

1990

## Pragmatic factors in the interpretation of generics

Alexander Nakhimovsky  
*Colgate University*

Follow this and additional works at: <https://scholarworks.umass.edu/nels>



Part of the [Linguistics Commons](#)

---

### Recommended Citation

Nakhimovsky, Alexander (1990) "Pragmatic factors in the interpretation of generics," *North East Linguistics Society*. Vol. 20 , Article 10.

Available at: <https://scholarworks.umass.edu/nels/vol20/iss2/10>

This Article is brought to you for free and open access by the Graduate Linguistics Students Association (GLSA) at ScholarWorks@UMass Amherst. It has been accepted for inclusion in North East Linguistics Society by an authorized editor of ScholarWorks@UMass Amherst. For more information, please contact [scholarworks@library.umass.edu](mailto:scholarworks@library.umass.edu).

## **Pragmatic factors in the interpretation of generics.<sup>a</sup>**

Alexander Nakhimovsky

Department of Computer Science  
Colgate University  
Hamilton, NY 13346 USA  
[sasha@colgate.edu](mailto:sasha@colgate.edu)

### **1 The subject matter.**

This paper is about habitual sentences, called ‘generic’ by many authors (hence my title, intended to mean “Pragmatic factors in the interpretation of habitual sentences”). Examples of such sentences are:

#### **Example 1.**

- a. John smokes.
- a. Dogs bark.
- a. Computers of today sing and hop, but don’t talk yet.

---

<sup>a</sup>Work on this paper was partially supported by Colgate Research Council and done while visiting at Cornell’s Computer Science Department. It was significantly helped by a seminar on Events at Cornell’s Linguistics department (Gennaro Chierchia, Fred Landman, Sally McConnell-Ginet). Parts of it were presented to Cognitive Studies groups at the University of Pennsylvania, Cornell, and SUNY Buffalo. Conversations with Tom Myers, and Patricia Ryan’s technical assistance have been instrumental. All errors of judgment and execution are mine.

*Pragmatic Factors in the Interpretation of Generics*

More narrowly, this paper is about **existential-habitual sentences**, or rather the existential-habitual reading of a certain type of habitual sentences illustrated by the following examples from Carlson (1988) (Carlson's numbers, here and elsewhere, are given in parentheses after each example):

**Example 2.**

- a. Hurricanes arise in this part of the Pacific. (1)
- b. A computer computes the daily weather forecast. (8)
- c. A cat runs across my lawn every day. (11)

As has been observed by many authors, these sentences are ambiguous. On a less likely reading, which I call kind-habitual, (1a.) asserts that all hurricanes, or hurricanes as a kind, originate in one part of the Pacific. On the preferred reading, which I call existential-habitual, hurricanes are existentially quantified. The preferred reading is brought out by the following paraphrases: (Carlson 1988:171):

**Example 3.**

- a. There arise hurricanes in this part of the Pacific. (2a)
- b. In this part of the Pacific arise hurricanes. (2b)

Existential-habitual sentences present a problem for extensive recent literature on generics originating from Carlson (1977). The problem is well documented in Schubert and Pelletier (1987) and Carlson (1988). In essence, Carlson's older theory is set up so that an indefinite subject NP in a sentence in the simple present tense has to refer to a kind, and cannot come out existentially quantified. (By an indefinite NP I mean a bare plural, a mass noun, or a singular indefinite.) Carlson (1988) is an attempt at a radical rethinking of the theory, aiming, among other things, to fix the problem posed by existential-habitual sentences. However, it does not investigate either the origin of their ambiguity or the principles by which it is resolved. This is what I do in this paper.

The paper is in two parts, a negative and a positive. The negative part argues against the main point of Carlson (1988), namely that habitual sentences necessarily have an 'intensional' component. I also argue that an adequate analysis of such sentences can only be based on a clear understanding of the semantics of the simple present, which is sorely lacking. The positive part, in turn, consists of a semantical part and a pragmatic part. The semantical part is presented in a programmatic fashion here and elaborated elsewhere (Nakhimovsky-ms). The pragmatic part, constituting the main point of the paper, is that the existential-habitual vs. kind-habitual ambiguity is resolved on the basis of the pragmatic division into 'given' and 'new' information.

*Pragmatic Factors in the Interpretation of Generics***2 Carlson's (1988) analysis.**

Carlson (1988) proceeds, in outline, as follows. In section 1, the subject matter of the paper is identified as “generic sentences”, defined as follows (167-168):

**Figure 1.**

- a. They express a regularity “as opposed to an instance from which one infers a regularity.”
- a. Their truth cannot be ascertained solely with reference to any particular localized time.
- a. They are stative, in the sense of Dowty (1979), but ...
- a. based on lexically non-stative predicates.
- a. They are intensional, in a sense left unspecified in the definition. <sup>1</sup>

Section 2 summarizes Carlson's original analysis of generics and formulates its essence thus: “The definition of a generic sentence under this [pre-1988] analysis is profoundly tied up with the view that all such sentences have a subject-predicate form; the subject of the sentence provides the key ingredient for the generic—the individual—and the generic predicate denoted by the VP is predicated of the denotation of the subject NP.” (p.170) Difficulties with this analysis, mostly having to do with existential-habitual sentences, are documented in section 3. Section 4 briefly considers and rejects a “sentential operator analysis”, based on the idea that “generic *propositions* are derived from non-generic *propositions*, rather than generic predicates being derived from non-generic predicates.” (p.175) Sections 5 and 6, the heart of the paper, formulate and advance arguments for a “relational analysis”, summarized, in section 7, as follows (pp.189-190). The generic or habitual interpretation of a sentence cannot be associated with a single syntactic rule. It does arise from a *relation* between two elements, a proposition or predicate and ‘a related constituent’; the subject happens to be the preferred such constituent. The relation is not that of predication, but Carlson cannot say what it is. Carlson's main point is that the two related elements are intensional; this is also my main point of contention.

In what follows, I first analyse Carlson's notion of intensionality and find that it pulls in two different directions. I then consider Carlson's arguments against the sentential operator analysis, and present counter-arguments in favor of it. Finally, I introduce the pragmatic factors operative in the interpretation of existential-habitual sentences, and show how they explain

---

<sup>1</sup>Carlson also mentions in passing that generic sentences are non-monotonic, in the sense of the AI work on non-monotonic reasoning (see Ginsburg 1987). This does not play any role in his discussion.

a range of data that are not brought out or remain “puzzling” in Carlson (1988).

### 3 Contra intensionality.

To use existential-habitual sentences as data, Carlson needs to show that they are “generic”, in the sense of his definition. Consider sentence (2a.), *Hurricanes arise in this part of the Pacific*. It is easy to see that it expresses a regularity, that its truth cannot be ascertained solely with reference to any particular localized time, that it passes Dowty’s (1979) tests for stativity, and that it is based on a lexically non-stative predicate. But why is it intensional? Because, according to Carlson 1988:173, by substituting the phrase ‘where I’m pointing my finger’ for the phrase ‘this part of the Pacific’ we obtain a sentence that has a different possible reading, in which the subject is possessed of power over the forces of nature: *Hurricanes arise where I am pointing my finger*.

At this point, it is useful to inquire what ‘intensional’ means (see e.g. Zalta 1988). Intensional logics were introduced to account for systematic failures of certain logical principles (axiom schemata), such as the principles of Existential Generalization, Strong Extensionality and Substitutivity. Zalta (1988):7 observes: “It is now customary to call relations ‘intensional entities,’ in virtue of the fact that expressions signifying them occur in sentences failing Strong Extensionality. . . . It is also customary to call the principal verbs and sentential operators that occur in sentences failing one of the above principles ‘intensional verbs’ and ‘intensional operators.’ Intensional verbs and operators create ‘intensional contexts.’ This profusion of things intensional means that whenever something is identified as ‘intensional,’ it is important to know which principles it violates.”

Carlson seems to have in mind the principle of Substitutivity. I quote Zalta again: “This principle derives from the intuition that if two things are identical, anything true concerning one is true concerning the other. If *S* is any English sentence containing a denoting expression *D*, and *S’* is the result of replacing at least one occurrence of *D* by a different expression *D’*, then Substitutivity may be expressed as follows: from *S* and “*D* is identical to *D’*,” we may infer *S’*.” (Zalta 1988:5)

However, Carlson’s example does not qualify as a failure of Substitutivity, for its logic is as follows: if *D* and *D’* are two denoting expressions, and if *in one reading of D’* it is true that “*D* is identical to *D’*” then from any sentence *S* containing *D* we can infer *S’*, the result of substituting *D’* for *D* in *S*.<sup>2</sup> This

<sup>2</sup>Carlson’s example makes use of the fact that the progressive in *where I’m pointing my finger* can have ‘narrow scope’ with respect to the main clause so that the phrase may

*Pragmatic Factors in the Interpretation of Generics*

is not a reasonable principle, for it leaves very little unintentional: anything localized in space and time can be referred to as *what I'm pointing my finger at*, which, when substituted, will produce a spurious extra reading, e.g. the dictatorial-performative reading of *What I'm pointing my finger at belongs to me*.

Why is it important for Carlson to have some sort of intensionality in a generic sentence? Carlson's (1988):168 discussion of the notion of an **individual**, as opposed to a temporal **stage** of such, provides an important clue: "a proper name like 'John Smith' denotes the (property set) of an individual. Individuals are not to be regarded as extensions proper; rather, individuals are intensional objects. They are the sort of things that can appear at different times and places (and in different worlds) and still be 'the same,' even if the instances are distinguishable." From the fact that individuals can appear at disjoint times and disjoint places Carlson thus concludes that they are intensional, in the technical sense that their denotations are functions from some indexing set to a set of extensions. "Different times and places" are simply indices, on a par with possible worlds.

Montague grammar has traditionally employed a limited variety of ways of constructing composite individuals out of simple (or simpler) ones, relying primarily on function sets. Given an individual that is not connected in space or time, the only way to model it is by a function from a set of primitive 'indices' at which connected component tokens appear to such connected tokens. By an association of ideas that has primarily to do with the history of modal and tense logics, any such functional object is called 'intensional', and so is the natural language phenomenon that the object is supposed to be the interpretation of. There is a big gap between this notion of intensionality and the original philosophical notion of 'objects of thought' that replace extensions in opaque contexts bringing about failures of substitutivity. Carlson's position seems to be that there is no gap: whatever is intensional in virtue of distributed reference can also be shown to be intensional in virtue of a failure of substitutivity. This leads to postulating spurious such failures; the gap, I believe, is real.

I suggest that the notion of an individual espoused by Montague grammar and evidenced by Carlson (1988) is too abstract, lacking in properties that the real flesh-and-blood individuals possess. (I'm here inspired by Dana Scott's remarks in Wilks 1989:141-142.) I do not claim to have found the magical solution, but the direction is, I believe, correct. It is best explicated by comparing the mathematical properties of the set of possible worlds with the set of times and places. In modal or epistemic logics, where the indexing sets represent very abstract things like possible ways the world can be, or alternative 'belief spaces', a binary accessibility relation is about as much as

---

mean (in some ideolects, it seems) the same as *wherever I point my finger*.

*Pragmatic Factors in the Interpretation of Generics*

one can say about the structure of the indexing set. However, these binary accessibility relations, although highly successful in capturing the distinctions between various systems of modal logics, are rather poor in content compared to what can be said about, for instance, the structure of Euclidian space. They soon proved to be insufficient for many areas of natural language semantics, counterfactuals and verb aspects being two, not unrelated, examples. Attempts have been made to introduce additional relations such as *closeness* (Lewis 1973) or *inertia worlds* (Dowty 1979), but little theory has developed around these tentative relations: they are, in effect, alternative labels for the phenomena they are supposed to explicate. How does one measure the distance, or similarity, between two possible worlds?

By contrast, time and space can be measured; we do that all the time. What it means is that the notion of a *distance* in space and time is well defined and satisfies the standard axioms. Time and space, therefore, are metric spaces that can be topologized in straightforward and intuitive ways, providing a basis for precise definitions of connectivity, density, boundary, and other topological notions. These, in turn, can be used to specify the semantics of tense, aspect, and generic NP operators.

For another way of formulating this project, some terminology is needed. Assume the framework of a situation-based semantics, in which the denotation of a sentence is a **history-token** (h-token), a space-time region in which 'something happens.' ('H-token' is a cover term for events, states, and other temporal entities.) The spatial dimensions of an h-token form its **spatial projection**, and the projection of an h-token on the time axis forms its **temporal projection**. By abuse of terminology, I also speak of the spatial and temporal projections of the sentence. We can observe that the set of all functions from time to truth values is way too large, containing functions whose domains are 'crazy sets' that cannot possibly be temporal projections of natural language sentences. Consider for instance the "metaphysical conviction" that "there are no indefinitely finely intermingled intervals of truth and falsity for any statement" (attributed to Hamblin in van Benthem (1988):64). This sort of intuition invites questions such as these: What kind of mathematical properties would we like to ascribe to temporal projections to reflect our intuitions about natural language expressions and inferences from them? Are there universal, cross-linguistic properties of temporal projections that would tightly constrain the notions of 'a possible aspect' and 'a possible tense'? My central claim is that these questions are best posed, and answers to them formulated, in a topological and measure-theoretical framework. Moreover, the same framework can provide a foundation for an ontology of spatial entities, endowed with topological and metrical properties that are reflected in grammatical distinctions.

*Pragmatic Factors in the Interpretation of Generics***4 Intensionality and boundedness.**

A clear example of intensionality called upon to model topological and metrical notions is found in Carlson's discussion of 'boundedness', a notion that frequently comes up in discussions of aspect (Dahl 1985). Consider again (2c.), Carlson's (11):

**Example 2.**

- c. A cat runs across my lawn every day. (11)

Carlson writes (p.180): "A phrase like 'every day' is, as many have observed, ambiguous between a reading which quantifies over some (normally contextually-defined) set of elements, or else it may have an 'unbounded' reading. In (11) and other such examples, only the latter 'unbounded' reading appear." This is proven by the semantical ill-formedness of sentences in which (I quote Carlson again) "there is an overt restriction on the range of quantification" (ibid), by means of a durational adverb:

**Example 4.**

- a. A cat runs across my lawn *every day this week and last*. (29a)  
 b. A cat runs across my lawn *every day from last Monday to next Friday*. (29b)  
 c. A cat runs across my lawn (on) four days. (30a)  
 d. A cat runs across my lawn several times. (30b)

How is 'unboundedness' to be represented? Carlson posits two possibilities: an intensional construct, or universal quantification "over all possible days" (ibid). The second possibility is rejected because of two arguments. First, it is not true that the phrase is totally unbounded: "(11) is perfectly compatible with the occurrence of cats dashing across my lawn having begun only last month, and its present truth certainly does not require that this go on forever." (p180) Second, even if the durational adverb *lexically states* that the number of days is unlimited or unbounded, the sentence is still semantically ill-formed:

**Example 5.**

- a. A cat runs across my lawn (on) an unlimited number of days. (31a)  
 b. A cat runs across my lawn every day of an infinite number of days. (31b)

Carlson concludes: "The beginnings of a satisfactory analysis would treat the meaning of the phrase in (11) as a function from contexts to all days in



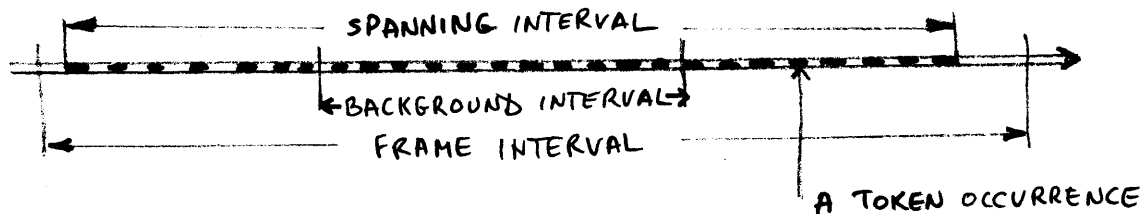
*Pragmatic Factors in the Interpretation of Generics*

that context" (p181), an intensional object. I disagree with the conclusion, but find Carlson's arguments pointing up important semantical facts. The first indicates that the interpretation of a sentence is always constructed within a **background time interval**; Nakhimovsky-ms argues that the semantics of tense and aspect cannot be understood without a reference to such a background interval, itself contained in a larger **frame interval**. (The background interval is represented by a variable in the logical form that is either existentially quantified or acquires a binding from the preceding context via a context-update mechanism as in Schubert and Pelletier 1988.) The second argument of Carlson's shows that, not surprisingly, a lexical item, especially a learned one, cannot correct a semantical ill-formedness arising from the clash of grammatical categories.

But what precisely is the clash? It is not, I believe, between 'genericity' and 'boundedness', but rather between the habitual aspect and the presence of **boundaries** within the background interval introduced by the adverbial. A habitual sentence asserts the absence of such boundaries within the background interval.

Let me indicate how the semantics of the habitual aspect should go. A sentence like (2c) asserts a repeating regular occurrence of a token event, a cat running across the lawn, throughout the background interval. Consider the **spanning interval** (the 1-D convex hull) of all such token occurrences within the larger frame interval. In the case of a habitual sentence, the spanning interval will contain the background interval. By contrast, in the case of an episodic sentence like *A cat ran across my lawn yesterday*, the spanning interval (identical to the temporal projection) is contained in the background interval and introduces two boundaries into it, dividing it into the intervals before, during, and after the token event. This is illustrated by Figure 2, and elaborated in greater detail in Nakhimovsky-ms. I refer to the configuration of Figure 2 as the **habitual time structure**.

Figure 2.



*Pragmatic Factors in the Interpretation of Generics*

As empirical evidence that habitual sentences are compatible with **bounds** (but not with **boundaries**), observe that the following are well-formed:

**Example 6.**

- a. In my first year at college, I used to go swimming every day.
- b. All through the year, our computer would break down every two weeks.

There are also **metrical** constraints involved. Carlson (p.182) contrasts (a.) and (b.) below and attributes the difference to ‘every Sunday’ denoting the intensional Sunday in (a.) and extensional ‘token days’ in (b.).

**Example 7.**

- a. Every Sunday used to go by too quickly. (33a)
- b. ??Every Sunday in the past month used to go by too quickly. (33b)

It seems to me that part of the reason is that a month is just too short and does not have enough Sundays to form a generalization. The following are well-formed:

**Example 8.**

- a. In my first year at college, every Sunday used to go by too quickly.
- b. Every Sunday of my college years would go by too quickly.

It appears that intensionality is unnecessary if we learn to distinguish singular temporal entities from plural ones by endowing their temporal projections with such properties (properly axiomatized) as connectivity, and the presence or absence of its boundaries within the background interval. It also appears that the binary  $\pm$ intensional distinction is too blunt a tool to capture the gradation of metrical distinctions suggested by (6)-(8): we need something like the relation **much-greater-than** to account for the data. In sum, there are no intensionality restrictions that the habitual nature of the sentence imposes on any or its constituents. Thus ‘John’, in *John smokes* does not have to be treated as denoting an intensional object. Similarly, existential-habitual sentences can be taken as straight evidence that there is no necessary connection between the interpretation of indefinite NPs (referring to a kind vs. ordinary individual) and the aspectual character of the sentence (habitual vs. episodic). The interpretation of habitual sentences and indefinite NPs are mutually constrained only by topological and metrical conditions like the following: the spatial projection of a kind cannot be ‘localized in space’ by precise boundaries in much the same way the temporal projection of a habitual sentence cannot be ‘localized in time.’ This is

further worked out in Nakhimovsky-ms. In this paper, I pursue the following questions: why does the ambiguity of habitual space-localized sentences arise, and how is it resolved?

## 5 On partitioning a sentence.

The two tasks (habitual or not? refers to a kind or not?) call for two different ways of partitioning the logical form of the sentence, neither of them necessarily coinciding with the syntactic division into subject and predicate. The first task calls for partitioning it into an aspectually elementary proposition and the coercing elements (the tense and aspect operators, including adverbials) that impose the habitual time structure. The second task calls for the pragmatic division into given and new (which in English frequently coincides with the division into subject and predicate).

Treating habituality as an aspectual category (a fairly traditional point of view, cf. Dahl 1985) naturally assumes that it is represented by a sentential operator, the way other tenses and aspects are. Carlson (1988):175-77 presents arguments against such a sentential-operator analysis of habitual sentences. They consist of a theoretical problem and a number of empirical ones. The theoretical problem is that the sentential-operator analysis appears to say nothing about “the relationship between the existential and universal readings of bare plurals (and mass nouns) on the one hand, and the generic or nongeneric nature of the sentence on the other.” (p175) My answer is that everything that needs to be said is expressed by the just mentioned semantical constraints: a sentence about a kind (with ‘the universal reading’) cannot be localized in space, while a sentence about ordinary individuals has to be so localized. The question is how to determine what the sentence ‘is about’; this is a pragmatic problem having to do with the division into given and new.

Similar pragmatic factors are at work in Carlson’s empirical counter-examples. They concern the contrast between sentences in the simple present with and without adverbials of space, time or frequency. Why should it be that in (a.) the subject can be interpreted either as a kind or existentially, while in (b.) only the first reading obtains?

### Example 9.

- a. Slaves work Lower Slobovia’s salt mines. (17a)
- b. Slaves work. (17b)

The answer, I believe, is that a sentence has to be about something, and whatever the sentence is about determines whether or not it is space-localized. (a.) can be either about slaves (referring to a kind) or about the

*Pragmatic Factors in the Interpretation of Generics*

salt mines (localized in space and thus enforcing the existential reading on the indefinite subject NP). No such choice is available in (b.): it has to be about a kind. This sort of considerations has to be incorporated into any semantical theory, and they are no more difficult (and no easier) to incorporate into the sentential operator approach than in its alternatives.

On the proposed view, the kind-habitual vs. existential-habitual ambiguity is the ambiguity of ‘what the sentence is about’. The ambiguity arises because the grammatical category of indefiniteness can play either a semantical role (denoting a kind) or a pragmatic role (pointing to the new information of the sentence). It is not my intent here to add to abundant literature on the given-new distinction (see Chafe 1975, Clark and Marshall 1981, Prince 1981), but I would like to connect it, conceptually and terminologically, to the recent approaches to discourse semantics. I assume, in the spirit of Kamp 1981, Webber 1979, that the semantic value of a discourse is some collection of entities that stand in various relations to each other, and the semantic value of a sentence is the modification it effects on the already constructed representation of discourse. An NP in the current sentence can either *introduce* a new entity or *access* a given entity; a variety of linguistic means (definiteness, intonation, word order) help determine which.

## 6 The indefinite – given rule.

I suggest the following rule for the interpretation of indefinite NPs (bare plural, indefinite singular, mass term).

*If a sentence exhibits the habitual time structure then an indefinite NP has a ‘universal interpretation’ (refers to a kind) if it accesses an entity (uses it as given); such an NP has an existential interpretation (refers to an object or a number of different objects of the same kind) if it introduces a new entity.*

The rule makes an intuitive sense: one of the sources of givenness is shared knowledge (Prince 1981), and referents of the ‘data type’ kind, unlike referents of the ‘data type’ object, are assumed to be shared by the speech community and do not need a special introduction before becoming available for accessing. (There are remarks to this effect in Chafe 1975.) The rule also explains several facts that are not brought out or remain “puzzling” in Carlson (1988). Before presenting them, I repeat examples (2a,b) here, for ease of reference:

### Example 2.

- a. Hurricanes arise in this part of the Pacific. (1)

*Pragmatic Factors in the Interpretation of Generics*

- b. A computer computes the daily weather forecast. (8)

Now, for the evidence. First, observe that the existential reading of an indefinite subject NP in an intransitive habitual sentence is brought out by a paraphrase with the “there” construction, the syntactic signal of introducing a new entity into the discourse (cf. (2a) and its paraphrases in (3)):

**Example 3.**

- a. There arise hurricanes in this part of the Pacific. (2a)  
 b. In this part of the Pacific arise hurricanes. (2b)

Second, as observed already in Carlson (1980), and illustrated by (2a), the existential-habitual vs. kind-habitual ambiguity of intransitive sentences frequently arises in the presence of a locative adverbial, another common signal of introducing a new entity. Significantly, if the locative is indefinite, the ambiguity does not arise: compare (2a) with *Hurricanes arise in an area of the Pacific*. The reason is that there is a general tendency to proceed from given to new and introduce new information towards the end of the sentence. The tendency can be overridden, in English, by definiteness values: a sentence that is syntactically Ind-NP – V – Prep – Def-NP can be interpreted as introducing the entity denoted by the indefinite subject NP, but only if the other NP is definite.

It is instructive to consider how the two readings of (2a) translate into Russian, which does not have the grammatical category of definiteness, and whose constituent order does not carry the syntactic load of the English constituent order, but serves to express the distribution of given and new. The existential-kind ambiguity does not arise, because the two readings are expressed by different constituent order:

Uragany	voznikajut v etoj časti Tiħogo	Okeana.
hurricanes	arise in this part of-the-pacific	ocean
(kind-habitual reading only)		

V etoj časti Tiħogo	Okeana	voznikajut	uragany.
in this part of-the-pacific	ocean	arise	hurricanes
(existential-habitual reading only)			

As already mentioned, if there is only one (indefinite) NP in the sentence it is interpreted generically, because introducing a new entity requires relating it to a given one; compare *Mice squeak when you pound on this wall* and *Mice squeak* (Carlson’s examples 18a,b).

### *Pragmatic Factors in the Interpretation of Generics*

In transitive sentences like (2b), the existential reading of an indefinite subject NP is clearly brought out by passivization, i.e., by putting the indefinite NP in the end of the sentence where it is interpreted as 'new'; compare (2b) and *The daily weather forecast is computed by a computer*, with the existential reading only. In transitive sentences with two indefinite NPs, it is the fronted NP that is interpreted as referring to a kind, as in the following pair (much discussed in the days of the Passive Transformation): *Beavers build dams./Dams are built by beavers*. In general, the syntactic subject most commonly denotes the given of the sentence, which explains why the subject is the preferred 'related constituent' in Carlson's (1988) analysis.

## **7 Conclusions: a larger picture.**

These data, and the thesis they confirm, pose some difficult questions. One concerns the perennial problem of interaction between different kinds of linguistic information, and the role such interaction plays in the resolution of ambiguity. Assuming that existential-habitual sentences are not syntactically ambiguous (and there does not seem to be any evidence that they are), they present a case of semantical ambiguity resolved by pragmatic considerations, with one reading immediately and clearly preferred. A similar situation at the interface of syntax and semantics interface has been the subject of continuous argument about the time-course and nature of their interaction, generating psycholinguistic data that, ideally, should feed into syntactic theories. In a similar fashion, data concerning the resolution of semantical ambiguity can become subject of psycholinguistic research whose results can feed into theories of semantics.

Another question concerns the nature of mathematical objects out of which models (as in model-theoretical) are constructed, and particularly the notion of an individual. Individuals afforded by Kripke structures are too abstract; the task of a semantical theory is to find a means of endowing the individual with a richer set of mutually constrained properties, reflecting the logically accidental, but physically, biologically, and socially universal parameters of human existence. These primarily include topological, metrical, and dynamical properties as identified, most prominently, in Talmy 1985?, 1987. In pursuing this line of research, semantics will find natural allies in naive physics as a theory of commonsense world (Bobrow 1985, Hobbs and Moore 1985, Gardin and Metzler 1989), and computational theories of perception, especially computer vision. There are, I believe, profound interconnections between the domains of these lines of research; Nakhimovsky 1987, 1990 provide some examples and initial considerations.

## References

- [1] Bobrow, Daniel. (Ed.) 1985. *Qualitative Reasoning about Physical Systems*. Cambridge, MA: MIT Press.
- [2] Carlson, Greg (1977) *References to Kinds in English*. PhD Dissertation, U Mass Amherst. Published as Carlson, Greg. 1980. *References to Kinds in English*. New York: Garland.
- [3] Carlson, Greg (1988) The semantic composition of English generic sentences. In Chierchia et al. 1988, vol.2, 167-192.
- [4] Chierchia, Gennaro, Barbara Partee, Ray Turner (eds.) *Properties, Types and Meaning*. Boston: Reidel.
- [5] Chafe, Wallace. 1975. Givenness, contrastiveness, definiteness, subject, topic, and point of view. In C. Li (ed.) *Subject and Topic*. New York: Academic Press.
- [6] Clark, Herbert and Catherine Marshall. 1981. Definite reference and mutual knowledge. In A. Joshi, B. Webber and I. Sag (eds.) *Elements of Discourse Understanding*. Cambridge: Cambridge University Press.
- [7] Dahl, O. 1985. *Tense and Aspect Systems*. Oxford: Basil Blackwell.
- [8] Dowty, David. 1979. *Word Meaning and Montague Grammar*. Dordrecht: Reidel.
- [9] Hobbs, J. R. and R. C. Moore (Eds.). 1985. *Formal Theories of the Commonsense World*. Norwood, NJ: Ablex Publishing Corporation.
- [10] Gardin, Francesco and Bernard Metzler. 1989. Analogical representations of naive physics. *Artificial Intelligence* 38:139-159.
- [11] Ginsberg, Matthew. (ed.) 1987. *Readings in Non-monotonic Reasoning*. Los Altos, CA: Morgan Kaufmann.
- [12] Kamp, Hans. 1981. A theory of truth and semantic representation. In Groenendijk, J. A. G. et al. (eds.), *Formal Methods in the Study of Language*. Amsterdam.
- [13] Lewis, David. 1973 *Counterfactuals*. Cambridge, MA: Harvard University Press.

*Pragmatic Factors in the Interpretation of Generics*

- [14] Nakhimovsky, A. 1987a. The lexicon, grammatical categories and temporal reasoning. In J. Hallam and C. Mellish (eds.), *Advances in Artificial Intelligence*, Chichester: John Wiley.
- [15] Nakhimovsky, A. ms. Tenses and aspects as operators on time regions.
- [16] Prince, Ellen. 1981. Toward a taxonomy of given/new information. In Peter Cole (ed.) *Radical Pragmatics*. New York: Academic Press. Pp. 223-55.
- [17] Schubert, Lenhart and F. J. Pelletier. 1987. Problems in the representation of the logical form of generics, plurals, and mass terms. In Ernest LePore (ed.) *New Directions in Semantics*. New York: Academic Press.
- [18] Schubert, Lenhart and F. J. Pelletier 1988. Generically speaking. In Chierchia et al. 1988, vol.2, 193-268.
- [19] Talmy, Leonard. 1985. Force dynamics in language and thought. In *Parasession on causatives and agentivity*, Chicago Linguistic Society 21st Annual Meeting, University of Chicago.
- [20] Talmy, Leonard. 1987. The relation of grammar to cognition. In Brygida Rudzka-Ostin (ed.) *Topics in Cognitive Linguistics*. Amsterdam: John Benjamins.
- [21] van Benthem, J.A.F.K. 1988. *Manual of Intensional Logic*. 2nd Edition. Stanford, CA: CSLI.
- [22] Webber, Bonnie. 1979. *A Formal Approach to Discourse Anaphora*. New York: Garland.
- [23] Wilks, Yorick. 1989. *Theoretical Issues in Natural Language Processing*. Hillside, NJ: Erlbaum.
- [24] Zalta, Edward. 1988. *Intensional Logic and the Metaphysics of Intentionality*. Cambridge MA: MIT Press.