

**Tolerating exceptions with „descriptive“ and „in virtue of“ generics:
two types of modality and reduced vagueness**

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Problem and Goal: Generics with indefinite singular subjects (IS sentences, like *A dog has four legs*), and those with bare plural subjects, under their descriptive reading (descriptive BP sentence, like *Tall carpenters drink only water on Tuesdays*) tolerate exceptional and irrelevant entities (individuals and situations) in the same basic way, but differ w.r.t. the degree to which the properties which legitimize the exceptional entities can be specified in advance. The full range of similarities and differences between the two types of generics in this respect cannot be accounted for by any exceptions-tolerance mechanism that has been suggested in the literature. This paper develops an improved exceptions-tolerance mechanism for dealing with the full range of facts, which integrates insights from Greenberg's 2002 work on the different modalities of IS and descriptive BP generics, and from Kadmon & Landman's 1993 characterization of the generic operator as a domain vague quantifier.

Background assumptions: Although minimally contrasting IS and BP sentences in English (e.g. *A dog has four legs* and *Dogs have four legs*) sound almost synonymous and share several important semantic properties, there are reports about a number of semantic, pragmatic and distributional differences between them (in e.g. Lawler 1973, Cohen 2001, Greenberg 1998, 2002). In particular, IS sentences (like *A table has four legs* sound more "analytic / definitional" than their minimally contrasting BP counterparts (e.g. *Tables have four legs*), which sound more "descriptive / inductive". Moreover, the distribution of generically interpreted IS sentences is significantly more restricted than that of the minimally contrasting BP ones (as in e.g. Lawler's example *#A madrigal is popular* / *Madrigals are popular*). Greenberg 2002 such sentences can express two types of nonaccidental generalizations. IS ones can only express „in virtue of“ generalizations, asserting, very roughly, that the generalization is nonaccidentally true in virtue of some property (e.g. having a four legged genetic makeup), which given the shared real world knowledge is associated with the subject property (being a dog). On the other hand BP sentences are ambiguous and can express both „in virtue of“ and „descriptive“ generalizations, where in the latter case they merely assert that the generalization is nonaccidentally true without specifying, or even knowing, the factor in virtue of this is true.). Unlike most theories, which assign IS and BP sentences an equivalent representation, and several more recent theories, which assign them two completely different representations, in Greenberg 2002 the two types of sentences are assigned a basically uniform - quantificational, modalized - semantic structure, capturing the similarities between them, but the accessibility relation restricting the modalized quantifier are different. That of IS generics is systematically restricted by real world knowledge presuppositions about the subject and VP properties (following Brennan's 1993 work on root modals), whereas that of descriptive BPs has no such limitations, and is defined, following Lewis's 1973 notion of maximal similarity, as inherently vague. Although both IS and BP sentences are instances of sentential I-genericity, the compatibility with different accessibility relations is proposed to be derived from the kind / property denoting interpretation of BP and IS noun phrases in them, respectively.

The basic similarities w.r.t. exceptional and irrelevant entities Both IS and descriptive BP sentences tolerate four types of entities: exceptional and contextually irrelevant individuals¹, and (when the VP is stage-level) – also exceptional and contextually irrelevant situations. Examples for these are given in (2), for the IS sentence in (1):

(1) (*Context: Talking about this school*) – *A first grader finishes school at 13.00*

(2) **Irrelevant individuals** : *John, a first grader from another school.* / **Exceptional individuals** : *Bill, a first grader in this school, who finishes school at 12.30 (since he participates in a program for gifted kids which starts at this hour).* / **Irrelevant situations** : *A nonschool day (e.g. Saturday)* / **Exceptional situation** - *a school day which is extremely cold and stormy.*

In addition, both (epistemic) IS and descriptive BP generics make predictions into actual relevant and nonexceptional entities, and with both type of generics bringing irrelevant - but exceptional - not entities as counterexamples to the generalization is considered a misunderstanding on the side of the listener (or as a serious failure in accommodation).

Previous approaches I review several suggestions to deal with the exceptions problem, e.g. Krifka 1995, Asher & Morroeau 1995, and especially Kadmon & Landman's 1993 (K&L, henceforth) suggestion that the set of properties restricting the generic quantifier (which they take to be a nominal GQ) is a vague set. K&L's main intuition is that uttering generics like *An owl hunts mice* „is just like saying "every (possible) owl with the right properties hunts mice", while, crucially not committing yourself to what the right properties are“ (408). Formally, K&L take the restricting set of properties to be a pair $\langle v_0, V \rangle$, where v_0 , the precise part, is the set of properties supplied directly by the context, whereas V is a set of precisifications of v_0 , i.e. a set of properties which "represents all the different ways of making the restriction completely precise, which are compatible with what is already known about the restriction in the context" (411).

Advantages and shortcomings of Kadmon & Landman's suggestion I show that after adopting K&L's suggestion to a semantic structure with a sentential generic quantifier, it has several important advantages over other approaches to the exceptions problem. It captures in the best way the facts mentioned above, and moreover allows a novel explanation of both the similarities and differences between classic generics (e.g. *Dogs have four legs*) and universal statements on their accidental and nonaccidental reading (e.g. Carlson's 1989 ambiguous example *Every friend of John's votes for Socialists*).

Despite these advantages, however, K&L's characterization of the domain vague restriction makes it, in fact, too vague. I.e. it predicts that „anything goes“ in the restricting set of properties, so there is nothing we can tell about which properties legitimize an exception to a generic sentence and which do not. This prediction is not borne out, since there are several types of systematic limitations on the characterization of legitimate exceptions, made in every context. Two rather minor limitations are that no property v in v_0 or in any precisification in V can contain the VP property itself, or its negation. If this limitation is not imposed then we allow a possibility where in some context a listener may take the set of properties restricting Gen in e.g. *A dog has four legs* or *Dog have four legs* to contain the properties "has four legs" or "does not have four legs", thus wrongly leading to the trivial truth or trivial falsehood of such sentences.

While these two restrictions hold equally of IS and BP sentences, and can be easily derived from general conversational maxims of informativeness, there are two further systematic restrictions on the set of properties restricting Gen, which are affected by the specific type of nonaccidentalness, i.e. modality, expressed by the two types of Generic. First, as many researchers (e.g. Krifka et al 1995, Condoravdi 1997, Eckardt 1999) note, the exceptions to generic sentences are considered legitimate (i.e. not falsifying the generic statement) to the extent they are considered „abnormal“, i.e. exceptional in some other sense besides not having the VP property. K&L's theory doesn't capture this since it doesn't impose any limitations on the properties in the vague set V . In

¹ This is contra to claims (by e.g. Dahl 1975, Krikfa et al 1995 and Condoravdi 1997), that unlike quantified statements, generics cannot be contextually restricted.

considering (3a), for example, it wrongly predicts that books with the properties in (3b) (normal properties, that most books have) may be considered legitimate exceptions to (3a), just like books with „abnormal“ properties, as in (3c), i.e. it may wrongly predict (3a) to be true although only a minority of the subject set will have the VP property :

(3) *a. Brown covered books contain an odd number of typos*

b. containing more than 4 pages, containing less than 3000 pages, printed on paper...

c. Being less than 4 pages long, being exactly 257 pages long, printed on silk...

The final type of systematic limitations on properties legitimize exceptions, those existing with IS sentences, are even stricter. Merely having an „abnormal“ property is not enough to legitimate an exception, e.g. although the properties in both (4b) and (4c) are considered „abnormal“ properties of sparrows, we take only the ones in (4b) to legitimize exceptions to (4a):

(4) *a. A sparrow has four toes in each leg*

b. being caught by a cat, undergoing a mutation, participating in some cruel medical experiment...

c. having a problem in the vocal cords, reading papers in Semantics, having three names...

Solution and implications – To account for these two further restrictions I suggest to continue using a Kadmon & Landman’s style domain vague restriction, but add two different explicit limitations on the properties in the vague set V, one for descriptive BP sentences and one for IS sentences. Each limitation creates a different type of reduced domain vagueness of the generic quantifier. Crucially, the difference between these two types of reduced vagueness is systematically influenced by the independently motivated difference in modality between IS and descriptive BP sentences, argued for in Greeneberg (2002), i.e. from the difference between the vague, „maximal similarity“ style accessibility relation with descriptive BP sentences, vs. the more specified accessibility relation, keyed to an „in virtue of“ property, with IS one. In descriptive BP sentences, the intuition is that in any context c the only requirement on the properties legitimizing the exceptional is they are not „normal“. In contrast, in any context c, the exceptions to IS sentences like (4a) are only those with properties which, given our real world knowledge, are taken in that context c, to block the normal causation relation between the „in virtue of“ property associated with the subject property, and the VP property (e.g. block the „natural outcome of „having a genetic makeup for four toes“). Thus, with descriptive BP sentences we merely require that in any context, the number of individuals who have the properties in any of the precisifications in $v-v_0$ in V is not significantly smaller than the number of relevant individuals quantified over. In contrast, with IS sentences we require that each property in any set of precisification $v-v_0$ in V is a member of the complement set of properties which in the world of evaluation are taken to block the normal causation relation between the „in virtue of“ and the VP properties.

I discuss the degrees and sources of the two types of reduced vagueness with the two types of generics, and compare them to the degree and source of reduced vagueness of free choice *any*, under K&L’s analysis, and the modifiability of all these elements by e.g. *almost*. I compare my analysis with that of Eckardt’s 1999 suggestion to solve the exceptions puzzle by positing a "normal" restriction on the subject (and possibly object) set of individuals. Although "normal" is a vague adjective I claim that the present development of K&L’s analysis does a better job in capturing the vagueness of generics (among other things since in Eckardt’s use "normal" is a vague first order modifier, whereas in the present theory the restriction can be defined in terms of second order modification. Time permitting I will comment on the implications for formalizing distinctions in natural language vagueness in general (such as vague restrictions on quantifier vs. modification by vague adjectives, first and second order vagueness, vagueness of first or second order predicates, degrees of vagueness, etc.).

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