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Remarks on exceptions and vagueness in generics*

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Kim, Yong-Beom. 2015. Remarks on exceptions and vagueness in generics. *Linguistic Research* 32(2), 481-501. This paper addresses two issues involving exceptions and vagueness of generic sentences as discussed in Greenberg (2007) and attempts to provide alternative solutions to a wider range of exception patterns and vagueness. Greenberg argues that the indeterminacy in delimiting exceptions to generics comes from the vagueness of *blocking* properties in that some *blocking* properties cannot precisely delimit the domain of quantification. This paper suggests that the vagueness of generic expressions can come from whether the blocking properties are accessible to the speakers or not and also from an unmeasurable nature of the strength of certain blocking properties in their restriction of the domain of quantification. Secondly, Greenberg sets up a constraint that restricts only the domain of individual objects for quantification. This paper proposes that the property of situations or eventualities should further be included in the definition of *blocking* in order to account for a wider range of generic expressions including indefinite singular (IS) generics and bare plural (BP) generics. **(Kwangwoon University)**

Keywords indefinite singular (IS) generics, bare plural (BP) generics, exceptions, vagueness, blocking property, precisification, domain of quantification, in-virtue-of property

1. Introduction

This paper deals with two issues concerning the exceptions and vagueness of generic sentences as discussed in Greenberg (2007), and attempts to provide alternative solutions to different patterns of exceptions and vagueness in the generic sentences shown in (1).

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(1) a. Dogs have four legs.
b. Frenchmen eat horse meat.
c. Dutchmen are good sailors.
d. Triangles have three sides.

The first example in (1a) allows exceptions but the number of the exceptional dogs is very small; the second and third statements have the majority of the relevant people as exceptional cases, respectively; in contrast, the statement in (1d) does not allow any exception. Greenberg's discussion was limited only to the type shown in (1a).

This paper will deal with the exceptional behaviors of generic expressions and their vagueness, especially for BP generics shown in (1). In the next section, Greenberg's main argument will be reviewed and summarized. In section 3, the main points of this paper will be presented. We will rebut Greenberg's inductive position on BP generics by elaborating and extending my previous position in Kim (2008). It will also be claimed that vagueness of generic expressions can come from two sources. One is the unequal accessibility of blockers to the speaker and the hearer; the other is the unmeasurable nature of the strength of certain blocking properties in their restriction of the domain of quantification. In section 4 a more formal treatment will be given.

2. Greenberg (2007)

Greenberg (2007) presents a comprehensive analysis of generic sentences in a very convincing way. One of the key issues in generics has been how to provide a coherent account of exceptional cases in generics[1]. In this section, Greenberg's paper will be reviewed. The main strategy of Greenberg is to restrict the domain of individuals denoted by the generic NP using relevant properties and information in order to restrict and exclude irrelevant and abnormal individuals from the domain of quantification in a principled way.

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[1] There are not many authors who dealt directly with this issue. Recent attempts were made by Cohen (1999, 2001, 2004) and they do not seem to be as successful as Greenberg (2007).

2.1 Contextual relevance, legitimacy and in-virtue-of properties

Greenberg's main argument involves exceptions to generics, especially IS generics and BP generics. According to her proposal, there are two types of exceptions that are tolerated even though they do not satisfy the property denoted by the VP of the generic sentence. An individual object can be a legitimate exception to generics, according to Greenberg, if the object is assumed to be *abnormal or non-standard* in some sense. For instance, dogs that have undergone an accident or a genetic mutation can be legitimate exceptions to (2a) and (2b).

(2) a. Dogs have four legs.
b. A dog has four legs.

In other cases, an individual entity can be considered to be *contextually irrelevant*. For instance, the generic statements in (3) do not concern the books in other libraries. Those books are simply left out of the question in the first place, although they may not be *abnormal*.

(3) (This library holds more than 400,000 books and 1000 periodicals.)
a. Books can be borrowed for one week only, but periodicals can only be borrowed overnight.
b. A book can be borrowed for one week only, but a periodical can only be borrowed overnight. (Greenberg 2007)

Greenberg (2007) asserts that IS generics and BP generics are characterized differently by different constraints. IS generics obtain genericity thanks to a certain *in-virtue-of* property that the speaker has in mind. In other words, if every individual has a special (inherent) property, then all the normal and contextually relevant individuals will satisfy the VP property expressed in the generic expression. For example, *A bird lays eggs* can be analyzed intuitively like this: every normal and relevant bird lay eggs in virtue of their having a certain genetic makeup. This idea is formally stated in (4), where P, Q and S_c stand for the denotations of the subject, VP and the contextually supplied *in-virtue-of* property, respectively.

(4) $\forall w'[\forall x\ P(x, w') \rightarrow S_c\ (x, w')] \rightarrow [\forall x\ P^{cont.norm}(x, w') \rightarrow Q(x, w')]$
'In all worlds where $P \subseteq Q$, all contextually relevant and normal Ps have Q' (Greenberg 2007: 143)

Thus, (4) says that in every circumstance where every individual in the domain P has some special property (S_c, a certain in-virtue-of property), all the contextually relevant and normal individuals will satisfy the property encoded by VP.

Furthermore, Greenberg contends that BP generics can express both *in-virtue-of* interpretations and descriptive generalizations. Therefore, (5a), for instance, can attain genericity not only on the basis of birds having in-virtue-of properties but on the basis of observing enough egg-laying instances of birds, whereas (5b) has an in-virtue-of interpretation only.

(5) a. Birds lay eggs
b. A Bird lays eggs.

Greenberg also claims that the two types of generics, IS and BP generics, are distinguished by the degree to which the tolerated exceptions are specified, as shown in (6)

(6) The degree to which the properties of the exceptions to a generic can be specified is high with in-virtue-of generics (i.e., IS generics and their BP counterparts) but very low with unambiguously descriptive generics (i.e., BP generics with infelicitous IS counterparts).
(Greenberg 2007: 159)

This generalization seems to be an intuitive but convincing postulation and it says that the exceptions to in-virtue-of (IS) generics are relatively easy to define whereas the deviant cases of descriptive (BP) generics are not. However, Greenberg does not explain why these two types of generics show this difference. This paper will attempt to show that the difference is related to how singular indefinite NPs and bare plural NPs obtain genericity and to the manner in which vagueness arises in connection with the two types of generics.

2.2 Vagueness in Greenberg

Vagueness in Greenberg's analysis is assumed to be a contextual underspecification and can be resolved by using various possible 'precisifications' in terms of Kamp (1975) and Fine (1975). 'Precisification' is a process of supplying contextually appropriate specific properties to a predicate, thereby making the meaning precise. Also following Kadmon and Landman (1993), Greenberg uses the following constraint:

(7) The abnormality constraint on K&L's domain-vague restriction:
Any set of properties v in V is such that $|\cap v \cap P$ in c$|$ is not significantly smaller than $|\cap v_0 \cap P$ in c$|$.
(Greenberg 2007: 153)

v is a precise specification of a given generic NP in our discussion, and P is the basic properties of the subject NP and v_0 is a contextually supplied relevant specification of the NP in the utterance context c. V is a set of precisifications on v_0. It is a set of sets of properties and each of the set is consistent and contains properties compatible with the CN property only. What (7) says is that the number of P individuals who have the properties in any of the precisely determined specifications is not significantly smaller in the context c than the number of contextually relevant P individuals as a whole. Thus v should include properties that are most common for P to the effect that there should be a small number of exceptional individuals among the contextually relevant individuals. This restriction dictates that the number of exceptional objects be small. Let us exemplify this by (8).

(8) (Context: talking about professors in this university) Professors wear a tie.
(9) $\forall w'[w' \ R_{max} \ w_0 \rightarrow \forall x \ \text{professor}^{X^{professor}}(x, w') \rightarrow \text{wear-a-tie}(x, w')]$
(10) Abnormality constraint on $X^{professor}$: $|\cap v \cap$ professor' in c$|$ is not significantly smaller than $|$ in-this-university' $\cap$ professor' in c$|$.

The contextual specification in v_0 for (9) (i.e., for $X^{professor}$) is 'in this university'. What (10) says is that no matter which properties we assign to each precisification

v in V on $X^{professor}$ and no matter which precisification v we look at, the result of intersecting these properties with those of [professor] will yield a set which is not significantly smaller than the set of [professors in this university]. So v cannot include exceptional properties, like 'refusing to obey dress codes'. Otherwise, the intersection ｜∩v ∩ professor' in c｜ could never yield the majority of individuals. This means that such abnormal individuals are excluded from the domain and are not quantified over. This restriction applies to descriptive BP generics and Greenberg says the abnormality constraint in (7) correctly captures the way in which exceptions to descriptive generics are tolerated. (Greenberg 2007: 156).

This may be one possible way of excluding exceptional individuals. However, this restriction is an ad hoc stipulation about how large the number of exceptions can be. In other words, the constraint in (7) simply forces the majority of relevant individuals to satisfy the VP property, and there are problems with such an approach since not all generics involve the majority of individuals. Consider (11)

(11) a. Frenchmen eat horse meat. (=1b)
b. Dutchmen are good sailors. (=1c)

Probably far less than the majority of the French and Dutch people would be horse meat eaters and good sailors, respectively, but these are felicitous generic sentences. These generic sentences seem to violate the restriction in (7) and they are acceptable.

2.3 Blocking properties and vagueness

Now, in order to devise a frame for the exceptional cases of BP generics we turn to how Greenberg deals with the easier case, IS generics. In this section we review how the exceptions of IS generics are dealt with. Unlike BP generics, IS generics have an additional component, which is called an in-virtue-of property. As the constraint in (7) concerns solely with BP generics, there needs to be a constraint for IS generics.

Greenberg's basic idea is to introduce the notion *blocking property*. Intuitively, blocking properties are such properties that prohibit generic NPs from having a normal property. For example, for *A bird lays eggs*, we can think of 'undergoing a

genetic mutation' as a blocking property since it can block the objects of [birds] from having the normal property [lay eggs]. This kind of idea is formalized by Greenberg (2007), as in (12)

(12) The relevant abnormality constraint on the domain-vague restriction $<v_0, V>$:
a. $\forall v \in V \rightarrow v_0 \subset v$,
b. (i) If $b \in \cap \mathbf{B}_{<<S, Q>, w>}$ then $b^{-} \in \cap V$.
(ii) If $b \notin \cap \mathbf{B}_{<<S, Q>, w>}$ then $b^{-} \notin \cup V$.
(iii) If $b \in \cup \mathbf{B}_{<<S, Q>, w>} \wedge b \notin \cap \mathbf{B}_{<<S, Q>, w>}$ then $b^{-} \in \cup V \wedge b^{-} \notin \cap V$
(Greenberg 2007: 158)

B is a set of blocking properties as has been sketched above. (12a) is a requirement that every precisification in the restriction be a superset of v_0 —the set of contextually supplied properties. Thus, v is more fully specified than v_0. The definition in (15bi) says that complements of the definitely blocking properties are in every precisification of the generic NP. Let us take (2b) *A dog has four legs* for illustration. This definition guarantees that if some properties like [having mutations] or [undergoing an accident] are blocking properties, then their complementary property should appear in every precisification of the subject NP. So [not having mutations] or [not undergoing an accident] should appear in every precisification, excluding from the domain those dogs that have mutations or have undergone an accident. This specification results in a quantification over all dogs that do not have those exceptional properties; those with the exceptional properties will be considered legitimate exceptions.

The definition (12bii) says that if a certain property is not a blocking property, then their complements are present in no sets of properties in the restriction. So, for example, if [being infertile] or [having vocal problems] is not blocking properties for dogs to have four legs, then their complements, i.e. [being fertile] or [not having vocal problems] is not included in any of the precisifications. So (in)fertile dogs or dogs with (no) vocal problems are **not** excluded from the quantification domain and are not considered legitimate exceptions to *A dog has four legs*.[2]

(12biii) deals with borderline cases. (12biii) says that if a certain property

functions as a blocking property for some but not all individuals, its complementary property should be specified in some precisifications of the generic NP. Consider a property like [living in an area with many traps], for instance. If it is a borderline property, then its complementary property [not living in an area with many traps] will be present in some but not all precisifications. This move will allow some dogs not living in dangerous areas to be included in the quantification domain, and this will leave the question open as to what portion of the dogs living in dangerous areas are included in the domain of quantification. Greenberg thinks that this indeterminacy gives rise to vagueness in determining the quantification domain of generic NPs. The problem, however, is that it is not clear whether a borderline blocking property can count as a blocking property in the same way that the clearer case like (12bi) does. This is because what (12biii) requires about the domain restriction is that some dogs not living in the dangerous area and (unspecified) other dogs be in the quantification domain. It does not say anything about the ones living in the dangerous area. In other words, as stated in (12biii), the blocking property of [living in a dangerous area] does not seem to exhibit any degree of blocking effect on the ones living in a dangerous area.

3. Vagueness in generic sentences

In this section we will restrict our discussion to BP generics since vagueness may be more problematic with BP generics as Greenberg implied in her hypothesis shown in (6). This section will present two types of vagueness in generics. The first type of vagueness comes from the idiosyncratic nature of individual properties; the other type seems to derive from the limited aspect of our knowledge about the world. Let us consider these two one after the other.

3.1 Idiosyncrasies of individuals

Let us consider (8) again, as shown in (13).

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2 Since [being infertile] as well as [being fertile] seems to be a non-blocking property with respect to [have four legs], the both properties will be absent from the precisifications of the generic NP, according to (12bii).

(13) Professors wear a tie. (=8)

What kind of professors are to be excluded from the domain of [professors] in (13)? There seem to be three kinds in my view. First, as Greenberg suggests, there are irrelevant members. For instance, professors from other universities are irrelevant. Secondly, according to Greenberg's terminology, female professors will be *legitimate exceptions* since they are not usually required to wear a tie. This group will be considered legitimately exceptional individuals. Professors taking a shower would be considered irrelevant, so those professors are excluded from the set to be quantified over. In fact, there are many other situations where professors of this university are allowed to do without a tie, like having supper at home, sleeping in bed, and so on. These may be dubbed as informal situations where informal attires are considered acceptable.

Now imagine a situation where some professors are very liberal or simply negligent or forgetful of the dress code and are unwilling to follow the rules of the university. In this case it is hard to predict clearly what portion of the professors have such characteristics. Even if someone is found to be disobedient, it may be difficult to predict whether or not he will actually wear a tie in a formal setting. It is just up to the individual's whim. Then it is difficult to include or exclude those individuals from the set to be quantified over. This seems to be the case of purely idiosyncratic exceptions that no one can predict how many of those types of people will be excluded from the domain of quantification[3].

3.2 Vagueness in knowledge-based approach

Let us consider (14).

(14) Frenchmen eat horse meat.

(14) also seems to create another vagueness issue. What portion of the French population should eat horse meat for the sentence (14) to be felicitous? According to

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[3] We will not deal with this type of vagueness in this paper although we can include it in the definition of blocking so that individual idiosyncratic properties can restrict the domain of quantification to a minor degree.

a survey, in the recent years less than 20% of the French people have ever eaten horse meat[4]. If this is true, then how can 80% of the population be excluded from the quantification domain? Is there a plausible way of making the large portion of individuals as legitimate exceptions to (14)? There seems to be no clear blocking property candidates that we can count on. In other words, it is difficult to apply the frame in (12) to the analysis of (14). This kind of vagueness seems to pose a real problem to the interpretation of generic sentences, and Greenberg's constraint in (12) may not be able to address this issue. This is because Greenberg thinks that (14) is a descriptive generalization that is obtained as a result of observation. This seems to deprive us of means to relating any blocking properties to the stated VP properties[5].

3.2.1 Generics as knowledge-based generalizations

This paper assumes that (14) is a knowledge-based generalization as proposed in Kim (2008) and that the vagueness in (14) can be accounted for in principle by looking at clues or evidence supporting (14) and by considering factors functioning against (or blocking) the generalization in (14). How do we know and conclude that French people eat horse meat? Ordinary people make an inference from various clues. Let me quote Kim (2008) in this regard.

> If we know that there are butcher shops or even some supermarkets in France that sell horse meat, this kind of information or fact will allow us to infer that Frenchmen eat horse meat. There could be, of course, other clues such as the existence of restaurants specializing in horse meat cuisines, instances of old law prohibiting horse meat consumption among common people, and so on. (Kim 2008: 279)

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4 According to the internet edition of the Kyunghyang Shinmun (March 5, 2013), only 17% of the French people were reported to have ever tasted horse meat and the horse meat consumed in that year accounted for only 0.4% of the total meat consumption. (http://news.khan.co.kr/kh_news/khan_ art_view.html?artid=201303 051643581&code=970205)

5 The notion BP generics as conceived by Greenberg seems to leave nothing for us to lean on because BP generics are observation-based generalization and she only looks at an 'enough' quantity of cases, not quality. Since she does not look into the qualities of individuals or groups, she may not be able to talk about the 'properties' of the individuals or groups concerned.

This approach to generics may be called a knowledge-based one in the sense that generic sentences are seen as generalizations or results of inferences that come from an attempt to achieve knowledge-level coherence. This position contrasts with Greenberg's which maintains that BP generics are descriptive generalizations. Consider the following statement by Greenberg that BP generics are descriptive statements made on the basis of observation.

> 'Boys don't cry', for example, is ambiguous. It can express both an in-virtue-of generalization just like its IS counterpart 'A boy does not cry' (asserting that 'every (relevant and normal) boy does not cry' holds in all worlds where 'every boy is tough' holds), and also a **descriptive generalization,** which is especially appropriate as a **conclusion of some inductive inference**. **Think about someone watching the behavior of enough boys in various 'tear-inducing' situations.** This speaker may use this sentence to assert that not crying is not accidental of boys, ... (Greenberg 2007: 145, emphasis is mine)

The questions yet to be answered are how many boys are enough and how many situations are enough to produce such a generalization. However, these questions are never answered nor mentioned. Futhermore, assuming there are similarities between BP generics and habitual sentences, she states as follows:

> Like BP generics these habituals are potentially ambiguous between in-virtue-of and descriptive generics. 'Mary walks to school', for example, can make a descriptive generalization, **based on watching Mary for a couple of mornings**, and merely asserting that her walking to school in every relevant and normal situation is not accidental, **without having in mind (or even knowing) the in-virtue-of factor.** (Greenberg 2007: 148, emphasis is mine)

One of the crucial points is whether or not one can describe someone else's behavior as non-accidental based on watching for 'a couple of mornings'. If Mary was found walking to school for a week for reasons known later that bus drivers were on strike leaving her no other options, you would not be justified in concluding

that she walks to school. No matter how frequently you see Mary walk to school, there is always a possibility that she just happens to walk to school on a temporary basis.

Then what evidence or clue do we need in order to be able to say Mary walks to school? It may not be easy for strangers or Mary's mere friends to arrive at such a conclusion. Mary and maybe her close friends or her close family members could say anything about her habit. Mary will definitely know what she has as a habit regarding how to get to school. Her close friends and family members may well find out about her habits through exchanging information about her habits. Then if I state that Mary walks to school, then my utterance will be based on what I heard directly or indirectly from those people or based on other clues. This means that my statement is based on the knowledge borrowed or provided to me through some information exchange chain[6]. If there is no such knowledge shared through a certain knowledge exchange chain, all we can say would be as follows:

(15) (dialogue between May's classmates)
A: Does Mary walk to school?
B: I know that she walks to school quite often, but I'm not sure.

As has been mentioned, it is difficult or impossible for a linguist or an ordinary person to watch enough people to make a descriptive generalization in (14).

There are many other cases where merely watching people or finding scenes of certain actions or states does not guarantee the non-accidentalness of those actions or states. Consider the data in (16).

(16) a. John owns a Ford.
b. Mary loves John.
c. Farmers hates racoons.

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6 Donnellan (1972) and Kripke (1980) argue that names are socially inherited or borrowed in a causal chain as a social knowledge once reference is fixed in a certain situation. Naming a person can be a personal matter but names can be part of social knowledge through this kind of causal chain. How wide the name is spread through the causal chain depends on the fate of the name bearer, i.e., how great impact he or she can make on the society. Likewise anyone establishing a habit can be a personal matter since it involves making up one's mind, and such a habit or any knowledge of it can be transmitted or borrowed in a causal chain as shared social knowledge.

The examples in (16) contain individual level predicates, and for (16a) we may not be able to identify the ownership simply by observing enough scenes where John and the car in question are located at the same scene. To see if John owns (not *lease*) a car, we may have to visit the Motor Vehicles Bureau which has the ownership record of cars. So (16a) can be stated by someone who checked with the bureau, or by someone else who got this information through a causal chain of knowledge. Likewise we cannot make the statements in (16b) and (16c) simply by watching enough of Mary and John, and many instances of farmers and racoons, respectively.

3.2 Knowledge-based generalizations and exceptions

In this section we discuss various cases of exceptions in generic sentences and suggest solutions in an intuitive sense, and it will be discussed more formally in Section 4. For this purpose I will categorize BP generics into four groups and limit my discussion to those categories. I will attribute to each group some characteristics that will be further utilized for setting up a constraint to account for related exceptions.

As is pointed out by Kim (2008) and by other authors[7], there are a group of generics that do not allow exceptions. It has to do with 'rule-governed concepts' which 'specify the features and relations that define membership in the class on an all-or-nothing basis' (Bourne 1970). Consider (17).

(17) a. Dogs are mammals.
b. Triangles have three sides.
c. #Prime numbers are odd.

(17a) is based on zoological taxonomy, a scientific concept, and it allows no exceptions; (17b) contains geometrical terms and it has no exceptions; (17c) involves a mathematical concept and does not allow even a single exception.

There are also other types of generics which allow exceptions as shown in (18).

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7 See Krifka et al. (1995), Carlson (1995) and Cohen (1999, 2001, 2004) for various types of generic sentences and related views.

(18) a. Dogs have four legs.
b. Birds lay eggs.

This type of generic sentence is 'characterizing' in the sense that the objects in the categories ⟦ dog ⟧ and ⟦ bird ⟧ are depicted as having some distinguishing properties as compared to other kinds. In these generics, irrelevant members are easily defined and excluded. As will be proposed in Section 4, the exception problem can be accounted for by adopting the constraint similar to the one proposed by Greenberg.

The third type of generic sentence is shown in (19).

(19) Frenchmen eat horse meat. (=1d)

These generics allows a lot of exceptions, which Greenberg (2007) may not account for[8]. This is problematic because only a small portion of the population will eat horse meat. In this category, we think, the exceptional majority may be excluded by situational factors. For instance, the shortage or lack of horse meat supply in general would limit the chance of eating the meat. The existence of cheaper and better tasting meat, like beef or mutton, will discourage horse meat consumption since people are very sensitive to what they eat and what they taste. Nonetheless, what (19) implies is that if French people are put into a situation where horse meat is served, they would not refuse to eat it. So the unusual size of the exceptional individuals in (19) can be accounted for by the fact that the majority of French people would have no chance to eat horse meat due to various blocking factors.

The fourth type of generics is shown in (20)

(20) a. Ships sink; planes crash.
b. Dutchmen are good sailors. (11b)

This type is very peculiar in that only exceptional individuals among many satisfy the property denoted by the VP in the sentence. Intuitively (20a) says ships

8 Greenberg admits that her abnormality constraint in (10) cannot account for the fact that BP generics like (14) can be true even if only a minority of members of the subject set have the VP property. See her footnote 13. (Greenberg 2007: 154)

and planes arrive at a final stage of their life in a certain fashion in a doomed situation. (20b), on the other hand, seems to say that among sailors of many nationalities, Dutch sailors are better than others. What they seem to have in common is that the individuals or situations are restricted in a certain way, and those individuals under such restricted conditions satisfy the VP property. There is a difference between (20a) and (20b), though. It seems that the interpretation of (20a) should be restricted to those individuals in 'doomed' situations whereas (20b) has to restrict the individuals to a certain good sailors among the Dutch population[9].

3.3 Legitimate exceptions and domain restriction

Before a formal treatment is given, some definitions are provided in an intuitive way for the semantic or pragmatic notions that affect the quantification domain and the resulting truth conditions of generic expressions. This paper will employ the term *blocker* that will substitute Greenberg's *blocking property* in order to expand the idea of the blocking property. *Blockers* will include not only blocking properties suggested by Greenberg, but will also take care of (con)textual information, presupposition and other background knowledge.

To get an intuitive idea, consider (8) again, as shown in (21).

(21) (There are professors and students in this university)
Professors wear a tie.

Let us check how the generic NP ⟦ professors ⟧ is restricted in order to exclude irrelevant or exceptional individuals from the domain. First, I will look at professors as a class and look into its subclasses. Thus female professors will be seen as an irrelevant subclass since they are not usually supposed to wear a tie. Professors from other universities will be classified into this category and will be excluded as irrelevant. I will call it a *subclass blocker* wherever the blocking capacity comes from.

The second type of blocker will account for situations where some subset of individuals of the NP domain are located. For instance, some situations are excluded

9 A few more examples can be given: *Trains collide or derail, Cars collide, Bridges collapse* for (20a), and *Korean women are good golfers*, *Bulgarians are good weight lifters* for (20b).

as legitimate exceptions. For instance, professors are not expected to wear a tie when they jog, take a shower or eat supper at home. I will call the second type a *situational blocker*. These two types of blockers allow some of its class members to be legitimate exceptions in certain situations[10]. This paper puts forth the following definition shown in (22).

(22) Subtypes of Blockers
  i) *subclass blockers* containing subclass specification exclude a subset of the class members as irrelevant.
  (e.g., female professors, professors from other universities)
  ii) *situation blockers* involving irrelevant situations exclude the subset of class members in certain situations as legitimate exceptions. (e.g., professors in a shower)

4. Blockers and vagueness

In this section, we will revise Greenberg's constraint so that it can accomodate the discussions presented in the preceeding sections. Let us look more closely at Greenberg's definition of blocking properties.

(23) B $\in$ $\mathbf{B}_{\langle\langle S,\ Q\rangle,\ w\rangle}$ iff B is taken to be a property which, from the point of view of w, 'blocks' the reasonable causation relation between S (in-virtue-of property) and Q (the VP property). (Greenberg 2007:156)

The definition in (23) is to impose a restriction on the domain of the generic NP. What Greenberg attempts to do is to restrict the domain of quantification. What we attempt to do in this paper is to limit situations using blockers in addition, as shown in (24). My approach will divide the generic sentences into three categories. One is

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[10] In the first version of this paper, a third type of blocker was postulated in order to account for some idiosyncratic properties that some individual can have, as mentioned in section 3.1. As it turns out, it can be subsumed under *subclass blockers* since this *blocker* would contain the same type of individual properties after all. Theoretically, under this revision, a subclass blocker can contain not only 'normal' subclass members like female professors but a small number of peculiar ones.

a pseudo-universal generic type; the second is the minimal type; the third type is an intermediate type. Dogs *have four legs* is an example of the first type. *Planes crash; ships sink* is an instance of the minimal type. *French people meat horse meat* exemplifies an intermediate type.

In the pseudo-universal generics, the individual objects denoted by the subject NP will be expected to satisfy the VP property unless there is a blocking property involved with them. In other words, when there is a set of individuals defined as free of blockers, then all the relevant individuals will satisfy the VP property.

In the case of the second type, a small set of individuals are driven into a certain (inescapable) situation, and all the individuals in that situation are expected to satisfy the VP property. In the case of the intermediate type there are many individual and situational blockers with a different level of blocking strength that are possibly accessible only to the speakers, and the speaker predicts that all the individuals who can resist those in the situation can satisfy the VP properties. So in this case vagueness can arise since various blockers may not be accessible equally to the speaker and the hearer. Furthermore such blockers can only limit the domain in a vague manner since no one can actually calculate the strength level or the impact of each blockers on the size of domain. For instance, a shortage of horse meat supply can be a blocker[11] for (19) but it is hard to determine its exact impact on the behavior of the potential horse meat eaters. We can say this situation introduces vagueness of generics since the domain of quantification cannot be precisely restricted.

As is mentioned regarding the categorization in (22), blockers can be defined in two sub-types. Thus, we include situational factors in the definition in order to account for wider range of generics. Then (23) could be revised as follows.

(24) Definition of Blockers

i) $B_i \in \mathbf{B}_{\ll R,\ Q\gg,\ S>}$ iff B_i is taken to be a property of an individual object which, in a set of situation S accessible to the speaker, 'blocks' the reasonable causation relation between R and Q (the VP property).

ii) $B_s \in \mathbf{B}_{\ll \mathbf{X}^{Ps},\ Q\gg,\ S>}$ iff B_s is taken to be a property of a situation

[11] This type of blocker cannot be attributed to the property of an individual and the need for situational blockers arises independently.

which, in the set of situations accessible to the speaker, is expected to 'block' the occurrence of $s_q \in S^Q$
($\mathbf{X}^{Ps}$: variable over properties of situations, S^Q : set of situations supported by Q).

(24i) is to capture the usual intuition that some of the properties of individual objects are blockers when they blocks causal relations between R (evidence or in-virtue-of properties) and Q (the VP property). (24ii) says that in the absence of R, some situations are expected to block the occurrence of some other situation with which Q is compatible .

We will examine how these definitions handle the three types of generics.

Let us consider the first type, for instance, *birds lay eggs*. Suppose there is an in-virtue-of property: [have a egg-laying genetic makeup]. Then the individual blockers would be [having mutation], [being male], [lacking an ovulation function][12], for instance. In addition, there are situation blockers, like [living continually in an extremely polluted environment]. Let assume for convenience that these are all the (possible) blockers for laying eggs. Given this, all the birds which are free of these individual or situational blockers will satisfy the VP property. This is captured by the clause (25a) below; (25a) says that if a certain individual does not have any (individual or situation) blocking properties (i.e., b^-_i or b^-_s), and it will satisfy the VP property in every case. (25bi) says that if there arises a (doomed) situation s_{nd}, all the individuals in that situation are forced to do a certain action. If ships are caught in a big Hurricane, they will sink. (25bii) says that if there arise a certain situation where individuals show some degree of performance as specified in VP, they perform better than other individuals in a certain situation. This paper attempts to capture this idea as formally defined in (25).

(25) For 'not-rule-governed' types of generics[13] where $B \neq \varnothing$,
the domain is restricted as follows[14].

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12 [being male] could be a subclass blocker since only females as a subtype of birds are egg layers and [having a mutation] could be a subclass blocker and it will theoretically exclude a subclass of birds from quantification.

13 Rule-governed generics, on the other hand, can be said to have no blocking properties.

14 In this definition, we will use properties and one-place predicates interchangeably. So the properties like b^-_i and b^-_s can be used as a one-place predicate in this paper. Furthermore, although

a. If generic sentences are of a pseudo-universal type,
the following restriction holds:
$\forall s \forall x \forall b_i \forall b_s\ [\bar{b}_i(x) \wedge \bar{b}_s(s)] \rightarrow P(x, s)]$

b. If generic sentences are of the second type (minimal type),
the following restriction holds:
i) $\exists s_{nd} \forall x[v_c(x, s_{nd}) \rightarrow P(x, s_{nd})]$ for non-degree predicates.
ii) $\exists s_d \forall x \forall y[v_c(x, s_d) \wedge v_c'(y, s_d) \rightarrow P^{comparative}(x, y, s_d)]$ (for degree predicates)
where the following conditions hold[15].
(i) $\exists s \forall x \forall b\ [v_c(x, s) \wedge \bar{b}(x, s) \rightarrow P(x, s)]$
(ii) $\exists s' \forall y \forall b\ [v_c'(y, s') \wedge \bar{b}(y, s') \rightarrow P(y, s')]$
(iii) $\forall s \forall s'[\ v_0 \neq v_0'$ in s or s']

c. If generic sentences are of the third type (intermediate type),
$\exists s \exists x \forall b_i \forall b_s\ [[b_i(x) \vee b_s(s) \rightarrow \sim P(x, s)\ ] \vee \exists x'\ [b_i(x') \wedge b_s(s)] \rightarrow P(x', s)]]$

(25c) says that there are blocking properties, individual or situational, that affect some individual in some situation, and that there are some other situations that all other individuals free of blocking properties can satisfy the VP property. Let me elaborate this with *Frenchmen eat horse meat*. There will be many factors that block French people from eating horse meat, e.g., being a vegetarian, short supply of horse meat, lack of restaurant that sells horse meat cuisine, the price level of the meat, etc. In this situation, some individuals are reluctant to eat, some cannot have an access to, some cannot afford to eat the meat. In contrast, in the same situation, there can be some other individuals who they are fortunate enough to overcome all of the blockers and can enjoy the meat. As we can see, there may be many blockers that may not be accessible to some speakers. This difference in the behavior of blockers for different individuals and different speakers can lead to a different interpretation

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v is a set of properties like {airplane', new', carry-passenger'} for instance, its mutant v_c is a new category derived from v and used as a compound one-place predicate having the same type of denotation like that of the lambda expression λx[(airplane'(x) & new'(x) & carry-passengers'(x)].

15 The three sub-clauses intend to specify that x and y are good performers in their own categories.

in terms of the size of the individuals in the quantification domain that satisfy the VP property. So this can also result in vagueness when interpreting BP generic sentences.

5. Conclusions

Greenberg attempted to show that vagueness of generics can be accounted for by precisification of the semantics of generic NPs. This simplistic approach, this paper claims, cannot cope successfully with various kinds of generic sentences and their exceptions. This paper has pointed out that there can be indeterminacy as to what is and what is not considered a blocking property to interpreters. This can mean that some people have an access to certain blocking properties and others do not. This may be due to the fact that different people have different background knowledge about different objects and different situations. In addition, as has been pointed out with regard to the horse meat case, some situational properties can be a blocker for some people but not for others. Thus, even the well-defined blocking properties that are unambiguously accessible to the speakers can be vague in the actual interpretation. This point involving vagueness is the new claim of this paper and different from Greenberg's position, and it is based on my previous claim that BP generics encode knowledge-based generalizations.

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