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### Predicates And Temporal Arguments

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# Predicates and Predicaments

The distinction between individual-level and stage-level predicates has interested grammarians for a number of reasons. In English, this distinction interacts with a variety of apparently unrelated syntactic constructions. In some constructions the different sorts of predicates show a contrast in interpretation, and in others they show a contrast in grammaticality. This is particularly interesting because the distinction is not a matter of traditional syntactic category like noun or verb phrase. It seems to be a semantic classification, although delineating it precisely in terms of meaning has proven difficult, at least outside a particular theoretical viewpoint. Complicating things further, a number of contextual and pragmatic factors can affect the tests taken to be diagnostic of the distinction. Many languages display grammatical effects due to the two kinds of predicates, suggesting that this distinction is fundamental to the way humans think about the universe.

This study is confined, for the most part, to data from English, and so it overlooks a growing body of work on the ILP/SLP distinction in other languages: for example, Diesing (1992) on German, Doherty (1996) on Irish, Kratzer (1988) on German, Kuroda (1992) on Japanese, Willie (1999) on Navajo, and Sasse (1987) on a wide variety of languages.

## 1. Characterizations of the Distinction

Since the work of Milsark (1974) and Carlson (1977), the distinction between individual-level predicates (ILPs) and stage-level predicates (SLPs) has been at the forefront of the development of theories about the syntax-semantics interface (e.g., Kratzer 1988, Diesing 1992, Krifka et al. 1995). Milsark's (1974, 1977) original proposal of the distinction between "state-descriptive" (SLP) and "property" (ILP) predicates is introduced as follows:

It would be of great value at this point to be able to point out some independent criteria for telling the difference between state-descriptive and property predicates. The best I can do is to suggest some tendencies and rules of thumb, plus an imprecise definition or two. Properties are those facts about entities which are assumed to be, even if they are not in fact, permanent, unalterable, and in some sense possessed by the entity, while states are conditions which are, at least in principle, transitory, not possessed by the entity of which they are predicated, and the removal of which causes no change in the essential qualities of the entity. (1974:212)

This discussion presents the distinction as one that distinguishes essential, permanent properties of an entity from accidental states that the entity might be found in. In Milsark (1977), this is repeated:

States [are] conditions in which an entity finds itself and which are subject to change without there being an essential alteration of the entity . . . [Properties] are descriptions which name some trait possessed by the entity and which is assumed to be more or less permanent or at least to be such that some significant change in the character of the entity will result if the description is altered. (1977:12f.)

Milsark (1974) offers the following lists of representative predicates:

- |          |              |
|----------|--------------|
| (1) SLPs | ILPs         |
| sick     | all NP PREDs |
| hungry   | shapes       |
| tired    | colors       |
| alert    | intelligent  |
| clothed  | beautiful    |
| naked    | boring       |
| drunk    | crazy        |
| stoned   | etc.         |
| closed   |              |
| open     |              |
| etc.     |              |

This classification applies to verbal predicates as well, as Milsark (1977) notes. Most are stage-level (e.g., *kick over a trash can, eat supper, think lovely thoughts*), but some are individual-level (e.g. *own a bank, have long arms, know how to fly an airplane*). And Hana Philip pointed out to me that nominals are not ILPs in all languages: in the Slavic family, case markers seem to make a difference in the sort of predicate one has.

In introducing this distinction, connections are made on one hand between being a property predicate and tending to remain true of an entity over time, and on the other between being a state-description and freely changing applicability over time. While the latter connection does not seem to be problematic, the former is: even though predicates like *be blond(e)*, and *be French* are individual-level, they are not literally permanent properties because we can imagine an individual changing status, even repeatedly, with respect to the property. On the other hand, as Carlson (1977:72) notes, some SLPs—like *be dead*—are permanent. Whatever sense of permanence is crucial to this distinction, it must be a very weak notion. For example, Chierchia proposes that ILPs are *tendentially* stable while SLPs are not:

The main characteristic of i[ndividual]-level predicates is that they ascribe tendentially permanent properties to their arguments. It seems that one can say of an argument with an i[ndividual]-level property P, “Once a P, tendentially always a P.” (1995b:198)

Chierchia proposes that the non-necessary tendency toward permanence that ILPs have is a result of inherent genericity. However, the tendential stability characterization is problematic as well. Predicates like *be an infant*, and *be a child* are classified as individual-level, but by no means do we expect infants to remain infants or children to remain children. On the contrary, in a world in which everything follows its normal course, these states will occupy a relatively small portion of an entity’s existence. We must admit, then, that the permanence of ILPs is intuitive but elusive. In our discussion of the diagnostic tests, and in particular in our later discussion of “coercion,” the temporally persistent nature of ILPs will be an important theme.

Carlson’s (1977) discussion of this distinction views the difference as essentially one of domain for the predicates: ILPs are predicates of individuals, while SLPs are predicates of “stages.” He writes, “A stage is conceived of as being, roughly, a spatially and temporally bounded manifestation of something. . . . An individual, then, is (at least) that whatever-it-is that ties a series of stages together to make them stages of the same thing” (68). Carlson later wrote:

[The ILP/SLP distinction] is correlated with the sort of entity the predicate meaningfully applies to. If the predicate speaks of general characteristics, or dispositions, we represent it as applying to a set of objects. If something more fleeting is intended, somehow more temporary, and in some sense less intrinsic to the nature of a given individual, the predicate is represented as denoting a set of stages. This distinction is intended to correspond to the basically atemporal nature of individuals as opposed to their time-bound stages. (1979:57)

The difference between ILPs and SLPs, on this view, is that the former characterize individuals, while the latter present eventualities that take place and involve the stage of an individual. Carlson’s characterization commits stage-level predications to an essential spatiotemporal location. This theme is continued in Kratzer (1988), where SLPs are distinguished as having an inherent spatiotemporal argument that ILPs lack.

The ILP/SLP distinction has been assumed to give rise to a number of grammatical effects. These effects involve the grammaticality requirements and interpretational possibilities of a number of constructions. These will be examined in detail in chapter 2, but I will summarize them here. The existential construction permits only SLPs in its coda (Milsark 1974, 1977). Bare plural and indefinite subjects also show ILP/SLP effects: as we will see, subjects of ILPs must be construed strongly (Milsark 1974, 1977). This phenomenon forces bare plural subjects of ILPs to have a generic interpretation rather than an existential one (Carlson 1977), and indefinites that cannot be construed strongly (e.g., *sm* and, ordinarily, *a*) sound quite odd in this environment. Another diagnostic is the position of the predicate in the small clause complement to perception verbs; only SLPs are grammatical in this environment (Carlson 1977). *When* adjuncts (Carlson 1979, Kratzer 1988) and absolute adjuncts (Stump 1985) show a contrast in possible interpretations depend-

ing on whether they contain a SLP or an ILP. Finally, Carlson (1982) and Kratzer (1988) have argued that temporal and locative modifiers are grammatical only when the main predicate of a sentence is stage-level. Other researchers have proposed additional constructions in which the ILP/SLP distinction has a role, but the ones that will be central to our investigation are mentioned above.

The terms used in this classification of predicates are due to Carlson, who distinguishes SLPs and ILPs from a third level that he calls “kind-level predicates” (KLPs). KLPs denote properties that logically cannot have individual objects as their arguments. Rather, they are predicates of kinds, species, or classes of objects. The examples below contain KLPs:

- (2) a. Wolves were widespread in North America.  
 b. Dinosaurs are extinct.  
 c. This kind of tree is indigenous to California.

These examples cannot be interpreted as generalizations about members of a group. For example, (2a) does not mean that in general, if you find a wolf it will be widespread in North America, and (2c) does not mean that a particular individual tree is indigenous. Instead, these are claims about the class of wolves and the kind of tree being indicated. Carlson (1977) is the classical work on kinds and their predicates; see also Krifka et al. (1995) for a recent overview of relevant issues and previous work. Issues involving KLPs are not of central concern in this investigation, but they will occasionally enter into the discussion. ILPs and SLPs interact with each other in subtle ways, but KLPs do not interact with the other levels in the same way, and this is the reason that they will generally be ignored.

## 2. Stativity

In the course of this investigation, issues involving Aktionsart will keep popping up. Aktionsart deals with the aspectual characteristics inherent in sentences and determined largely by the head of the sentence’s main predicate. Vendler (1967) distinguishes four verbal classes: *states*, *activities*, *accomplishments*, and *achievements*. Dowty (1979), in his discussion of “the Aristotle-Ryle-Kenny-Vendler Verb Classification,” provides a summary of earlier work on Aktionsart. Verkuyl (1972) shows that the distinction must really take the whole verb phrase into account and not simply the verb. Dowty (1979) has examples, discussed below, which appear to show that even the subject of the sentence can contribute to the classification. Work on Aktionsart is ongoing; Smith (1991) adds *semelfactive* as a distinct class; and see Verkuyl (1993) and ter Meulen (1995) for recent accounts of these phenomena.

The ILP/SLP distinction overlaps significantly with the stative/non-stative aspectual distinction, but the two distinctions do not quite make the same division among the non-KLP predicates. Lakoff (1965) provides a number of tests for the stative/non-stative distinction, some of which involve the orthogonal issue of agentivity. Those that do not test for agentivity involve the ability to appear in the progressive and the ability to appear in the pseudo-cleft construc-

tion; Lakoff claims that only non-statives have both of these abilities. These claims are supported by the data below:

- (3) a. \*Robin is knowing the answer.  
 b. \*What Robin did was know the answer.
- (4) a. Robin is reaching a decision.  
 b. What Robin did was reach a decision.

Carlson (1977) claimed that individual-level verbs cannot appear in the progressive, and this raises the question of whether the progressive is properly seen as excluding states or as excluding ILPs.

As it turns out, all ILPs are stative, and all non-statives are SLPs. The only reason we have for positing the existence of the ILP/SLP distinction at all is that there exist some stative SLPs. Some of these are PPs and APs that are overtly locative (e.g., *on the lawn*, *airborne*), but others are not (e.g., *out of their minds with worry*, *drunk*, *naked*). For simple verbal predicates, the ILP/SLP distinction coincides nearly exactly with the stative/non-stative distinction, although things will get more complicated when we consider predicates with clausal complements in chapter 6. There is one group of verbs, discussed by Dowty (1979), which displays complex behavior in this respect. These are verbs like *sit*, *stand*, and *flow*, which are sometimes used statively and sometimes not. In particular, they can appear in the progressive with certain subjects, but not with others. Dowty notes the following contrasts, from his examples (62) & (67):

- (5) a. The socks are lying under the bed.  
 a'. ??New Orleans is lying at the mouth of the Mississippi River.  
 b. Your glass is sitting near the edge of the table.  
 b'. ??John's house is sitting at the top of a hill.  
 c. The long box is standing on end.  
 c'. ??The new building is standing at the corner of First Avenue and Main Street.  
 d. One corner of the piano is resting on the bottom step.  
 d'. ??That argument is resting on an invalid assumption.

Dowty proposes that in the cases in which the progressive is permissible, the VP is being used as a SLP, and when it is not, the VP is used as an ILP. These predicates, which Dowty calls “interval statives,” are taken to be individual-level just in case the subject denotes the sort of thing that cannot ordinarily change its physical position from the one described by the predicate: New Orleans always lies at the mouth of the Mississippi River, but the socks do not always lie under the bed. It seems, then, that there are stative verbs that can serve as the heads of SLPs, and that these statives can appear in the progressive. These are the only stative verbs that appear able to head a stage-level predicate.

The progressive does not make a clearcut distinction between all ILPs and SLPs, however, and this makes it difficult to use as a diagnostic for the ILP/SLP distinction, at least until we consider its coercive effect:

- (6) a. \*Sam is being on the ship.  
 b. Sam is being a hero.

- (7) a. Sam is being careful.  
b. Sam is being an idiot.

The locative in (6a) is a SLP, and the nominal predicate in (6b) is an ILP, and yet the progressive is acceptable with the latter and not with the former. In chapter 4 we will see reasons to believe that the progressive can “coerce” a stative predicate into becoming a non-stative predicate (all of the latter are SLPs), with a predictable change in interpretation resulting. Dowty (1979:114, 115) argues that in (7), *careful* and *an idiot* are ambiguous between stative and agentive readings, and that copular predicates in the progressive, therefore, adhere to the stative/non-stative distinction (see 130, fn. 6). However, his analysis of the examples in (5) suggests that for verbal predicates, the progressive is sensitive to the ILP/SLP distinction, supporting Carlson’s claim to this effect.

Kenny (1963:175) notes an additional means of distinguishing stative and non-stative verbs. English non-stative verbs tend strongly to have a habitual or generic interpretation when they appear in the simple present:

- (8) a. Sam sits by the fire after supper.  
b. Surgeons cook for themselves.

Such sentences can also have a “reportive present,” typified by a sportscaster’s play-by-play or newspaper headline usage; however, they do not have the ordinary existential reading found with other tenses. Although we will see that the unavailability of existential readings for bare plural subjects and the ungrammaticality of weak nominal subjects can be indications that the predicate is individual-level, the judgments in (8) arise independently of the ILP/SLP contrast. Note that a generic interpretation is required even when the subject is independently referential, as in (8a). This is not what we see when the predicate is individual-level (cf. *Sam is intelligent*). Further, the predicates in (8) pass the tests for stage-level status when they appear in the past tense. We clearly do not want to say, however, that it is a characteristic of SLPs that they have generic readings in the simple present; stative SLPs (e.g., *be excited*, *be available*) do not have the generic reading, and they allow weak subjects:

- (9) a. Sam is excited.  
b. Surgeons are prepared for the operation.  
c. Sm surgeons are prepared for the operation.

Thus, we must conclude that the generic reading for the simple present and the ungrammaticality of weak subjects is a property of non-stative predicates, and that this issue is independent of the ILP/SLP distinction. This discussion shows that the bare-plural and weak-subject tests for SLP status (discussed in chapter 2) cannot be applied blindly in the simple present for non-stative predicates. The tests are reliable, however, in the present progressive, present perfect, and past tenses (with any aspect). The English simple present is idiosyncratic in requiring generic interpretations for non-stative predicates. Other languages (e.g., German) do not have this restriction, and the simple present can mean what English speakers use the present progressive for. Because there are other languages that do not have this

restriction, it is clear that the English facts are due to a quirk of grammar and not to some deep principle of logic.

We conclude that the ILP/SLP distinction cannot be reduced to previously known aspectual distinctions. The fact that stative SLPs exist makes reduction to the stative/non-stative distinction impossible. Because the stative/non-stative distinction is so close to the ILP/SLP distinction, we must exercise caution in our work; otherwise, we may accidentally identify a stativity distinction as one of predicate levels. By including stative SLPs in our diagnostics, we can avoid this problem.

### 3. The Theses

If the ILP/SLP effects are really indicative of a binary, lexical classification of predicates, then the constructions that show the effects should always yield consistent results when taken as diagnostics for the binary classification. Carlson (1977) and Stump (1985) showed that there is a class of copular predicates which behave like typical SLPs from the point of view of the existential construction and the indefinite subject effect, but which are ungrammatical in the small clause complement to perception verbs. Later, Kratzer (1988) pointed out that there is another class of predicates (the “unaccusative” ILPs, in her terminology) which behave like SLPs for the existential construction and the indefinite subject diagnostics, but not for temporal and locative modification. Previous work has focused primarily on data involving very simple predicates; when predicates of greater syntactic complexity are considered, the uniformity of the effects will be seen to break down still further. I will investigate such cases in chapter 6. Carlson (1977) briefly discusses what happens when predicates of different levels are embedded in the complements of raising verbs; in the present work, they will be subjected to a wider range of diagnostics. The effects of embedding ILPs and SLPs in the complements of control verbs and propositional attitudes will also be examined, along with cases in which SLPs appear as modifiers of heads that are independently classified as ILPs.

Some of the differences between ILPs and SLPs result from the ability or inability of a clause to delimit cases for the purpose of quantification; these effects are seen with *when* and with absolute adjuncts when they restrict certain modals. Other effects are due to the ability or inability of clauses to delimit *multiple* cases for the purposes of quantification; this is evident when absolute and *when* adjuncts appear with adverbs of quantification. I will use the term “subject effects” to include the existential construction and the diagnostics that concern bare plurals and the possibility of indefinite subjects to be construed weakly. The grammaticality of perceptual reports constitutes a fourth set of effects.

There are, I think, a number of widely held assumptions about individual- and stage-level predicates that have not been sufficiently scrutinized. Certain previous analyses have suffered because of their assumption that the ILP/SLP distinction depends entirely on a classification of the predicate’s head (along with, perhaps, some ill-understood pragmatic factors). In this book I will argue that, in many cases,



it is necessary to consider the entire predicate before its proper classification can be attempted with success.

It has been widely assumed that predicates that are not KLPs fit into either the SLP or the ILP group, or else they are ambiguous, but it is constantly acknowledged that there are ways in which a predicate from one level can be taken to be a predicate from the other level. But making such a claim should have empirical consequences. In general, language users are quite adept at concocting interpretations for strings of words that are thrown at them and are purported to be sentences. When a predicate of one level is used in an environment that favors predicates of the other level, the interpretation of the predicate is *coerced* according to a small number of predictable patterns. Once we identify the patterns, we can test whether coercion has actually occurred in any given instance.

The analysis developed in this book draws heavily on existing work, particularly that of Kratzer (1988) and Carlson (1977). The cases of nonuniformity that we find among the diagnostics will naturally be explained by trying to be clearer about what each of the tests diagnoses. I will claim that ILPs and SLPs have a conglomerate of properties that different diagnostics pick out. The heart of my analysis is built on a fairly implicit assumption in Kratzer (1988): that there is a type-theoretic distinction between ILPs and SLPs because only the latter can have a spatiotemporal argument. Of course, Carlson (1977) was the first to propose that the predicates be distinguished type-theoretically. We will see evidence from perceptual reports and from free and absolute adjuncts that the ILP/SLP distinction can be maintained after the predicate composes with its subject. An assumption compatible with Kratzer's distinction will fare better in allowing a formal treatment of this observation. In addition to the type-theoretic distinction, we will find reason to believe that SLPs are potentially anaphoric and that ILPs are not, suggesting that a dynamic analysis is called for. We will also identify what sorts of pragmatic factors are involved with certain diagnostics, and we will develop precise ways of telling when they are exerting their influence.

In chapter 2, the traditional diagnostics will be examined with respect to simple predicates. Chapter 3 presents traditional analyses for each of these groups of effects; the discussion will focus on the work of Carlson, Stump, Kratzer, Diesing, and de Hoop and de Swart. In chapter 4, we pause to consider again the basis of the ILP/SLP distinction, and then we investigate coercion, the precise means by which the classification of a predicate can be changed. We will explore what possibilities Kratzer's and Carlson's theories allow for the change in meaning that accompanies coercion. Chapters 5 and 6 lay the groundwork for the theory developed in chapter 7. The first of these considers the consequences of previous work, arguing for three large points: first, that the ILP/SLP distinction is visible at syntactic nodes dominating tenseless clauses; second, that adverbial quantification is subject both to a prohibition against vacuous quantification (Kratzer 1988) and to a plurality condition (de Hoop and de Swart 1989); and finally, that SLPs are anaphoric but ILPs are not. Chapter 6 follows this with a presentation of data that have received little discussion in previous work. The effects of definite nominals, clausal complements, and clausal modifiers will be considered. This is followed by consideration of ways of extending the analyses of Kratzer, Diesing, and Carlson

to account for more complex predicates. This discussion poses serious problems for the Mapping Hypothesis of Diesing (1992) and Kratzer (1988), and it calls for a theory that allows SLPs and ILPs to be derived compositionally.

Finally, chapter 7 develops the analysis based on the type-theoretic distinction implicit in Kratzer (1988). I focus only on the temporal portion of the extra argument found in SLPs and consider the predictions that the analysis makes for how time is used in propositions described by SLPs as opposed to ILPs. Because time is an argument of SLPs but not of ILPs, time will be a constituent in a SLP-based proposition.

As for the basis of the distinction, rather than claiming that ILPs are tendentially stable, or that we assume they are, I will conclude what the formal account forces me to conclude: that SLPs describe characteristics of individuals that hold in space and time—we might even say that they describe spatiotemporal slices of the world; and that ILPs are independent of space and time.