{STUDENT}^*(X), \text{LAUGHED}^*(X)
\]

If one adopts a general hypothesis suggested by the generalized quantifier theory that all noun phrases are quantifiers, then the Japanese sentence should have the following “logical form”. (Here I adopt a formulation using restricted quantification instead of binary quantification as is usually done in the generalized quantifier theory. I also assume that plural quantification can be incorporated into the generalized quantifier theory.)

\[
(\exists X: \text{STUDENT}^*(X)) \text{LAUGHED}^*(X)
\]

The issue here is what the unpronounced quantifier “Q” should be. One suggestion is that (3) is ambiguous and has the following two readings.

\[
\text{(ID)} \quad (\exists X: \text{STUDENT}^*(X)) \text{LAUGHED}^*(X)
\]
\[
\text{(DD)} \quad \left(\exists x: \text{STUDENT}^*(X)\right) \text{LAUGHED}^*(X)
\]

According to the reading (ID), (3) contains an indefinite (plural) description, and in the reading (DD) it contains a definite one.

It is not difficult to understand what (ID) means; it means that some, possibly plural students laughed. But, it may not be perfectly obvious what a plural definite description means. Whereas uniqueness is one of the defining features of a singular definite description, what constitutes the definiteness of a plural definite description is maximality or exhaustiveness. (DD) means that not only some but all of the students under consideration satisfy the condition expressed by LAUGHED*. Just as in the singular case, an indefinite description reading is a logical consequence of a definite description reading.

There is one fundamental defect in the current proposal. It is that the mere supposition of the ambiguity in (3) does not help to explain why a particular utterance of (3) in a particular context has one interpretation or the other. One way to amend the situation might be to construe all Japanese noun phrases not
modified by explicit quantifiers as indefinite (plural) descriptions and explain the definite description reading by some pragmatic factors (as has been done for English definite descriptions in Ludlow & Segal [2004]). However, as far as such Japanese noun phrases are concerned, I believe there is a better way to give a unified account of them.

In order to understand the mechanism how the same noun phrase plays both the role of an indefinite description and that of a definite one at its different occurrences, we should give up a sentence-based approach; instead we should take a discourse or a text as a unit of our considerations. For, the typical examples of definite noun phrases in Japanese are anaphoric ones. Though there are expressions corresponding to English “they”, “he” and “she” in modern Japanese, they are the words invented for the purpose of translating European languages and seldom used in a colloquial Japanese. There are three kinds of anaphoric devices common in Japanese: they are (a) repeating the same noun phrase all over again, (b) repeating the same noun phrase prefixed by “sono” (= that), and (c) deleting the noun phrase altogether. In cases (a) and (b), sometimes the repeated noun phrase has a topic marker “wa” instead of a case marker. If we translate the examples of these three types into English as literally as possible, they look like the following (a)–(c). Here, as before “*” indicates plurality in our sense, and an expression enclosed by “[ ]” has a topic marker.

1

(a) Man* came in. [Man*]T had gun*.
(b) Man* came in. [That* Man*]T had gun*
(c) Man* came in. Had gun*.

We can represent (a) and (c) using a diagram similar to the one found in Discourse Representation Theory (Kamp and Reyle [1990]). We suppose that it is possible to revise DRT so that it can handle plural predication and quantification. $\simeq$ is the plural “identity” which can be found in a sentence like “The people who came today are just the same as those who came yesterday”.

<table>
<thead>
<tr>
<th>X, Y, Z</th>
<th>X, Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAN*(X)</td>
<td>MAN*(X)</td>
</tr>
<tr>
<td>CAME_IN(X)</td>
<td>CAME_IN(X)</td>
</tr>
<tr>
<td>MAN*(Y)</td>
<td>GUN*(Y)</td>
</tr>
<tr>
<td>GUN*(Z)</td>
<td>HAD(X, Y)</td>
</tr>
<tr>
<td>HAD(Y, Z)</td>
<td>HAD(Y, Z)</td>
</tr>
<tr>
<td>$\simeq$ X</td>
<td></td>
</tr>
</tbody>
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Let me explain briefly what these diagrams mean.

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1Here are original Japanese sentences.

(a) Otoko ga haittekita. Otoko wa jyuu o motte-ita.
(b) Otoko ga haittekita. Sono Otoko wa jyuu o motte-ita.
(c) Otoko ga haittekita. Jyuu o motte-ita.
We start from the first sentence of (a). The first occurrence of the noun “man*” introduces a new term X into the discourse. (If we wish to express more graphically the plural character of X, we might write “x₁, x₂, . . . , xₙ (n > 1)” instead of “X*”. This plural term X satisfies the predicates “MAN*(X)” and “CAME_IN(X)”. Proceeding to the next sentence we encounter the two nouns “man*” and “gun*”, so we introduce two new terms Y and Z as before. For them, we have “MAN*(Y)”, “GUN*(Z)” and “HAD(Y, Z)”. But we already encounter “man*” before, and moreover, in the present occurrence, it is marked as the topic of the sentence. These facts strongly suggest that this occurrence of the noun refers back to some term which is already in the discourse. Thus, we have the plural identity “Y ≃ X”.

In the diagram for (c), the first three lines are the same as in the case of (a). The second sentence of (c) introduces a new term Y of which “GUN*(Y)” holds. It satisfies another condition which can be represented provisionally as “HAD(–, Y)”; its blank should be filled by some term which is already in the discourse; as X is the only possible candidate for that, we have the condition “HAD(X, Y)”. Of course, all this should be given a proper semantical explanation. I suppose it can be done in a similar fashion as in DRT. Namely, a diagram such as (a) and (c) are defined to be true when for each term like X, Y . . . there are objects which satisfy the relevant conditions in the same diagram. One difference from the original DRT is that such truth definition should be given in the plural logic setting, and this might give rise to some technical problems. However, the main idea should be clear: “introducing a new term into the discourse” amounts semantically to an existential quantification, and “identifying a term with the term already in the discourse” amounts to a binding to the quantifier. Moreover, instead of talking about terms, we may talk about objects and say “introducing new objects into the discourse” or “identifying the objects with the objects already existent in the discourse”.

To see how the definite-indefinite distinction is recognized in Japanese, let us take up another example, which consists of three sentences. As before, I present it in a form translated into a sort of pidgin English. ²

(d) Child* and dog* were playing in park*. Child* threw ball* to dog*. [Dog*] ran after ball*.

The first sentence of (d) introduces three kinds of objects into the discourse, namely, children, dogs, and parks. In the same way, balls are introduced into the discourse by the second sentence. On the other hand, “child*” and “dog*” in it do not introduce new objects, but refer to the objects introduced by the first sentence. The third sentence introduces no new objects. It just asserts a certain relation holds between the already introduced objects by the preceding sentences.

²The original sentences are

Kodomo to inu ga kouen de asonde-ita. Kodomo ga bouru o inu ni nageta. Inu wa bouru o ukaketa.
Here are some rules of thumb to determine whether the occurrence of a noun phrase introduces the objects new to discourse or it refers to the already existent objects.

1. An occurrence of a noun phrase marked as a topic refers to already existent objects. (“dog*” in the third sentence.)

2. The first occurrence of a noun phrase that is not marked as a topic introduces new objects. (“child*”, “dog*”, “park*” in the first sentence, and “ball*” in the second sentence.)

3. An occurrence of a noun phrase that has a preceding occurrence in the same discourse refers to already existent objects. (“child*” and “dog*” in the second sentence, and “ball*” in the third sentence.)

We may term those Japanese noun phrases we have been considering as “descriptions”. Their functions are either to introduce the objects which satisfy the conditions given by them, or to identify the objects among those already introduced into the discourse by singling out those which satisfy the descriptive conditions. When they function in the first way, they function like English indefinite descriptions, and when they function in the second way, they function like definite descriptions. However, there is no need to assign the different semantic contents to them according to their different functions; for, the difference in their semantic import can be accounted for by their places in the discourse.

The definiteness of a Japanese definite description derives from a certain relation to some contextually given elements. The most perspicuous case is the case where the relation is an anaphoric one; here what we should consider is just the linguistic context. The rules of thumb above are just the first steps for formulating a set of much more complex rules used in establishing anaphoric links in Japanese.

There are also cases where we are certain that we have a definite description in spite of the fact that there is no preceding indefinite description in the discourse. Such cases can arise because the use of the topic-particle “wa” frequently signals that we are dealing with some objects which are supposed to be known already to the participants of a conversation. As a very simple example, consider the case where the following sentence is uttered before the cage of lion in the zoo.

(5) [Lion*] is asleep.

We should compare this to a discourse consisting of two sentences.

(6) Lion* is there. [Lion*] is asleep.

Instead of having a linguistic clue as in (6), a hearer of (5) has to make use of the facts like that the speaker and the hearer are both in front of the cage of lion and that the lions in it have already attracted their attentions. (5) may be represented by a diagram like the following.
Here “\( C(Y) \)” means that \( Y \) is contextually given in the discourse. The construction of this diagram starts with the inner box with “LION*(\( X \))” and “ASLEEP(\( X \))”. As “Lion*” is marked as a topic of the sentence, this noun must refer to some entities already existent in the discourse. But, this is the first (and only) sentence of the discourse. So, an accommodation takes place and a hearer supposes that there are some contextually given entities \( Y \) which are lion* \( (C(Y) \) and LION*(\( Y \))\) and identified with the entities that are talked about in the sentence \( (X \simeq Y) \).

A philosophically interesting problem is to see how such a treatment can be extended to more complex cases. The simple case we considered is the one where the objects talked about are physically present in the conversational context and can be ascertained perceptually to satisfy the relevant description. A contrasting case is the one where the objects talked about are not or cannot be physically present in the context, and only the descriptive condition is known to the participants of a conversation. Although such a case has been considered as the central case of definite description, the considerations on Japanese descriptions suggest that it may turn out otherwise.

References


