

ON GENERIC N P s *
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0. INTRODUCTION

The primary purpose of this paper is to present a semantic mechanism for generic noun phrases (henceforth, GNPs) which answers the following question: why are GNPs interpreted as such? Moreover I will show that the very same mechanism also plays a central role in the analysis of nominalized constructions, and thereby prove that the mechanism is semantically real.

There are four types of GNPs:

- | | | |
|--------|--------------------------------|-----------------|
| (1) a. | <u>Beavers</u> build dams. | (bare plural) |
| b. | A <u>beaver</u> builds dams. | (indefinite NP) |
| c. | <u>The beaver</u> builds dams. | (definite NP) |

In the above examples, the underlined NPs refer to a certain object other than individuals. That is, the referent of beavers in (1a), for example, is not a group of individuals which are running or swimming around you, but the kind that includes all existent or imaginary) beavers. This is a mystery, since beavers in other contexts like (2) does not exhibit such a semantic property:

- (2) Beavers are running.

The best interest of semantic theories on this topic has centered around this mystery, which I will give a solution in section 1.

In section 2, I will discuss the semantic properties of nominalized constructions (i.e. that clause, for-to clause), and show that the mechanism proposed in section 1 can handle them in a full-fledged way.

Though I will treat only bare plurals for simplicity, the same argument also holds for the other types of GNPs.

1. SEMANTIC PROPERTIES OF GENERICS

1.1. Carlson's (1980) Analysis

As a starting point, see the following examples:

(3) Dogs ran.

This sentence is two-ways ambiguous. The first reading is that there were some dogs, say Harry and Fido, which participated in an event (existential reading). The second reading tells us that the kind dog (i.e. all members of the kind) characteristically had the property of running (generic reading). Carlson(1980) attributes this ambiguity of bare plurals to the levels of the predicates: the existential reading arises when the predicate is a stage-level predicate, which is predicated of a spatially and temporally bounded manifestation of individuals, or equivalently, which denotes a set of stages, and the generic reading arises with an individual-level predicate, which denotes a set of individuals.

The reason that Carlson makes distinction of the levels of predicates can be best understood when we think of a sentence like (4), which has a proper name as the subject in place of a bare plural:

(4) Bill ran.

The proper name Bill also exhibits a similar ambiguity. In the first reading, Bill engaged in an event. On the other hand, Bill characteristically (or habitually) had the property of running in the second reading. So it is quite reasonable to assume that the difference of the levels of predicates somehow causes the two different readings of bare plurals. One might suspect that this distinction is pragmatically motivated and therefore out of semantic interest, but this is not the case. Carlson quotes the following examples from Milsark(1974):

- (5) a. Several policemen were available.
 b. There were several policemen available.
- (6) a. Several policemen were intelligent.
 b.*There were several policemen intelligent.

As is obvious from the examples above, some class of adjectives is sensitive to there-insertion. According to Milsark, the class of adjectives which allows there-insertion consists of those which refer to stages. On the other hand, those which do not allow it refer to characteristic properties. These examples strongly suggest that English is semantically sensitive to the levels of predicates. Therefore semantics rather than pragmatics should have a device to handle the distinction.

Before going back to the first example (3), we have to assume the following: bare plurals are names of kinds. Just as the name John refers to the individual John, dogs is assumed to refer to the special type of individual dogs as a kind. Carlson presents several reasons for this assumption, which I will not go into details here. ¹ Equipped with these assumptions (i.e. two levels of predicates and kind as an individual), we can explain the two (existential and generic) readings of the bare plural dogs: when ran is a stage-level predicate, which applies to stages of things, the sentence is interpreted as stating that at least one of the stages of the individual dogs is in the set of stages denoted by ran. Notice that the individual dogs is the special type of individuals which includes all dogs. Therefore dogs ran is true if there is any one of dogs which has the stage that ran. This is the existential reading. On the other hand, when ran is an individual-level predicate, the sentence means that the individual dogs (not its stages) is in the set of individuals which ran. In other words, the kind dogs has the property of running. Formally, the resultant logical forms for (3) are as below:

- (3)'a. $\exists y(R(y,d) \wedge \text{run}'(y))$
 b. $\text{run}''(d)$

R is a realization function which relates stages and individuals: R(a,b) means that a is a stage of b. Run' is a stage-level predicate and run'' an individual-level predicate. These logical forms express what is informally stated above.²

So far, so good. His system represents the different readings of bare plurals very elegantly. But it seems to me that the most interesting aspect of GNPs is left unsolved in spite of his ingenuity: why should bare plurals like dogs be construed as names of kinds? He presents several linguistic FACTS that justify this point (see the note 1), but gives no EXPLANATION. I will sketch the solution of the question in 1.2. In the system which I will propose, we can do without the counterintuitive assumption that certain types of verbs like run which have the two-ways ambiguity must be treated as two homonyms.

1.2. The Origin of Genericness

In this section, I will argue that generic flavor arises due to the presence of the so-called generic tense whose nature will be explicitly defined. As below, it is fairly clear that the possibility of interpreting noun phrases as generic or non-generic crucially depends on the form of the verb in the sentence:

- (7) a. A/The beaver builds dams.
- b. Beavers build dams.
- (8) a. A/The beaver is building a dam.
- b. Beavers are building a dam.

Needless to say, a/the beaver and beavers in (7) are interpreted as referring to a kind. On the other hand, those in (8) are not. What forces us the distinction on genericity between these minimal pairs? The only difference between (7) and (8) lies in their forms of the verb: progressive or non-progressive form. If we admit the existence of 'generic tense' in the form of simple present tense which indicates that the sentence is about characteristic properties, dispositions, habits and the like, the different

readings of the noun phrases seem to be easily explainable. But unfortunately this simple assumption is not helpful. See the following example:

(9) Dinosaurs ate kelp.

Though (9) does not contain the simple present tense, dinosaurs refers to a kind. Even if we admit the three generic tenses (the past, present, and future generic tenses) as in Dahl(1975), a problem still remains. That is, apparently tenseless constructions also exhibit the very property which we assumed that the 'generic tense' has:

(10) The doctor ordered Bill to jog.

According to Carlson(1980), this sentence is two-ways ambiguous: 'the doctor is either ordering Bill to engage temporarily in a happening, or else to be a habitual jogger'.

Then how can we explain the difference between (7) and (8)? Declerck(1986) argues, roughly, that a sentence with a verb of the progressive form refers to a single event. As long as a sentence refers to a single event, it is not possible for the subject NP to be interpreted as a kind. He claims that for an NP to be interpreted as a kind, there must not exist any 'bounding' expression like the progressive form of a verb which bounds the interpretation of a sentence to a single or at least a specified number of events. The progressive form of verbs is not the only candidate for such expressions. Adverbials and NPs can be such expressions as well:

- (11) a. That day Nelphi's dog chased cars.
 b. Bill killed all the vermin within five minutes.

(Declerck (1986),the underlines added)

That day in (11a) restricts the interpretation to a single event,

and the NP all the vermin in (11b) refers to some definite quantity of vermin. Compare this sentence with the one below:

(12) This insecticide kills vermin within five minutes.

(op. cit.)

Since the referent of vermin is unbounded in its quantity, one can easily interpret this sentence as a habitual event. Notice, however, that this 'unboundedness condition' is not decisive. See the following examples, which include an adverbial or a definite NP:

(13) a. When Nelphi's dog was young, he chased cars.

b. Sam beats the girl.

As is clear, both sentences permit the habitual reading, even though they contain the adverbial and the definite NP, respectively. Actually he does not present any theory in any decisive way. He only argues that the intuitive notion 'unboundedness' plays a central role in the generic interpretation of NPs. But the most important notion 'unboundedness' is left undefined. Bill ran in (4) is ambiguous between the habitual and the single event reading, therefore this sentence must be bounded in one way and unbounded in the other. Then there must be some semantic factor which we can not attribute to the forms of verbs, adverbials or NPs. He argues nothing about this point. Since this notion is left undefined, he can not explain as to why the 'unboundedness condition' effects on the genericity of NPs.

Though it seems that his intuition is on the right track, we should make clear the semantic device which both reveals the origin of his 'unboundedness' and gives an explanation as to why the 'unboundedness condition' effects on the genericity of NPs.

I will start my explanation with the example (4), reproduced here:

(14) Bill ran.

As is clear from the discussion above, we can not resort to the 'generic tense' in explaining the two-ways ambiguity of this sentence. Instead, I assume the following (abstract) two modes of time-specification in every propositional (or situation-denoting) expression.

(15) TWO MODES OF TIME-SPECIFICATION

(TIME: linearly ordered, consists of points of time)

- ① INTERVAL = _{DEF.} locates a situation on a maximally connected set of points of time which is compatible with the tense operator
- ② POINT OF TIME = _{DEF.} locates a situation at a point of time which is compatible with the tense operator

In current semantic theories, there is an element which locates a proposition (or its referent: situation) on the plane with time- and world-axis, or on the spatio-temporal plane. As a first step, here I assume that there are two types of LOCATIONS which are specified by a sentence. One is specified by the point of time mode which locates a situation at a specific point of time on the time-linear (I will ignore the world- and space-axis to simplify the discussion). The other is specified by the interval mode, which locates it on a stretch of time. In this sense, I will call these modes LOCATORS. Notice that the locators are independent of tense operators (PAST, NOW, FUTURE), which, in my view, restrict the application of locators to the time-linear. For example, a location specified by the point of time mode (henceforth, Po-mode) with the PAST is restricted to the one in the past. For tense operators and locators JOINTLY specify a location of a situation. With this system in mind, I examine the ambiguity of (14).

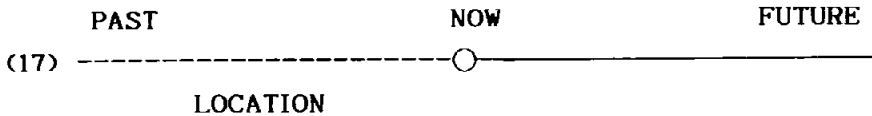
The first reading of (14), in which Bill participated in an event, comes out when we select the Po-mode. Since the tense operator is the PAST and the locator is the Po-mode, the location of the situation expressed by the sentence is some point of time

in the past. This is the event reading of (14). Naturally enough, as for Bill's property, he had the property of running at that time. To incorporate this fact into our system, I assume the following:

(16) Subject NPs inherit the location of a situation.

An NP with a specified location can be assumed to denote a set of properties of the referent of the NP at that location, which is equivalent to the stage of the referent.

The second reading of (14), on the other hand, comes out in the interval mode (henceforth, I-mode). From the definition of the I-mode and the PAST, we can see that the location of this situation can be illustrated as below:



By (16), the subject NP Bill has the same location as the situation. As defined above, a location specified by the I-mode consists of points of time. Therefore what is denoted by Bill is his stages all through this period. Therefore for the sentence to be true, he must have the property of running at every point of time in this period, in other words, all of his stages in this period include the property of running. So running was his characteristic property.

As above, this system can explain the ambiguity in (14). Notice that this analysis avoids the problem pointed out in (10): tenseless constructions also exhibit the similar ambiguity. In this analysis, what is crucial is not a tense operator but a mode of time-specification, which is in all situation-denoting expressions. Therefore tenseless constructions as in (10) are rightly expected to exhibit the similar ambiguity.

Now it is time to discuss the kind/existential reading of NPs

example, the contrast between progressive and non-progressive form of a verb in (7-8) can be explained in the following way:

- (20) a. Beavers build dams.
 b. Beavers are building a dam.

Only the generic reading is allowed in (20a) and the existential reading in (20b). In (20a), basically we are free to select a locator. In the Po-mode, however, a realistically very curious reading arises. Since the location of the situation in this mode is now as a point of time and the verb build is an accomplishment verb, the building action must be completed at this moment. Hence the Po-mode is cancelled and only the generic reading arises. On the other hand, in (20b), only a natural assumption that the progressive form of a verb forces the Po-mode will suffice for the explanation of this sentence.

Summarizing, the essential part of my analysis is the claim that there are two types of locations: one is specified by the Po-mode, and the other by the I-mode, and that a subject NP inherits the location of the situation expressed by the sentence. The former part of my claim corresponds to Declerck's intuitive contrast: bounded/unbounded. The location inheritance procedure in the latter part guarantees the relationship between bounded/unbounded and non-generic/generic.

An NP located at a point of time denotes a property set of the NP at that time: a stage of the NP. So an NP located on a set of points of time (because of the I-mode) denotes a set of stages. Since nouns can be regarded as a predicate: x is _____, bare plurals with this type of location denote x 's stages. Clearly no individuals can not cover all of x 's stages. This is the origin of KIND.

As above, I have shown that we can explain the generic/non-generic contrast of NPs without resorting to the curious distinction of the levels of predicates (i.e. run' and run'') if we admit the two types of locations.

Though we introduced the two types of locations (those specified by the Po-mode, and those by the I-mode), this is not a theoretical advance. Because we had to use two notions (the Po- and the I-mode) to explain the two readings of NPs. But if we consider these two types of locations seriously, it is fairly clear that we need only one notion. As is clear from the definition in (15), the location specified by the Po-mode is a constant point of time. Then the location specified by the I-mode can be characterized as a point of time which is a variable, because it is a SET of points of time. Thus we can reduce the distinction between the Po-mode and the I-mode to that between the two kinds of point of time (constant and variable).

The latter distinction is not just a notational variant of the former. The latter is much more general than the former. Because we can use the same distinction (constant/variable) not only to explain the generic/non-generic reading of NPs, but to explain the semantic properties of nominalized constructions as we will see in the next section, though, in this case, the distinction is that of the two kinds of tense operator.

2. SEMANTIC PROPERTIES OF NOMINALIZED CONSTRUCTIONS

The two types of nominalized constructions (i.e. for-to clauses and that clauses) will be discussed. Most of the discussion are from Ohnishi (1986), where a strict formalization in the framework of Montague Grammar is proposed.

The difference of the semantic properties between that and for-to clauses is obvious in the following examples:

- (21) a. That people own handguns is illegal in England.
 b. For people to own handguns is illegal in England.

(Carlson, 1979)

The that clause in (21a) refers to a specific actual situation. The for-to clause in (21b), on the other hand, refers not to a

specific situation, but to a certain type of situations. This is the difference which Bach(1977) intuitively characterized as that between 'proposition' and 'eventuality'. To make this point clearer, see the following examples from Bach(1977):

- (22) a. That the earth is flat is true.
 b. *For the earth to be flat is true.
 (23) a. *That you are here is imperative.
 b. For you to be here is imperative.
 (24) a. *That people love their children is common.
 b. For people to love their children is common.

If we regard that clauses as denoting a specific situation and for-to clauses as denoting a certain situation, these judgements naturally follow. Though a specific situation can be 'true' or 'false', a certain type of situations can not (in (22)). And a specific situation can not be common or imperative as in (23) and (24). The sentences below justify this point further:

- (25) a. ??For John to kill this fish was wrong.
 b. ??For John to go there bothered me.
 c. That John went there bothered me. (factive)
 (26) a. For John to kill his fish would be wrong.
 b. For John to go there would bother me.
 c. *That John went there would bother me. (non-factive)

The factive predicates in (25) require their subjects to be facts. In such cases, for-to clauses show low acceptability. If we regard a fact as a kind of specific situations, this follows quite naturally from the point of view above. That is, what is denoted by for-to clauses is not a specific situation but a certain type of situations. On the other hand, in (26), the predicates require hypothetical situations as their subjects, because the subjects are in the scope of would. Since specific situations can not be

hypothetical, that clauses are not acceptable. Now that the semantic difference between that and for-to clauses is clear (i.e. that clause: a specific situation, for-to clause: a certain type of situations), let us move to the next question: why does this semantic difference arise?

According to Bresnan(1972), the difference depends on the complementizer meaning. That is, that 'definitizes' a complement, and for indicates that the content of a complement is 'unrealized'. Though many investigators follow this assumption, this analysis is dubious. Consider the following example:

- (27) a. *That you are here is imperative.
 b. That you be here is imperative.
 c. For you to be here is imperative.

If the semantic difference between that and for-to clauses depends solely on the meaning of the complementizers, this set of data can not be explainable: the tenseless that clause (27a) has the same acceptability pattern as the for-to clause in (27c), and further, they share the same meaning, that is, 'unrealized'. Note the next example in which the tensed that clause is acceptable, and the tenseless that clause and for-to clause are not. (This example is from Huntley(1982) though slightly modified.)

- (28) { That Mary invited John to the party
 *That Mary invited John to the party
 *For Mary to invite John to the party } is true.

If we attribute this difference not to the meaning of the complementizers but to the presence or absence of tense, these facts follow naturally. That is, since the presence or absence of tense is crucial to the difference, tenseless that clauses and for-to clauses have the same meaning and distribution pattern. One more evidence will be suffice to confirm this point. For-to clauses with a tense operator, which is realized as have, show

greater degree of acceptability with factive predicates than those without a tense operator.

- (29) a. ??For John to kill the girl bothered me.
 b. ?For John to have killed the girl bothered me.
- (30) a. ??For JJohn to kill his gold fish was wrong.
 b. ?For John to have killed his gold fish was wrong.

From the discussion above, it should be clear that the semantic difference between for-to and (tensed) that clause mainly depends not on the complementizer meaning but on the presence or absence of tense. Why then does the presence or absence of tense cause this difference?

In Ohnishi (1986), I assumed that these and other kinds of nominalized constructions denote Situation-Individuals. (They should be individuals for technical reasons in Montague Grammar.) From this viewpoint, for-to clauses and that clauses denote quite different types of situations. I illustrate the structure of a situation in a rather sketchy way as below:

(31) V (A R G U M E N T *) LOCATION

The Argument in the bracket indicates (most typically) real things that participate in a situation. The V indicates a real state or action of, or a real relation between Arguments. The V's and Arguments are expressed linguistically as verbs and arguments sub-categorised by verbs, respectively. Recall that a location of a situation is determined by a locator and a tense operator, which restricts the range of a point of time. Therefore the situations denoted by (tensed) that clauses are illustrated as below:

(32) α (β , γ) LOCATION (Δ)
 α β γ Δ :SPECIFIED VALUE

Notice that they have a specified location because of a tense

(34)	POINT OF TIME	TENSE	
	constant	constant	(a)
	constant	variable	(b)
	variable	constant	(c)
	variable	variable	(d)

Indeed, we can find these four types of situations as below:

- (35) a. John killed the girl. (Event reading, TOKEN)
 b. I want John to kill Mary. (Event reading, TYPE)
 c. Mary jogs. (Characteristic reading, TOKEN)
 d. John ordered Mary to jog.
 (Characteristic reading, TYPE)

Though there are many interesting points that are left open and the theory itself needs a strict formalization, I hope that the above points shed interesting light on these phenomena.

NOTES

* This paper owes much to the insightful comments and suggestions I received from Hiroaki Tada. Needless to say, all errors are entirely my own.

¹ Pieces of evidence which Carlson presented for assuming that bare plurals are names of kinds are similarities between bare plurals and proper names with respect to so-called and other constructions, backwards pronominalization, and so on.

² The two-ways ambiguity of Bill ran is explained in the same way.

³ The distinction of the classes of adjectives in (5-6) can be assumed to be one of such factors.

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