

**EVIDENTIAL COERCION:  
USING INDIVIDUAL-LEVEL PREDICATES IN STAGE-LEVEL  
ENVIRONMENTS**

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Scholars frequently appeal to coercion in their analyses of the distinction between individual- and stage-level predicates (ILPs and SLPs) and yet they rarely follow up on the consequences of this claim. This article identifies the kinds of changes in interpretation that can arise when an ILP appears in a position that needs a SLP. Evidential Coercion derives a SLP from an ILP and yields, in the terms of Kratzer 1988 a predicate that denotes a function from spatiotemporal locations to individuals such that the individual displays behavioral evidence of having the property denoted by the ILP at the location. The analysis is formalized within the frameworks of Carlson 1977 and Kratzer 1988.

**1. Introduction\***

I take it to be a common assumption of semantics and pragmatics that hearers are very resourceful in their efforts to interpret whatever is said to them when they assume someone is trying to communicate with them. So, when there is a violation of one of the rules of grammar, hearers try to make what sense they can of the utterance they perceive. When possible, a minor adjustment will be made in the interpretation of the offending portion of the utterance to bring it in line with the requirements of the grammar. This kind of coercion allows some sense to be made of what was said. When the violation is serious, the hearer is also led to wonder why the speaker chose to violate the rule, and this may lead to an inference that the speaker intends to be humorous or poetic. The less obvious the violation, or the more frequent it is that a particular sort of violation occurs, the more likely it is that an adjustment in interpretation will be made without the hearer noticing.

In general, linguists appeal to coercion when there is reason for believing in a fundamental semantic classification of some sort, but where some wiggle room is possible. Placing a constituent of one class in the syntactic or semantic environment best suited to a member of another class may result in an altered interpretation for the constituent — one that is more like the interpretation typical for a member of the other class — rather than outright ungrammaticality. Coercion is frequently employed in analyses of Aktionsarten, although it is sometimes appealed to for other kinds of cases (see, for example, Hobbs 1999 and Pustejovsky 1995). Moens & Steedman 1988 and de Swart 1998 examine coercion of Aktionsarten in detail (and see Smith 1995). A typical instance of coercion results from

using a stative predicate with a modifier that is incompatible with statives. The temporal modifier *in an hour* is interpreted in Dowty 1979 as modifying the telos of a telic eventuality. Since stative eventualities are atelic, stative meanings are incompatible with modifiers like *in an hour*. Using such a modifier with a state description, however, does not necessarily result in ungrammaticality or incomprehensibility. Consider the following example:

- (1) In an hour Chris knew the answer.

Rather than being interpreted as a state, *knew the answer* has a change of state (inchoative) interpretation.

In the literature on the distinction between individual- and stage-level predicates (ILPs and SLPs), it is not unusual to find comments to the effect that a particular individual-level predicate is 'being used' as a SLP. Such a claim should have consequences — it should make predictions about how the interpretation of the predicate is affected — but past work has rarely pursued these consequences. This paper gives theoretical teeth to such claims by examining the systematic changes in interpretation that accompany such usage.

The remainder of this paper is laid out in four sections. Section 2 briefly reviews the basis for assuming that there is a grammatical distinction between ILPs and SLPs, and it presents the analyses of Carlson 1977 and Kratzer 1988. Section 3 discusses three ways in which ILPs appear to be used as SLPs. One of these, I will argue, is due to what I will call 'Evidential Coercion', which results from using an ILP in a grammatical environment that requires a SLP. The second is due to Inchoative Coercion, which is triggered by Aktionsart requirements, and interacts with the ILP/SLP distinction as a side effect. The third is an interruption in the temporal interval over which an ILP is taken to hold of an individual. I will argue that this is not a case of coercion at all, and, in fact, it does not even involve a change from ILP to SLP status. A few consequences are considered in section 4, and section 5 entertains the question of how coercion fits into a theory of generative grammar.

## 2. Individual- and stage-level predicates

### 2.1 The diagnostics

Several syntactic environments have given evidence of a division among predicates that cuts across syntactic categories. Milsark 1974 drew a distinction between 'state-descriptive' and 'property' predicates. The terms individual- and stage-level predicate are the most widely used today and are due to Carlson 1977, who distinguished them from a third sort of predicate, the kind-level predicate. Milsark 1974 showed that the existential construction is ungrammatical when an ILP appears as its coda. This is evident in the contrast between (2) and (3).

- (2) a. There were people sick.  
b. There were people drunk.  
c. There were doors open.

- (3) a. \*There were people intelligent.  
 b. \*There were people tall.  
 c. \*There were doors wooden.

Milsark also showed that weak construals are possible for indefinite subjects only with SLPs. The data in (4) and (5) indicate this.

- (4) a. **Sm** people were sick.  
 b. A man was drunk.  
 c. People were hungry. (existential (weak) or generic possible)  
 $\exists x[\text{person}(x) \ \& \ \text{hungry}(x)]$  or  $G_x[\text{person}(x)] [\text{hungry}(x)]$
- (5) a. \***Sm** people were tall. (cf. Some of the people were tall.)  
 b. \*A man was intelligent. (f. All men were intelligent.)  
 c. People were clever in those days. (generic (strong) reading only)  
 $G_x[\text{person}(x)] [\text{clever}(x)]$

Carlson 1977 pointed out that the ability to appear in perceptual reports is restricted to SLPs, as seen in the contrast between (6) and (7).

- (6) a. Martha saw a policemen available.  
 b. I saw Sam tower over his friends.
- (7) a. \*Martha saw a policemen intelligent.  
 b. \*I saw Sam taller than his friends.

The ability to restrict quantificational adverbs also appears to be limited to SLPs (Carlson 1979, Farkas & Sugioka 1983, Kratzer 1988, de Hoop & de Swart 1989):

- (8) a. Ryan is often sleepy.  
 b. Kyle usually towers over his friends.
- (9) a. ??Ryan is often human.  
 b. ??Kyle is usually taller than her friends.

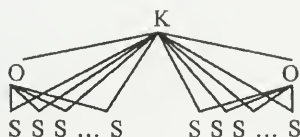
There are additional syntactic environments have appear to be sensitive to the ILP/SLP distinction (see Fernald 2000 for further discussion), but the ones discussed here have been the basis for theoretical accounts of the contrast.

## 2.2 Two analyses

### 2.2.1 Carlson 1977

Carlson 1997 assumed that the ontological type entity consists of three sorts: kinds, objects, and stages. Kinds are taken to be the denotata of bare plurals like *lions* and *politicians*. Objects are individuals like the referent of *Robin*, *that chair*, or *the Navajo language*. Stages are spatio-temporal realizations of individuals in various situations. Objects consist of stages. Kinds consist of objects and their stages:

(10)



SLPs are assumed to be functions from stages to truth values; ILPs are functions from objects or kinds to truth values; kind-level predicates (KLPs) are analyzed as functions from kinds to truth values:

- (11) SLP :  $\langle e^s, t \rangle$   
 ILP :  $\langle e^l, t \rangle$   
 KLP :  $\langle e^k, t \rangle$

Because Carlson argues that nominals denote only individuals (i.e., objects or kinds), a realization relation is needed to allow SLPs to compose with their subjects. There is another realization relation to allow object-level predicates (OLP) to compose with kind-denoting subjects. Two generalization relations are also posited to derive an ILP from a SLP and to derive a KLP from an OLP:

- Realization relations: R: stages and individuals  
 R': objects and kinds  
 Generalization relations: G: SLPs to ILPs  
 G': OLPs to KLPs

These assumptions correctly predict that (12) has an existential and a generic reading, while (13) has only a generic reading.

- (12) Dogs are available.  
 $\exists y[R(y, d) \ \& \ \text{available}'(y)]$   
 $G(\wedge \text{available}')(d)$   
 (13) Dogs are intelligent.  
 $G'(\wedge \text{intelligent}')(d)$

The subject of each sentence denotes the kind **dog**. The existential reading of (12) says that there is some stage of the kind **dog** such that the stage is available. The generic reading entails that the kind **dog** has the generic property of being available. (13) entails only that the kind **dog** has the generic property of being intelligent.

### 2.2.2 Kratzer 1988

Work in the tradition of Lewis 1975, Kamp 1981, and Heim 1982 has argued that indefinite nominals are best interpreted as restricted free variables. *When* adjuncts can be used to form the restriction of a null generic operator, and the clause to which they are adjoined can be used as its nuclear scope. In such cases, *when* has an atemporal reading, as noted in Carlson 1979 and Farkas & Sugioka 1983, for example. Kratzer 1988 points out that this quantificational reading is only possible when a variable is present for the quantifier to bind:

- (14) a. \*When Mary knows French, she knows it well.  
 b. When a Moroccan knows French, she knows it well.

The only difference in these examples is that (14b) contains the indefinite *a Moroccan* in place of the definite *Mary* in (14a), and there is a contrast in the acceptability of the sentences. These sentences are taken to express generic quantifications. The adjunct expresses the restriction, and the main clause, the nuclear

scope. If a *when* adjunct is not used to restrict a quantifier, the same adjunct appearing in (14a) is grammatical:

- (15) When Mary knows French, she will be able to advance to candidacy.

The adjunct can be paraphrased as 'when Mary learns French'. A generic interpretation is not possible except in a bizarre world in which Mary alternates between states of knowing and not knowing French and in which advancing to candidacy can happen repeatedly.

Kratzer 1988 notes that the examples in (14) have the logical representations shown below, on the assumption that the adjunct restricts the null generic quantifier and that the main clause contributes the nuclear scope:

- (16) a. \*When Mary knows French, she knows it well.  
           \*G [knows (*Mary, French*)] [knows well (*Mary, French*)]  
       b. When a Moroccan knows French, she knows it well.  
           G<sub>x</sub>[Moroccan(*x*) & knows (*x, French*)] [knows well (*x, French*)]

The difference between the two logical representations is that, in (16a), the quantifier has no variable to bind. Thus, Kratzer proposes the following well-formedness constraint on logical representations:

(17) Prohibition against vacuous quantification

For every quantifier Q, there must be a variable *x* such that Q binds an occurrence of *x* in both its restrictive clause and its nuclear scope.

Violations of this constraint are taken to result in ungrammaticality.

The examples in (14) above contain ILPs in the adjunct and in the main clause. Interestingly, if a SLP takes the place of the ILPs in (14a), the sentence becomes fully grammatical:

- (18) When Mary speaks French, she speaks it well.

Since this is grammatical, it must not violate the prohibition against vacuous quantification. But this sentence does not have any more indefinite nominals in it than (14a) had; neither one has any. Kratzer proposes that SLPs, themselves, contribute a variable to the logical representation of the sentence, and this variable prevents (18) from being a case of vacuous quantification:

- (19) When Mary speaks French, she speaks it well.  
           G<sub>*l*</sub>[speaks (*Mary, French, l*)] [speaks well (*Mary, French, l*)]

The constraint in (29) requires a variable to appear in the main clause, as well as the adjunct. The first example below is acceptable because the adjunct contains an indefinite and the main clause contains a pronoun with the indefinite as its antecedent. The second example has a variable in the adjunct clause, but not the main clause:

- (20) a. When Mary knows a foreign language, she knows it well.  
           G<sub>*x*</sub>[foreign language(*x*) & knows (*Mary, x*)] [knows well (*Mary, x*)]  
       b. \*When Mary speaks French, she knows it well.  
           \*G<sub>*l*</sub>[speaks (*Mary, French, l*)] [knows well (*Mary, French*)]



Diesing 1988, 1992 seeks to reduce the difference between the interpretation of subjects of ILPs and SLPs to assumptions about argument structure and projection. Deising assumes a Mapping Hypothesis, that material above the VP node of a syntactic tree is mapped to the restriction of a quantifier and that all material dominated by VP is mapped to its nuclear scope. Unselective existential closure is assumed to bind any variables that remain within VP at LF, even when there is no quantifier in the sentence. To account for the observation that bare plural subjects can be interpreted existentially only when the predicate is stage-level, there needs to be a way to allow the subject to appear within VP at LF only if the predicate is stage-level. Kratzer 1988 adopts this strategy and follows Carlson 1977 in assuming that SLPs fundamentally need to be associated with a point in space and time in a way that ILPs do not. Thus, *Manon was dancing* is necessarily about some eventuality that took place somewhere and at some time, while *Manon was a dancer* is not. This distinction among predicates parallels Gawron's (1986) distinction between two kinds of facts. Gawron takes it that facts characterize situations. 'Facts often obtain at particular locations, where locations are taken to be connected regions of space/time' (1986:429). The set theoretic construct that constitutes an abstract fact is an ordered n-tuple consisting of a location (possibly), a relation, its relata, and a polarity. The fact of Marc Antony addressing the Senate at some location *l* is represented thus:

- (21)  $f_l = \langle l, \text{Addressing, Marc Antony, Senate, } 1 \rangle$

Although this fact is located in space/time, Gawron notes that some facts are not, citing the following as an example:

- (22)  $\langle \text{man, Marc Antony, } 1 \rangle$

This is the fact of which the claim *Marc Antony was a man* is true.

For Kratzer 1988 the association to space and time is the defining characteristic of SLPs, and it is taken to be the crucial semantic difference between ILPs and SLPs. Kratzer points out that SLPs tend to accept temporal and locative modification more easily than ILPs. This provides further confirmation of the conclusion reached in the analysis of (19), that SLPs have a logical argument that ILPs lack. Furthermore, this suggests that the argument must be the sort of thing that temporals and locatives can have as arguments. Kratzer does not decide once and for all whether the argument is Davidsonian — recalling Donald Davidson's 1967 analysis of certain predicates and their modifiers — or spatiotemporal. Kratzer uses an *l*, apparently borrowed from Barwise & Perry 1983, to represent the variable associated with the spatiotemporal argument in logical form. This cannot simply be a non-stative argument: although all ILPs are stative, some SLPs are as well.

Kratzer implements her proposal by taking the spatiotemporal argument of SLPs to be a thematic role in the sense of Williams 1981. Williams assumes that the lexical entry for a head includes a list of its arguments and that at most one argument can appear outside the maximal projection of the head at deep-structure. That argument is called the external argument, and all other arguments

are projected internally, within the maximal projection. Kratzer assumes that a spatiotemporal thematic role will always be the external argument of the head. The effect of this is to prevent any other thematic role from being projected to the specifier of IP. This effect is realized by ranking the spatiotemporal role highest on a thematic hierarchy so that, if it is present, it will always be the external argument. Below are examples of argument structures for typical ILPs and SLPs:<sup>1</sup>

(23) SPSs:

*hit* <location, agent, theme>

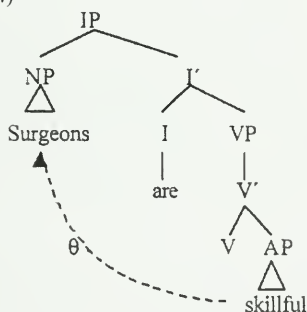
*dance* <location, agent>

ILP:

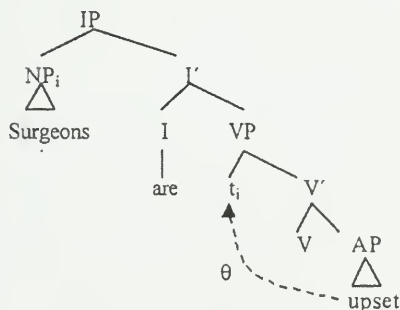
*know* <experiencer, theme>

Because the location argument cannot be assigned to a nominal projected in the clausal subject position, all SLPs are 'unaccusative' in the sense that all their nominal arguments will be projected within the predicate's maximal projection (the specifier of VP is taken to be a possible projection site). In (24), the (deep and surface) structure proposed for ordinary individual-level predication is shown: (25) shows the surface structure for stage-level predication:

(24)



(25)



Diesing assumes that VP-internal subjects move to the specifier of IP to receive case. On the way to LF, this movement can be undone by reconstruction, allowing the NP to be caught up in the domain of unselective existential closure,

that part of the tree that is dominated by VP. Because ILPs do not have any spatiotemporal argument, some other thematic role can be projected outside the maximal projection of the predicate to the specifier of IP. Because it is projected outside VP, there is no way for the nominal to get an existential interpretation.

The spatiotemporal thematic role has the effect of causing a spatiotemporal variable to appear in Kratzer's logical representations, as shown below (Kratzer's ex. 12):

- (26) Manon is dancing on the lawn  
[dancing (*Manon*, *l*) & on the lawn (*l*)]

### 2.3 The basis of the distinction

Some scholars hold the view that the ILP/SLP contrast is mainly pragmatic. Kratzer (1988) notes that having brown hair is an ILP, but she asserts that 'If I dyed my hair every other day, my property of having brown hair would be stage-level. Usually we think of having brown hair as an individual-level property, though, since we don't think of persons dying their hair capriciously' (1988:2). Chierchia 1995 expresses the same view, using the following sentence as an example:

- (27) John was intelligent on Tuesday, but a vegetable on Wednesday.

First, Chierchia notes that the sentence has a reading we in which we take *was intelligent* to mean 'behave intelligently'. This is a case of what I will call 'Evidential Coercion' in the discussion below. He continues to note, however, that there is another reading true in case 'John has a double personality which involves switching his mental capacities on and off in an abnormal manner' (1995:178). Then Chierchia asserts, "If we all were like him, intelligent would be s[stage]-level."

Although my view is outvoted, I am not convinced by these assertions. I am not sure that we can have reliable intuitions about what sentences would be grammatical if the world differed from its current condition in certain specific ways. Let us assume a world in which people dye their hair capriciously and in which everyone has a multiple personality disorder such that certain personalities are intelligent and others are not. I agree that it would be perfectly natural to use temporal modifiers with predicates about intelligence and hair color. But I do not think we can have trustworthy intuitions about perceptual reports and the existential construction or even about readings for bare plural subjects. Thus, my view is that the ILP/SLP distinction is a more idiosyncratic one than what Kratzer and Chierchia seem to believe (cf. *I saw John tower over his friends* vs. *\*I saw John taller than his friends*).<sup>2</sup> Surely the language could change over time, but I do not think it necessarily will in the way suggested here. Greg Carlson pointed out to me the following contrast:

- (28) a. Whenever I land in New York lights are on.  
b. ??Whenever I land in New York buildings are tall.



Example (28a) sounds perfectly fine even though lights are always on in New York. Of course, it is not necessary for lights to always be on in New York, but neither is it necessary for buildings to be tall. This leads me to believe that the ILP/SLP distinction is not simply a matter of pragmatics. It is a true grammatical distinction.

Kratzer writes, 'If a distinction between stage-level and individual-level predicates is operative in natural language, it cannot be a distinction that is made in the lexicon of a language once and for all' (1988:2). I disagree except to the extent that the ILP/SLP status can be determined compositionally (see Fernald 2000) — and so not everything is determined in the lexicon. And of course I would not want the phrase "once and for all" to rule out the possibility of diachronic change.

Rather than these views, I prefer the idea behind Kratzer's proposal that SLPs occur or hold crucially in space and time but that ILPs do not. Or, in terms compatible with work on the *thetic/categorical* distinction (e.g., Kuroda 1972, Sasse 1987, Ladusaw 1994, McNally 1995) that ILPs are properties of individuals and SLPs are descriptions of the world, or perhaps a spatiotemporal slice of it. How else can we explain the difference in meaning between *I saw Robin tower over his friends* and *\*I saw Robin taller than his friends*.

Scholars have often claimed that an ILP is being used as a SLP when one appears where it ought to be unacceptable according to their theory. Carlson and Kratzer both have a clear take on what the basis of the distinction is. Let us assume that there is a fundamental, grammatical distinction — rather than a pragmatic one — between these sorts of predicates, and let us consider what it would mean for each of these analyses if an ILP could actually be used as a SLP.

For Carlson, the ILP/SLP distinction is due to the sort of entity with which the predicate can compose. To convert an ILP into a SLP, it would be necessary to apply operators and relations to the interpretation of the predicate to allow it to compose with stage-level sorts of entities. (Of course, since no nominals actually denote stages the predicate will need to be converted back, in effect, into an ILP before composition with a nominal expression will be possible. One could even take the view that SLPs are always coerced into ILP status whenever they must compose with a nominal. We will take this up in the final section.)

For Kratzer, a SLP has a location as its external syntactic argument, and an ILP does not. To convert an ILP into a SLP, the external argument of the ILP must be internalized (except for the unaccusative ILPs which have no external argument at all) and a location must be added as the new external argument.

For Carlson's theory, a change in interpretation is expected due to the need to introduce an operator to bind the individual-sort argument of the original ILP. For Kratzer's theory, there will need to be a way to add a spatiotemporal argument to a predicate that ordinarily cannot have one. The result should be a located eventuality that is somehow related to the meaning of the ILP used to describe it.

### 3. Slippage in the grammar

#### 3.1 Evidential coercion

Many of the standard diagnostics for the ILP/SLP distinction discussed in 2.1 usually yield quite clear results, but others are far less clear. In some cases, simply putting an ILP in a necessarily SLP environment forces the predicate to take on certain SLP characteristics. The sentence may be grammatical with the reading typically associated with sentences containing a SLP, but the ILP might seem to be used in a slightly unusual way. In such cases, the diagnostic depends on a very subtle and subjective judgment.

The sentences below contain ILPs, as indicated by the ungrammaticality of the existential construction in (29), and the lack of an existential interpretation in (30).

- (29) a. \*There is a man clever.  
 b. \*There is a man pedantic.  
 c. \*There is a man a bore.  
 d. \*There is a man intelligent.  
 e. \*There is a man a child.  
 f. \*There is a man Bohemian.

- (30) a. People are clever.  
 b. People are pedantic.  
 c. People are bores.  
 d. People are intelligent.  
 e. People are children.  
 f. People are Bohemian.

However, these same predicates are surprisingly good with adverbs of quantification, which are usually taken as a diagnostic for SLPs:

- (31) a. Nancy is rarely clever.  
 b. Laura is often pedantic.  
 c. Sam is sometimes a bore.  
 d. Max is sometimes intelligent.  
 e. Carlos is frequently a child.  
 f. Karen is often Bohemian.

The conventional wisdom is that one is at least expected to feel a bit of a twinge whenever an ILP is used in an environment that 'prefers' SLPs. The problem posed by data like those in (31) for the diagnostic is that the twinge we are supposed to feel is quite subtle, and, sometimes, we cannot really tell whether we felt one at all. However, by carefully examining the meanings of these sentences we will find that we no longer need to hang our hopes on detecting the subtle twinge we allegedly feel. A predictable change has occurred in the interpretations of the ILPs in these sentences. These examples all entail that the subject is behaving, in some situation, in a manner consistent with having the property denoted by the ILP. This change in interpretation is due to what I will call

'Evidential Coercion' because it involves the subject giving behavioral evidence for having the property named by the ILP.

We begin our discussion assuming Carlson's 1977 framework for concreteness, and then we will see how it would work for the assumptions of Kratzer 1988 or Diesing 1988, 1992. We would like to understand what it means for a SLP to be used as an ILP. Carlson, as we have seen, assumed that SLPs have stages as their arguments and ILPs have individuals. To use an ILP as a SLP, a variable must fill the individual-sort argument, and there needs to be an abstraction over a stage-sort entity, and that entity variable must be related by the realization relation  $R$  to the individual-sort variable. Further, some quantifier will be needed to bind the individual-sort variable. Below is a first try at an informal statement of the idea using Carlson's assumptions about the ILP/SLP distinction:

- (32) Evidential Coercion (first try): Let  $\alpha$  be an ILP with interpretation  $\alpha'$ .  $\alpha$  can be used as a SLP with the following interpretation:  
 $\lambda x^s \exists Q, y' [R(x, y) \ \& \ Q(x) = 'x \text{ behaved in a manner supporting the judgment of } \alpha'(y)']$

Notice that (32) does not result in an entailment that the subject actually has the ILP-property, only the subject's behavior is consistent with having it. This is in fact just what we want. Consider (31e). We would not want to predict that this means that Carlos is actually judged to be a child from time to time, only that he frequently acts like one. The effect of (32) is to entail that evidence supporting the inference has been given, allowing all the while that the judgment might not turn out to be valid. The following version of (32) is more formal:

- (33) Evidential Coercion [Carlson-style]: Let  $\alpha$  be an ILP with interpretation  $\alpha'$ .  $\alpha$  can be used as a SLP with the following interpretation:  $\lambda x^s \exists Q [Q(x) \ \& \ G_{y^s, z^i} (Q(y) \ \& \ R(y, z)) [\alpha'(z)]]$

Here,  $G$  is the generic operator. The coerced predicate denotes a set of stages for which there is some stage-level property  $Q$  that holds of the stage, and in general, having  $Q$  predicated of a stage entails that the individual associated with the stage has  $\alpha$ , the ILP, predicated of the corresponding individual. By this formulation, *?Laura is often pedantic* will be coerced into expressing the claim that often there is some stage-level eventuality, in which Laura participates, and one would generally judge the individual who participates in such eventualities as "pedantic." The success of coercion in this case depends on the hearer's ability to imagine there being stage-level evidence of having the ILP-property, which is not difficult in the case of *pedantic*. The idea that the stage-level property  $Q$  must be a behavior is not explicit in (33), but at least the property is required to be one that holds of stages.

Before considering the consequences of (33), we will pause to see how evidential coercion can be formulated in terms of Kratzer's and Diesing's proposals. On these accounts, SLPs have a spatiotemporal argument and ILPs do not. To convert an ILP to a SLP, we have to somehow add a position for a spatiotemporal argument and abstract over it. Below is a formulation that parallels (33):

- (34) Evidential Coercion [Kratzer-style]: Let  $\alpha$  be an ILP with interpretation  $\alpha'$ .  $\alpha$  can be used as a SLP with the following interpretation:  
 $\lambda l_j \lambda x \exists Q [Q(x, l_j) \ \& \ G_{y,l}(Q(y, l))](\alpha'(y))]$

For Kratzer's account, the thematic grid in the lexical entry for the predicate would need to have a location argument added to it as the external argument. By either formulation (33) or (34), the output of Evidential Coercion is a stage-level predicate. This story predicts that ILPs should be usable in any stage-level environment provided that coercing can take place. We have already seen in (29) and (30) that the existential construction does not induce coercion, and neither do bare plural subjects. (Without these judgments, we would not have considered the relevant predicates ILPs in the first place.) What about perceptual reports?

- (35) a. I have seen Lyle clever (on several occasions).  
 b. We have seen Laura pedantic (on several occasions).  
 c. \*Robin has seen Sam a bore (on several occasions).  
 d. You have seen Max intelligent (on several occasions).  
 e. \*Leslie has seen Carlos a child (on several occasions).  
 f. Robin has seen Karen Bohemian (on several occasions).

With the exception of cases in which the predicate in the perceptual report are nominals, these sentences (helped along by perfect aspect in the matrix and by frequency modifier) are not so bad. So if we assume that nominal predicates are independently ruled out in this environment by category selection, then we conclude that evidentially coerced predicates are stage-level since they are grammatical in the perceptual report. In fact, if we add a form of *be* to turn the nominal predicate into a verbal one, the results are grammatical with an evidential coercion interpretation:

- (36) c'. Robin has seen Sam being a bore (on several occasions).  
 e'. Leslie has seen Carlos being a child (on several occasions).

Our analysis captures a subtlety of interpretation that is worth dwelling upon for a moment. Ordinary perceptual reports are said to be veridical. That is, they entail that the perceived eventuality held or happened, unless the perceiver was hallucinating. However, veridicality does not hold for the ILPs in (35) and (36), but only for the SLPs derived by coercion. For example, as we saw with (31e), (36e') does not entail that Carlos was a child when Leslie saw him, only that he behaved like one. Our account makes exactly the correct distinction.

Of course, aspectual information is being added in (36) in addition to simply changing the predicate into a VP. In fact, a coerced reading is possible in simple sentences with *be* in the progressive:

- (37) a. Nancy is being clever.  
 b. Laura is being pedantic.  
 c. Sam is being a bore.  
 d. Max is being intelligent.  
 e. Carlos is being a child.  
 f. Karen is being Bohemian.

This is also noted by Stump (1985:76-79), building on Partee 1977 (and see Smith 1991:43). Stump refers to this form of *be* as *be<sub>3</sub>* and says that it 'has a meaning something like that of *act (like)*' (1985:77). It seems odd that a particular lexical item like *be<sub>3</sub>* should trigger coercion: coercion is what happens when the rules of the grammar are violated in a fairly minor way; how could a lexical item require a coerced reading rather than a basic one? On the other hand, the progressive needs to combine with an eventuality description that is non-stative. If an ILP stative is inserted into the progressive, the aspectual coercion that is triggered would result in a SLP.

We must ask what the limits are on coercion. Clearly, it is triggered by a mismatch in the grammar and its success depends on the hearer's ability to repair the mismatch. Thus, coercion is constrained by the imagination of the hearer and so we cannot nail down hard and fast rules. Despite these concerns, we can identify what is involved in successful applications of evidential coercion by examining cases where coercion is more difficult.

Not all ILPs are equally coercible. The ones we have been examining thus far are easily coerced. But now that we have a precise idea of at least one thing that is meant by saying that an ILP is being used as a SLP, we can get an idea of why some ILPs are more easily coerced than others. The following are not as easily coerced as the ones we have seen:

- (38) a. ?Sue is sometimes tall.  
       b. ?Karen is often Norwegian.  
       c. ?Nancy is rarely a human.  
       d. ✓/?Francis is occasionally blond.

These do seem to allow metaphorical readings for the predicates, however. For example, *tall* might be taken to mean something like 'highly respectable' or 'above the fray'. Thus, if we first take the predicate to indicate a set of stereotypical properties, then a reading is possible in which the subject exhibited behaviors consistent with those stereotypes. This can be seen by comparing (38b) with (31f), *Karen is often Bohemian*. (38b) is likely to be meaningful only for people with stereotypical ideas about Norwegians. Similar stories can be told, I think, about the other examples in (38). Note that (38d) is ambiguous between a stereotypical evidential coercion reading and a reading in which sometimes Lou's hair is actually blond. The other examples in (38) also can have this kind of interpretation, although they are more bizarre. We will discuss these readings in the following section. In sum, Evidential Coercion is possible when standard behaviors are associated with a certain property described by an ILP, and when the subject potentially has control over those behaviors. In each case, the success of Evidential Coercion depends on the availability of stereotyped behaviors associated with the property.

### 3.2 Inchoative coercion

Moens & Steedman 1988 point out that use of a stative predicate in a position that requires a non-stative often results in a change of state reading for the



predicate. In the examples below, the stative predicates are interpreted as a changes of state:

- (39) a. Suddenly, Lynne knew the answer.  
b. After 6 years of hard work, Leslie knew Italian.

A change of state is a telic event, and is thus stage-level. Stative predicates, of course, can be individual- or stage-level. Inchoative coercion yields a change of state reading even when the input stative is stage-level, as the following examples show:

- (40) a. Suddenly Lynne was on the porch.  
b. After 3 hours, the room was available.

Inchoative coercion is relevant to it since any ILP that is coerced in this manner will become stage-level.

### 3.3 Interruption

Some ILPs can appear with frequency adverbials without an Evidential Coercion reading. Adding a quantificational adverb to these induces a reading by which the property sometimes holds of its subject and sometimes does not. Schubert & Pelletier 1989 and Krifka et al. 1995 discuss this as a kind of coercion, and I will call it Interruption. The interruptions in the intervals over which the ILP is true of the subject allow a plurality of cases for the nuclear scope of a quantificational adverb. Below are some cases in which this occurs:

- (41) a. Max is sometimes a California resident.  
b. Francis is occasionally blond.  
c. Alice is sometimes tall.  
d. Karen is sometimes Norwegian.

(41a&b) sound quite natural since these ILPs can easily be interrupted. (41c&d) do not fit well with the way we typically think of the world because the sentences clearly indicate that the predicate holds of its subject intermittently. Interruption fails if the hearer cannot imagine the truth-value of the proposition changing. To get a reading for (41d), we either have to think of Karen changing her citizenship from time to time or we have to think of Karen being reincarnated repeatedly, sometimes as a Norwegian.

It is important to notice that interruption is not really coercion in our terms. Taking Carlson's 1977 approach, the predicates still have arguments that are of the individual sort. In Kratzer's 1988 terms, there is no need to suppose that the predicates in (41) describe eventualities that are spatiotemporally located. The only interesting thing about the sentences in (41) is that they are interpreted as formulas that fluctuate in truth-value over evaluation times. Thus, while evidential coercion actually produces a SLP, interruption does not.

### 3.4 Going the other way

We have seen how a SLP can be coerced from an ILP. It is worth contemplating what it would be like to coerce a SLP into an ILP. For a SLP to become an ILP, in Kratzer's terms, the predicate would need to lose its strong connection to space



and time, and to become an atemporal property of individuals. Something would need to supply the spatiotemporal argument for the predicate and bind it. There are at least two ways in which this might happen. One is for the SLP to receive a habitual interpretation. This appears to be what happens when a non-stative SLP is employed in the simple present:

- (42) a. Sam goes jogging after work.  
 b. Hakeem plays basketball for a living.

The habitual interpretation seems also to be involved in what Carlson called the individual-level reading for *Bill ran*. What is involved is clearly the binding of the spatiotemporal argument by a generic quantifier along with the assertion that the subject generally has the relevant property. This can be formalized as follows:

- (43) [for Kratzer's theory] Let  $\alpha$  be a SLP with interpretation  $\alpha'$ .  $\alpha$  can be used as an ILP with the following interpretation:  $\lambda x G_l[\alpha'(x, l)]$

Also, the thematic grid must have its location argument removed, and possibly one of the other arguments would be promoted as the new external argument.

In Carlson's terms, what happens is that the stage-sort argument of the SLP needs to be supplied and bound by an operator. Then it must be related to an individual-sort entity which is bound by a lambda operator. Since Carlson assumes that no natural language nominal has the set of stages as its denotation space, he has already built into his system various mechanisms for doing just what we have been talking about. Every time a SLP composes with its subject it must already have been, in effect, converted into an ILP. Below is the counterpart of (43) in Carlson's terms:

- (44) [for Carlson's theory] Let  $\alpha$  be a SLP with interpretation  $\alpha'$ .  $\alpha$  can be used as an ILP with the following interpretation:  
 $\lambda y' G_{xs}[R(x, y) \ \& \ \alpha'(x)]$

We should note that (44) is not really a coercion rule in the same sense that Evidential Coercion is. For the latter, coercion is the result of forcing a predicate of one level into an environment that requires a predicate of a different level. We certainly do not wish to say that SLPs are coerced into ILPs when they appear in the simple present; stative SLPs retain their ordinary readings in that environment (see Fernald 2000). (43) and (44), then, express a way in which a located description can come to denote an atemporal property. This takes place in an environment that permits both ILPs and SLPs to appear, so it differs in kind from Evidential Coercion.

The second way to derive an ILP from a SLP would be to bind the spatiotemporal location, in Kratzer's terms, or the stage-sort argument in Carlson's, with an existential operator. It seems that the past perfect is an environment in which some kind of shifting could occur from SLP to ILP status. Once a stage of an individual has done something, it becomes an eternal property of that individual that one of its stages has done whatever it is. This does not result in a gener-

alization, but an existential quantification over the stage and the location at which the eventuality took place.

#### 4. Consequences

I would like to comment on four consequences of our inquiry into coercion. First, unless the ILP/SLP distinction is subject to some additional sort of coercion not noted here, this analysis supports McNally 1993 arguing against Rapoport 1991. Rapoport claims depictive adjuncts are required to be stage-level. McNally cites examples like the following as counterexamples, noting that ILPs can be used as depictives when the main clause supports a reading of the depictive as a changed state:

- (45) a. The neighbor's girls entered the Army enthusiastic advocates of U.S. interventionism. (= McNally's (8a))
- b. Nancy Kerrigan returned from Lillehammer an Olympic silver medalist.

The present argument makes it unlikely that these ILPs are "being used" as SLPs since these examples do not display evidential coercion. They also do not display interruption readings; they simply entail that the depictive is a changed state, as McNally claims.

The second consequence is related to depictives. I have claimed that interruption does not change ILPs to SLPs. This claim makes the prediction that ILPs with an interruption interpretation should not be acceptable in perceptual reports. The following examples suggest that this prediction is incorrect:

- (46) a. Robin has seen Max a California resident (on several occasions).
- b. I have seen Francis blond (on several occasions).
- c. We have seen Sue tall (on several occasions).
- d. Pat has seen Karen Norwegian (on several occasions).

Interruption is clearly induced here by the perfect aspect in the matrix. My analysis forces us to the conclusion that the ILPs in these examples are depictives rather than reports of perceived eventualities. If so, following McNally, we would have to claim that a report of perception in past perfect is an environment supporting the inference that the depictive is a changed state. This prediction seems to be correct.

If we add a form of *be* in the progressive to the examples in (46), we get the following:

- (47) a. ?Robin has seen Max being a California resident (on several occasions).
- b. ?I have seen Francis being blond (on several occasions).
- c. ?We have seen Sue being tall (on several occasions).
- d. ?Pat has seen Karen being Norwegian (on several occasions).

As we have seen, the progressive *be* induces Evidential Coercion. The examples are odd only to the degree that it is difficult imagining behavioral evidence supporting the inference of having the described property.

Third, the view of coercion proposed here is clearly distinct from one that says that an ILP has become a SLP whenever it becomes the case that the truth of a proposition containing an ILP is not constant over time. Such a view at times seems to be held by Kratzer 1989, Diesing 1992, and Chierchia 1995. This view seems to derive from the intuitive characterization of ILPs as tendentially stable, immutable properties. Researchers always hasten to acknowledge that the truth values of certain propositions based on ILPs necessarily or potentially change over time (e.g., *Rose is a child*, *Tom is a novice*), and that others, although they do not change out of necessity, change freely as the result of volitional acts (e.g., *Janet is a resident of Idaho*, *Tim has blond hair*). Despite acknowledgments of this sort, many researchers persist in reasoning that seems to be based on the assumption that ILPs denote constant sets over time (at each world).

This kind of reasoning may be behind Kratzer's 1989 discussion of the following (Kratzer's example 73):

(48) Henry was French.

Kratzer notes that (48) can be taken to implicate that Henry is no longer alive (but that he was French when he was alive) or that Henry has changed his national allegiance and is no longer French. Kratzer asserts that the difference in these construals is due to the former being derived from an ILP and the latter from a SLP. Kratzer writes, 'The past tense is an effective tool for turning individual-level predicates into stage-level predicates' (1988:41f.), and from this it seems clear that she has something like coercion in mind. Kratzer does not provide arguments for the claim that the construals line up in the manner she proposes. Presumably, the idea is that if the truth conditions of a proposition containing an ILP vary over time, the ILP has been coerced into acting like a SLP. But above we have seen several ILPs (and there are many more) that are not necessarily constant over time.

As de Swart 1991 notes, *be French*, even in the past tense passes all the diagnostics for classification as an ILP:

(49) Brain surgeons were French

Example (49) does not have an existential interpretation. Neither is the existential in (50) grammatical:

(50) \*There were brain surgeons French.

What I offer to this debate is the observation that Evidential Coercion is not involved here. Instead, Interruption is involved, and, as I have argued, there is no reason to believe that this results in a SLP.

## 5. Where is coercion?

I have argued that Evidential Coercion derives a SLP from an ILP. Coercion needs to be induced by something, and some syntactic/semantic environments are better at inducing it than others. Adverbs of quantification are very good at getting a plurality of cases for their restrictions. Perceptual reports do not seem to induce

Evidential Coercion, but they do accept coerced predicates as descriptions of the perceived event as long as something else (the progressive, for example) has induced coercion. The progressive induces it strongly, but the existential construction and weak construals of indefinite subjects do not induce coercion at all.

This analysis offers a new diagnostic for determining when ILPs are being used as SLPs. It gives theoretical teeth to such a claim by showing precisely what change in interpretation is predicted. This is a significant contribution since it extends the domain of interpretation that is subject to empirical testing. In addition, I hope that these considerations contribute to dispelling the notion that simply because there is an interruption in the temporal interval over which an ILP holds, the predicate is being used as a SLP.

Finally, I would like to raise the question of how coercion fits into a theory of language. One possibility is that it is a matter of pragmatics — a reinterpretation that operates on an output of the grammar. The alternative seems to be that it is a morphological or morpho-syntactic process that adjusts lexical and phrasal interpretations as a part of semantic composition. The line between semantics and pragmatics has not been very sharp in recent years — dynamic semantics encompasses much of the territory once thought to be clearly pragmatic.

Something like the Maxim of Manner (Grice 1975) is involved in finding a meaning for a sentence involving coercion. A Manner-based inference is drawn when the hearer of an utterance wonders why the speaker chose to use the wording, or other manner of expression, that s/he used. The hearer is then motivated to find an alternative meaning for an utterance. This is not quite what happens with coercion. Coercion has a different motivation, and the speaker may not be conscious of it. Coercion is triggered by a mismatch in the meanings of a sentence's constituents. With sentences involving Evidential Coercion, on the analyses developed here, the component meanings are of incompatible semantic type prior to coercion, and this is the motivation to reinterpret one of the constituents. With more blatant violations of grammatical constraints the hearer may have to consciously figure out what meaning was intended by the speaker; these cases most closely resemble Manner-based inferences. Less blatant violations may not be noticed by the hearer at all. Of course, pragmatic inference is often not calculated consciously — introductory semantics students need to be taught the difference between semantic entailment and pragmatic inference — so lack of awareness is not evidence that a process is not pragmatic. De Swart 1998, writing about coercion involving aspect, states, 'The felicity of an aspectual reinterpretation is strongly dependent on linguistic context and knowledge of the world' (1998:360). Clearly, pragmatic elements are involved in coercion. However, pragmatic inference draws on general cognitive processes and assumptions about the world. Thus, it is common to assume that pragmatics is outside the realm of grammar.

However, the output of grammar — sentences and their interpretations — are also objects of manipulation in pragmatic inference. If pragmatics is as distinct from grammar as is commonly assumed we have an apparent problem: sen-

tences must be fully formed before they are 'passed along' to the pragmatic module, so to speak. As Grice showed, pragmatics is involved in reinterpreting the import of well-formed utterances. The data considered in this article contrast with Grice's examples because the former do not have a coherent interpretation until certain sentential constituents are coerced in what appears to be a pragmatic process.

What happens when coercion is needed is that the grammar outputs a syntactically well-formed string of words along with a kind of fragmented interpretation — interpretations for the sentence's constituents but not a propositional interpretation for the whole utterance. Different factors are involved in generating and in parsing these sentences. Performance error aside, a speaker will not output a sentence that is not well-formed syntactically and that does not have some sort of coherent interpretation. A speaker would not use a sentence that had incompatible constituent meanings if coercion were not possible. For sentences in which coercion is needed, the speaker already knows how to coerce the constituent meanings. The problem is then for the hearer to successfully coerce the meanings of the constituents. This is where pragmatics is involved. If the context is not adequately rich or if the intended meaning is too obscure, the attempt at coercion will fail. I propose, then, that coercion is pragmatic from the hearer's point of view but morphological from the speaker's point of view. That is, coercion is a lexical operation available to the sentence generator; coerced meanings can only be used felicitously in contexts in which the hearer has a chance of identifying the intended coerced meaning.

## NOTES

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<sup>1</sup> Kratzer 1988 also discusses unaccusative predicates, but these are omitted from this discussion since there is nothing particularly interesting about them for the investigation of coercion.

<sup>2</sup> Thanks to Jack Hoeksema for calling this pair to my attention.

## REFERENCES

- BARWISE, Jon, and John PERRY. 1983. *Situations and Attitudes*. Cambridge, MA: MIT Press.
- CARLSON, Gregory N. 1977. *Reference to Kinds in English*. University of Massachusetts, Amherst, Ph.D. dissertation in Linguistics. [published 1980 by Garland: New York].
- . 1979. Generics and atemporal *when*. *Linguistics and Philosophy* 3.49–98.



- , and Francis Jeffry PELLETIER (eds.). 1995. *The Generic Book*, Chicago: University of Chicago Press.
- CHIERCHIA, Gennaro. 1995. Individual-level predicates as inherent generics. In Carlson & Pelletier. 176–223.
- DAVIDSON, Donald. 1967. The logical form of action sentences. *The Logic of Decision and Action*, ed. by Nicholas Rescher, 81–95. Pittsburgh: University of Pittsburgh Press.
- DIESING, Molly. 1988. Bare plural subjects and the stage/individual contrast. *Genericity in Natural Language: Proceedings of the 1988 Tübingen Conference*, ed. by Manfred Krifka, 107–54. SNS-Bericht 88-42, University of Tübingen.
- . 1992. *Indefinites*. Cambridge, MA.: MIT Press.
- DOWTY, David R. 1979. *Word Meaning and Montague Grammar*. New York: Kluwer.
- FARKAS, Donka F., & Yoko SUGIOKA. 1983. Restrictive if/when-clauses. *Linguistics and Philosophy* 6.225–58.
- FERNALD, Theodore B. 1994. On the nonuniformity of the individual- and stage-level effects. University of California, Santa Cruz, Ph.D. dissertation in Linguistics.
- . 2000. *Predicates and Temporal Arguments*. Oxford & New York: Oxford University Press.
- GRICE, H. P. 1975. Logic and conversation. *Speech Acts*. (Syntax and Semantics, 3.) 41–58. New York: Academic Press.
- HEIM, Irene. 1982. The semantics of definite and indefinite noun phrases. University of Massachusetts, Amherst, Ph.D. dissertation in Linguistics.
- HOBBS, Jerry R. 1999. Syntax, metonymy, and intention. *Semantics and Linguistic Theory* 9, University of California, Santa Cruz.
- DE HOOP, Helen, & Henriette DE SWART. 1989. Over indefinite objecten en de relatie tussen syntaxis en semantiek. *Glot* 12.19–35.
- KAMP, Hans. 1981. A theory of truth and semantic interpretation. *Truth Interpretation and Information*, ed. by Jeroen Groenendijk et al. 277–322. Dordrecht: Foris.
- KRATZER, Angelika. 1988. Stage-level and individual-level predicates. *Genericity in Natural Language*, ed. by M. Krifka, 247–84, University of Tübingen. [Published in Carlson & Pelletier, 125–75.]
- KRIFKA, Manfred, Francis Jeffry PELLETIER, Gregory N. CARLSON, Alice TER MEULEN, Gennaro CHIERCHIA, and Godehard LINK. 1995. Genericity: An introduction. In Carlson & Pelletier. 1–124.
- KURODA, S.-Y. 1972. The categorical and thethetic judgment. *Foundations of Language* 9.153–85.
- LADUSAW, William A. 1994. Thetic and categorical, stage and individual, weak and strong. *Proceedings from Semantics and Linguistic Theory IV*, ed. by Mandy Harvey and Lynn Santelmann, 220–29. Ithaca, NY: Cornell University Press.



- LEWIS, David. 1975. Adverbs of Quantification. *Formal Semantics of Natural Language*, ed. by E. L. Keenan, et al., 3-15. Cambridge, UK: Cambridge University Press.
- MCNALLY, Louise. 1993. Adjunct predicates and the individual/stage distinction. *Proceedings of the 12th West Coast Conference on Formal Linguistics*, ed. by E. Duncan, Donka Farkas, & Philip Spaelti, 561-76. Stanford: Center for the Study of Language and Information Publications.
- . 1995. Stativity and theticity. *Events and Grammar*, ed. By Susan Rothstein, 293-307. Dordrecht: Kluwer.
- MILSARK, Gary L. 1974. Existential sentences in English. Massachusetts Institute of Technology, Ph.D. dissertation in Linguistics.
- MOENS, Marc, and Mark STEEDMAN. 1988. Temporal ontology and temporal reference. *Computational Linguistics* 14.15-28.
- MILSARK, Gary L. 1974. Existential sentences in English. Massachusetts Institute of Technology. Ph.D. dissertation in Linguistics.
- PARTEE, Barbara H. 1977. John is easy to please. *Linguistic Structures Processing*, ed. by Antonio Zampolli, 281-312. Amsterdam: North-Holland.
- PUSTEJOVSKY, James. 1995. *The Generative Lexicon*. Cambridge: Cambridge University Press.
- RAPOPORT, Tova R. 1991. Adjunct-predicate licensing and d-structure. *Perspectives on Phrase Structure: Heads and Licensing* (Syntax & Semantics, 25), ed. by Susan D. Rothstein, 159-187. New York: Academic.
- SASSE, Hans Jürgen. 1987. The thetic/categorical distinction revisited. *Linguistics* 25.511-80.
- SCHUBERT, Lenhart K., and Francis Jeffry PELLETIER. 1989. Generically speaking: Or, using discourse representation theory to interpret generics. *Properties, Types and Meaning, 2: Semantic Issues*, ed. by G. Chierchia., B. Partee, & R. Turner, 193-268. Dordrecht: Kluwer..
- SMITH, Carlota S. 1991. *The Parameter of Aspect*. Dordrecht: Kluwer.
- . 1995. The range of aspectual situation types: derived categories and a bounding paradox. *Temporal Reference: Aspect and Actionality*, ed. by P. Bertinetto et al., 105-24. Turin: Rosenberg & Sellier.
- STUMP, Gregory T. 1985. *The Semantic Variability of Absolute Constructions*. Dordrecht: Reidel..
- DE SWART, Henriette E. 1991. Adverbs of Quantification: A Generalized Quantifier Approach. Rijksuniversiteit Groningen, Ph.D. dissertation in Linguistics.
- . 1998. Aspect shift and coercion. *Natural Language and Linguistic Theory* 16.347-85.
- WILLIAMS, Edwin. 1981. Argument structure and morphology. *The Linguistic Review* 1.81-114.



## GRADABLE ADJECTIVES DENOTE MEASURE FUNCTIONS, NOT PARTIAL FUNCTIONS\*

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This paper uses the distribution and interpretation of antonymous adjectives in comparative constructions to argue that an empirically and explanatorily adequate semantics for gradable adjectives must introduce abstract representations — ‘scales’ and ‘degrees’ — into the ontology. I begin with an overview of the basic assumptions of analyses that do not make reference to scales and degrees. I then turn to a discussion of the empirical data, and I demonstrate that such approaches do not support a principled explanation of the facts, but a degree-based account does.

### 1. Gradable adjectives and the problem of vagueness

A fundamental problem for the semantic analysis of gradable adjectives like *tall*, *long*, and *expensive* is that many of the sentences in which they occur are vague. (1), for example, could be true in one context and false in another.

(1) The Mars Pathfinder mission was expensive.

In a context in which the discussion includes all objects that have some cost-value associated with them, (1) would most likely be judged true, since the cost of sending a spacecraft to Mars is far greater than the cost of most things (e.g., nails, dog food, a used Volvo, etc.). In a context in which only missions involving interplanetary exploration are salient, however, then (1) would probably be judged false, since a unique characteristic of the Mars Pathfinder mission was its low cost compared to other projects involving the exploration of outer space (see Sapir 1944, McConnell-Ginet 1973, Kamp 1975, Klein 1980, Ludlow 1989, Kennedy 1999a, and others for relevant discussion).

What this example shows is that the criteria for deciding whether an utterance of a sentence of the form ‘*x is  $\phi$* ’ is true (where  $\phi$  is a gradable adjective) may vary according to factors external to the adjective, such as the meaning of *x* and features of the context of utterance. Determining the truth of ‘*x is  $\phi$* ’ in a particular context requires figuring out what these criteria are, and then making a judgment of whether *x* ‘counts as’  $\phi$  in that context. A basic requirement of a theory of the semantics of gradable adjectives, then, is to both provide a means of making this judgment, ensuring that sentences like (1) have definite interpretations, and to allow for variability of interpretation across contexts.