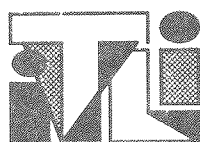


Institute for Language, Logic and Information (ITLI)



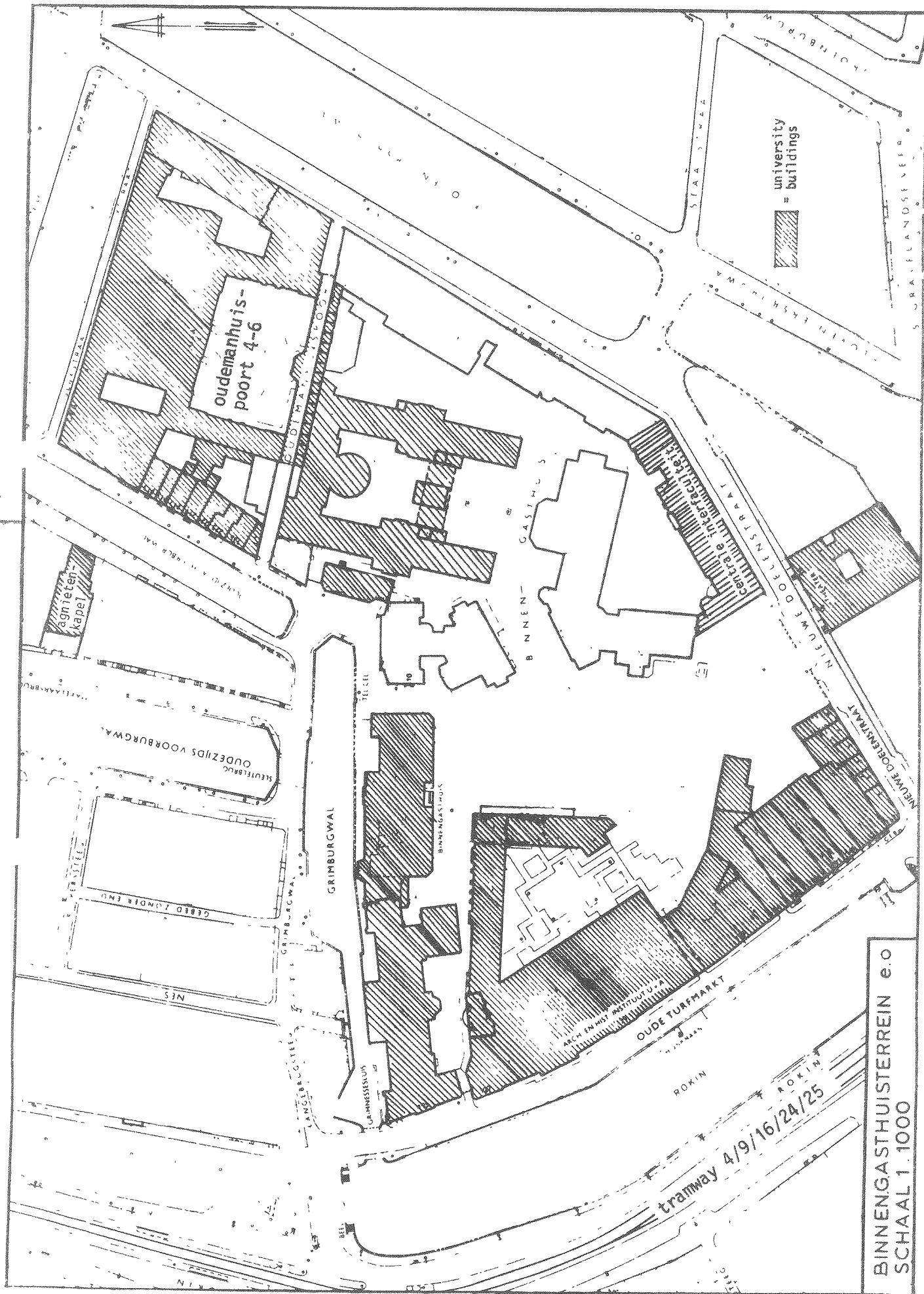
abstracts and program

---

SIXTH AMSTERDAM COLLOQUIUM  
April 13-16, 1987

---

Universiteit van Amsterdam



BINNENGASTHUISTERREIN e.o.  
SCHAAL 1:1000

In the series of bi-annual Amsterdam colloquia, the SIXTH AMSTERDAM COLLOQUIUM will be held in Amsterdam from April 13-16, 1987.

The colloquium is organized by the Institute for Language, Logic and Information (ITLI), founded by the Departments of Philosophy and Mathematics of the University of Amsterdam.

Financial support was received from the Royal Dutch Academy of Sciences and from BSO, a leading software house in the Netherlands, with a major research project on machine translation.

The organizing committee consists of Jeroen Groenendijk, Martin Stokhof, Frank Veltman and Marjorie Pigge (secretary).

Further information can be obtained from:

Organizing Committee Sixth Amsterdam Colloquium  
Centrale Interfaculteit (Department of Philosophy)  
University of Amsterdam  
Grimburgwal 10, gebouw 13  
1012 GA Amsterdam  
phone: 020-5254540 (Jeroen Groenendijk & Martin Stokhof)  
020-5254564 (Frank Veltman)  
020-5254552 (Marjorie Pigge)

The colloquium will take place at the *Oudemanhuispoort*, one of the buildings of the University of Amsterdam. The address is:

Oudemanhuispoort 4-6  
phone: 020-5253361 (doorman)

The lectures will be given in rooms D.108, C.217 and C.017. Coffee and tea will be served in room C.117.

Lunches will be served in the cafeteria of the Department of Philosophy. The department is located close to the Oudemanhuispoort. On the accompanying map the location is marked 'Centrale Interfaculteit'. On Monday evening, after the final lecture of that day, a reception will be held at the same location.

The Oudemanhuispoort and the department building can be reached by public transportation as follows.

From the Central Station: take tramline nr. 4, 9, 16, 24 or 25. From the Euromotel: take tramline nr. 25. From the Toren Hotel: take tramline nr. 14 (direction: Plantage Muidergracht). Get off at the stop 'Spui'.

From the Spui, proceed as follows: take the narrow street with the jeweller's shop with the windmill at the corner (name of this street: Langebrugsteeg); pass two bridges, turn left and immediately on your right you will find the entrance (a gate) of the Oudemanhuispoort. For the Department of Philosophy turn right after you pass the two bridges, then turn left, left again and then right. The entrance is on a small courtyard.

During the colloquium the secretary can be reached at the Department of Philosophy, phone: 020-5254552/5254500.

## PROGRAM MONDAY, APRIL 13

09.00-09.20 Registration and coffee (C.117)

09.20-09.30 Opening by Johan van Benthem (D.108)

09.30-10.30 INVITED LECTURE:

Jon Barwise (D.108)

*A model-theoretic treatment of natural language conditionals*

10.30-11.30 Coffee break (C.117)

11.00-11.45 Angelika Kratzer (D.108)

*An investigation of the lumps of thought*

11.45-12.30 Godehard Link (D.108)

*Algebraic semantics of event structures*

12.30-14.30 Lunch break

14.30-15.15 PARALLEL SESSIONS

Manfred Krifka (D.108)

*Mass terms, plural ,telicity: towards a semantics of quantity*

Alice ter Meulen (C.217)

*Incomplete events*

15.15-16.00 PARALLEL SESSIONS

Craige Roberts (D.108)

*Distributivity*

Frank van Eynde (C.217)

*A model-theoretic analysis of iterativity and habituality expressions*

16.00-16.30 Tea break (C.117)

16.30-17.30 INVITED LECTURE:

Robin Cooper (D.108)

*San Situation Semantics Contribute to Natural Language Processing ?*

17.30 Reception (at the Department of Philosophy)

## PROGRAM TUESDAY, APRIL 14

09.00-09.30 Coffee (C.117)

09.30-10.30 INVITED LECTURE:

Gennaro Chierchia (D.108)  
*Some issues in property-theoretic semantics*

10.30-11.30 Coffee break (C.117)

11.00-11.45 Anna Szabolcsi (D.108)  
*Bound variables in syntax*

11.45-12.30 Henk Zeevat (D.108)  
*A representation language with indices*

12.30-14.30 Lunch break

14.30-15.15 PARALLEL SESSIONS

Gosse Bouma (D.108)  
*Flexible phrase structure grammar and categorial unification grammar*

Sjaak van Leeuwen (C.217)  
*Identity and common nouns in intensional logic*

15.15-16.00 PARALLEL SESSIONS

Rob van der Sandt (D.108)  
*Presupposition and discourse structure*

Netta Koene (C.217)  
*Syntactic and prosodic form in empirical semantics*

16.00-16.30 Tea break (C.117)

16.30-17.30 INVITED LECTURE:

Arnim von Stechow (D.108)  
*Three theories of focusing operators*

## PROGRAM WEDNESDAY, APRIL 15

09.00-09.30 Coffee (C.117)

09.30-10.30 INVITED LECTURE:

Joe Halpern (D.108)

*What can machines know? On the epistemic properties of machines*

10.30-11.30 Coffee break (C.117)

11.00-11.45 J.-J.Ch. Meyer (D.108)

*The ethics of murder (a simple solution to the 'deepest' paradox in deontic logic)*

11.45-12.30 Edward Keenan (D.108)

*Non-standard noun phrases (four ways to skin a cat)*

12.30-14.30 Lunch break

14.30-15.15 PARALLEL SESSIONS

Franciska de Jong and Lisette Appelo (D.108)

*Synonymy and translation*

Thomas Ede Zimmermann (C.017)

*Intensional logic and two-sorted type-theory*

15.15-16.00 PARALLEL SESSIONS

Theo Janssen (D.108)

*Compositionality and machine translation*

Jaap Hoepelman and A.J.M. van Hoof (C.017)

*Dialogue tableaux theory as a framework for solving some linguistic puzzles*

16.00-16.30 Tea break (C.117)

16.30-17.30 INVITED LECTURE:

Bob Moore (D.108)

*Properties and propositions*19.00-22.00 EVENING SESSION ON *Discourse Representation Theory* (D.108)

INVITED LECTURES by:

Franz Guenther, Pieter Seuren, Hans Kamp

## PROGRAM THURSDAY, APRIL 16

09.00-09.30 Coffee (C.117)

09.30-10.30 INVITED LECTURE:

Manfred Pinkal (D.108)  
*Comparatives, plurals and quantifiers*

10.30-11.30 Coffee break (C.117)

11.00-11.45 Reinhard Muskens (D.108)  
*Going partial and relational in Montague grammar*

11.45-12.30 Fred Landman (D.108)  
*Groups*

12.30-14.30 Lunch break

14.30-15.15 PARALLEL SESSIONS

Jao-Woong Choe (D.108)  
*Anti-quantifiers and distributivity*

J. Lambek (C.217)  
*Production grammars revisited*

15.15-16.00 PARALLEL SESSIONS

Nirit Kadmon (D.108)  
*Asymmetric quantification*

Henk Verkuyl (C.217)  
*Aspect, quantification and negation*

16.00-16.30 Tea break (C.117)

16.30-17.30 INVITED LECTURE:

Barbara Partee (D.108)  
*Quantifying over contexts*

17.30 Closing by Renate Bartsch

## ABSTRACTS

*A Model-Theoretic Treatment of Natural Language Conditionals*

Jon Barwise  
 CSLI  
 Stanford

In my paper 'Conditionals and Conditional Information' (in *On Conditionals*, ed. by E.C. Traugott, C.A. Ferguson, and J.S. Reilly, Cambridge University Press, 1986) I presented an informal, information-theoretic analysis of conditionals, using ideas from situation semantics. In a book with John Etchemendy, *The Liar: An Essay on Truth and Circularity*, we have developed a general approach to modeling situations, types, and propositions, in order to give a model-theoretic analysis of the semantical paradoxes. In this talk, I want to combine these two by using the framework of the latter to present a model-theoretic treatment of the theory sketched in the first mentioned paper.

*Flexible Phrase Structure Grammar and Categorical Unification Grammar*

Gosse Bouma  
 Institut für Linguistik  
 Universität Stuttgart

Categorical Grammars using Composition and Category-Raising are able to assign various phrase structures to one and the same surface string. This property has proved to be useful for the analysis of unbounded dependency constructions and coordination. It will be argued that Fronting in German is another phenomenon that can be adequately described if one exploits this property of Categorical Grammar. The analysis is cast in terms of Categorical Unification Grammar. The view that composition is the essential operation for creating unbounded dependencies is adopted, but it will be argued that furthermore a distinction between functor categories, categories for incomplete constituents and island categories should be introduced. Discussing the Fronting facts, it is shown that a restriction (disallowing Category-Raising for non-atomic categories) is necessary, which prevents more than one argument to be fronted. Additional evidence for the distinction between functor and island categories will be presented and it will be shown that the interaction between coordination and island-constraints is predicted by this analysis.



### *Anti-Quantifiers and Distributivity*

Jae-Woong Choe  
Department of Linguistics  
University of Massachusetts at Amherst

It is generally assumed that a quantificational determiner like *each* has a distributive property reflected in its whole NP, the quantifier, so that the interpretation of other elements in its scope may depend on its interpretation. The Korean distributive particle *ssik* has an interesting property that distinguishes it from such 'regular' distributive determiners as *each*. While quantifiers with *each* have some distributive properties over other NP's in their scope, those with *ssik* in Korean expect other NP's to be interpreted distributively over them. On the basis of this, it is claimed that the concept of distributivity, is not a simple, non-breakable concept, but should be understood as a complex structured concept, like anaphora or the relation between an NPI and its trigger. It is proposed to treat distributivity as a relation between arguments in a sentence. It is argued that a subclassification is needed for quantificational determiners: 'regular' ones, such as *each*, and 'anti-quantificational' ones, such as *ssik*.

### *Can Situation Semantics Contribute to Natural Language Processing ?*

Robin Cooper  
Edinburg University  
University of Wisconsin. Madison  
Lund University

This paper provides an introduction to certain aspects of situation semantics and tries to isolate some ways in which it may make a contribution to natural language programming. We shall focus on three aspects of situation semantics. 1. *Ambiguity versus lack of information*. We will suggest that situation semantics may provide the possibility of analyzing what have previously thought to be ambiguous sentences as sentences which do not provide information which would decide between one reading and another. Hence there is a possibility for cutting down the generation of ambiguity. 2. *Parameters*. The theory of parameters in situation theory seems somewhat related to unification formalisms like PATR and Prolog. This suggests some possibilities for cross-fertilization. 3. *Situation-theoretic grammar*. There is a single situation-theoretic domain which comprehends syntax, phonology etc. and semantics. This may suggest implementations with complex relations among data objects representing situation-theoretic objects rather than with mappings from one kind of representation to another.

*A Model-Theoretic Analysis of Iterativity and Habituality Expressions  
in Natural Languages*

Frank van Eynde  
Katholieke Universiteit Leuven  
Eurotra-Leuven

The verbal tenses are often claimed to convey two kinds of information: 1. whether the event described in a sentence is past, present or future (= deictic information); and 2. whether the event described in a sentence is presented as going on, completed, just starting, etc. (= aspectual information). It will be demonstrated that one has to add a third component to the analysis of tense meanings, namely whether or not a tense expresses habituality. A format for representing expressions of iterativity, such as *every morning, daily*, will be developed, which will be used in the analysis of indefinite frequency adverbials, such as *always, never*, and in a temporal analysis of the concept of habituality. On the basis of these analyses it will be shown that two kinds of tense, habitual and non-habitual, need to be distinguished. This distinction will further be shown to have some relevance for the automatic translation of the tenses and for the explanation of some facts concerning the interaction of the tenses with conjunctions.

*What Can Machines Know? On the Epistemic Properties of Machines*

Joe Halpern  
IBM Research Center Almaden  
San Jose

It has been argued that knowledge is a useful tool for designing and analyzing complex systems in AI. We present an external, information-based notion of knowledge that can be shown to satisfy all the axioms of the modal logic S5. Although S5 was rejected by most philosophers as a model for knowledge, it seems to be a very appropriate one in this context. The question arises as to whether this notion of knowledge has any additional properties, over and above S5. The answer is shown to depend crucially, and in subtle ways, on assumptions we make about the system. We present a formal model in which to examine this question, show by example cases where S5 is not complete, and provide complete axiomatizations in some cases of interest.

*Dialogue Tableaux Theory as a Framework for Solving Some Linguistic Puzzles*

J. Ph. Hoepelman & A.J.M. van Hoof  
 Fraunhofer-Institut für Arbeitswirtschaft und Organisation  
 Stuttgart

Dialogue Tableaux Theory, if extended to handle abstract data structures, can serve as an alternative to the Prolog logic programming paradigm, thereby avoiding certain disadvantages of the latter, e.g. in the treatment of negation or of quantificational dependencies, offering at the same time advantages of its own, like a free predicate logic oriented syntax and the possibility to choose among various logic calculi with well-known, well-defined characteristics. Another use it can be put to is as a theory of natural language semantics and (at least in part) of syntax. Possible solutions to various problems in this area will be discussed. These include another interpretation of negation by failure, which provides a unified treatment of both positive and negative questions, a definition of dialogue rules for counterfactuals. Also the actual implementation of the theory so far will be discussed.

*Compositionality and Machine Translation*

Theo M.V. Janssen  
 ITLI, Department of Computer Science  
 University of Amsterdam

A general theory of translation will be sketched, which will be abstract in the sense that it aims at providing a mathematical framework for translation, and which will be concrete in the sense that it will be based on two systems for machine translation which are currently being developed. These are the EEC's Eurotra project, and the Rosetta project of the Philips Research Laboratories. The mathematical framework used is that of Montague's *Universal Grammar*. It will be shown that there are similarities between the two translation projects: in both cases the principle of compositionality of meaning and the corresponding principle of compositionality of translation function as starting points. An algebraic explication of these principles is presented. Next, it is investigated to what extent they are 'implemented' in the two translation systems under discussion, and how this relates to other features of the systems.

*Synonymy and Translation*  
*(Applications and Consequences of Theoretical Concepts in Rosetta)*

Franciska de Jong & Lisette Appelo  
 Philips Research Laboratories  
 Eindhoven

This paper is meant to give some insight into the interaction between theoretical concepts in the field of formal semantics on the one hand, and linguistic research directed towards an application, more specifically, the research within the Rosetta Machine Translation Project, on the other hand. Rosetta aims at the computerized translation of sentences. As such, it can be seen as a formal account of a special kind of *synonymy*, namely sameness of meaning for expressions belonging to *different languages*. Given this characterization of Rosetta as a starting point, some of the requirements that a theory of grammar should meet, in order to provide a suitable framework for the account of the synonymy relation between a source language expression and its translation, will be discussed. On the basis of an examination of a few of the more complicated tasks for machine translation in this framework, we will argue that applied linguistics of this kind can offer additional arguments for the independency of syntax and semantics, and for devices such as type-shifting. Furthermore it will be indicated how these issues can be considered to offer a contribution to the study of universals in natural languages.

*Asymmetric Quantification*

Nirit Kadmon  
 Department of Linguistics  
 University of Massachusetts at Amherst

The idea that quantifiers have scope over each other is typically identified in one's mind with one aspect of truth conditions, which has to do with correspondences between sets of objects. For example, by saying that *Two students reviewed three papers* has a reading where *two students* has wide scope over *three papers*, one typically means that on one reading this sentence is true iff the correspondence between students and papers is such that there are two students each of whom is matched with three papers. However, scope relations have other manifestations, involving other aspects of truth conditions, intuitive conceptual differences, and other phenomena. What all of the manifestations of scope have in common is that they reflect the asymmetry which is in the heart of scope relations. The paper is concerned with the 'uniqueness' or 'maximality' effects associated with definite NPs, and with an 'asymmetric' reading of quantified sentences which presents a clear problem for the unselective binding treatment of quantification in examples containing *most*, *usually*, *almost always*, etc. It will be argued that both these issues crucially involve the asymmetry inherent in scope relations, and an analysis will be proposed of the problematic reading, which finds support in the behavior of definites under quantification.

*Non-Standard Noun Phrases  
(Four Ways to Skin a Cat)*

Edward L. Keenan  
Department of Linguistics  
UCLA

An approach to the modeltheoretic semantics for natural language NP's and (extensional) n-place predicates will be presented which very properly includes the sort of NP's treated on other approaches. A distinction is made between *standard NP's*, which are interpreted as functions from n+1-place predicates to n-place predicates, and *non-standard NP's*, which express functions from n+k-place predicates to n-place predicates, for k>1. The primary purpose of the presentation is to exhibit various sorts of non-standard NP's, which are expressible in English 'non-compositionally'. This quest is motivated by the fact that almost no non-standard NP's are expressible by compositions of standard ones. Examples that will be discussed are standard NP's in subject position with some sort of anaphorically dependent 'NP' in object position, as in *Each student criticized each other student* ; NP's such as in *Johan and Mary support rival political parties*; and so on. An important question that will be discussed concerns the possibility to characterize limits on expressibility of such non-standard NP's.

*Syntactic and Prosodic Form in Empirical Semantics*

Netta Koene  
ITLI, Department of Philosophy  
University of Amsterdam

In natural language, the same syntactic form can be used to convey different informational contents. Sometimes the effect is a truth-conditional ambiguity (for instance, 'scope' of negation, or 'generic' readings), sometimes it is a subtle nuance (for instance, (non)-specificity, or accidentally versus essentially generic readings). Observations will be presented suggesting that there is a simple observable pattern in these form-content relations. Two minimal pairs of semantic/prosodic markers systematically make up for the lack of information in syntax. Deductively testable hypotheses will be formulated. A methodological point will be that this pattern offers a set of linguistic data that have to be accounted for in a theory of natural language.

*An Investigation of the Lumps of Thought*

Angelika Kratzer  
 Department of Linguistics  
 University of Massachusetts at Amherst

The paper deals with the semantics of situations and with the meaning of counterfactuals. It argues that there is a close connection between the laws of counterfactual reasoning and a relation between propositions called 'lumping'. Capturing this relation requires a component of semantic interpretation which recognizes parts of possible worlds (situations) as primitives and implies a new approach to genericity and negation. The paper argues that the metaphysics underlying our language is one where possible situations are basic entities and worlds don't overlap. It is shown that these assumptions are crucial for an adequate account of the difference between the accidental and the generic interpretation of sentences involving universal quantification and negation. Further, it will be argued that for the accidental interpretation of negation the familiar restricted quantifier representations are needed, and that there is a connection between foregrounding and backgrounding of information and the role of negative propositions in counterfactual reasoning. With regard to the latter, it is pointed out that a 'similarity' theory in the sense of Stalnaker and Lewis cannot explain why similarity considerations fail in some cases. It is argued that a theory based on the 'lumping' relation between propositions fares better.

*Mass Terms, Plural, Telicity: Towards a Semantics of Quantity*

Manfred Krifka  
 Forschungsstelle für natürlichsprachliche Systeme  
 Tübingen

Semantic aspects of some basic nominal constructions, namely mass terms, bare plurals, measure constructions and count terms, will be discussed, and it will be argued that generic and non-generic readings of bare mass and plural terms should not be conflated. A lattice-theoretical model structure is assumed. Bare mass terms are treated as basic predicates, measure constructions as the result of the application of a modifier to a predicate. Semantic restrictions on measure constructions are proposed. It will be argued that with respect to bare plural terms, two different kinds of plural have to be distinguished. The resulting semantics of quantity, as developed for nominal expressions, will be extended to cover verbal expressions. The paper concentrates on *atelic* expressions ('activities') and *telic* expressions ('achievements and accomplishments'). A semantic representation will be developed that captures the well-known similarities between nominal and verbal predicates and accounts for the observed influence of nominal arguments on the aspectual class of the verbal construction in which they occur.

### *Production Grammars Revisited*

J. Lambek  
 Department of Mathematics  
 McGill University  
 Montreal

The idea is to present the grammar of a language entirely in the form of rewriting rules. No preferential treatment is given to context-free productions, i.e. productions of the form:  $A \rightarrow B C$ . It is argued that although these play a leading role in syntax, it is productions of the form:  $A B \rightarrow C$ , or:  $A B \rightarrow C D$ , which predominate in morphology. It is observed that a production grammars can be programmed into a simple machine, essentially consisting of two pushdown automata, together equivalent to a Turing machine. And the question is raised whether this kind of machine models the (parallel) computations that go on in the actual processing of linguistic input. These ideas will be presented by developing a fragment of English grammar that incorporates from the beginning distinctions in person, tense, case, number, etc.

### *Groups*

Fred Landman  
 Department of Linguistics  
 University of Massachusetts at Amherst

The various arguments for the lattice-theoretic approach to plurals developed by Link will be discussed. Special attention will be paid to the distinction this approach makes between sums (plural individuals) and groups, and the three way ambiguity between distributive, collective and group readings that results from it. It will be argued that the arguments for the introduction of groups are sound, but that the analogies between group formation and ordinary set formation are so striking that it can be seriously doubted that going from set theoretic interpretations to lattices in general is a very good heuristic. Link's theory will be recast in a set theoretic framework where group formation simply *is* set formation and the three way ambiguity is reconsidered in the light of this. It will be argued that the distinction between sums and groups, although sound itself, does not parallel a contrast between collective readings and group readings, and an alternative will be proposed that makes this distinction the basis of the contrast between distributive and collective readings. Next, the problem of the 'non-extensionality' of groups will be discussed, and it will be argued that this phenomenon is not restricted to groups, but occurs with singular and plural individuals as well. A solution to this problem will be formulated which assumes that depending on the context, properties are not simply predicated of objects, but only under certain aspects.

*Identity and Common Nouns in Intensional Logic*

J.J.M. van Leeuwen  
ITLI Department of Philosophy  
University of Amsterdam

The paper reports joint work with Henk Zeeval. It is concerned with the connection between sortal concepts and identity of particulars, and with two formalizations of this connection within the framework of intensional logic. The thesis will be defended that criteria of identity are essentially connected with sortal concepts. Further it will be argued that in natural language it are common nouns, and not verbs or adjectives, that can play this typical role in identification, reference and quantification, since they always have some sortal concept as part of their meaning. This thesis will be related to two conceptions of identity: relative identity and absolute identity. It will be argued that Gupta's work on the logic of common nouns can be considered as a formalization of the thesis from a relativistic point of view, while Montague's IL will be shown to embody the absolute conception. The differences between the two approaches are pointed out, and it will be argued that the latter is to be preferred.

*Algebraic Semantics of Event Structures*

Godhard Link  
Department of Statistics and Philosophy of Science  
University of Munich

In this paper another attempt is made to give an algebraic account of the structure of events as it manifests itself in language. First, a model of the semantic treatment of the various parts-of-speech is discussed that is influenced by Austin's conception of truth as it has been reformulated in situation semantics. Using this, an algebraic model structure is built up, which contains a complete atomic semi-lattice of singular and plural individuals, a lattice of types of events, and a lattice of regions of space-time. This set-up is then used to do two things: represent the interplay between pluralities of individuals and pluralities of events; and give an account of the imperfective paradox. Next, it is argued that this picture suffers from the 'minimal parts problem', familiar from the analysis of mass terms, which reappears in the present context of event structures. It is proposed to deal with this problem by replacing the event lattice in the model structure with a partially ordered system of such lattices, each element representing a certain granularity of the event types in the lattice. This granularity has to be treated as a discourse parameter, which can be manipulated by appropriate linguistic means.



### *Incomplete Events*

Alice ter Meulen  
Department of Linguistics  
University of Washington, Seattle

Incomplete events are the semantic objects interpreting sentences of natural language with a progressive tense morphology. This paper discusses some of the main semantic properties of such sentences, including their behavior in temporal anaphora, and presents a modeltheoretic analysis of incomplete events as events in which constituents may be only partly realized. The commonly held view that part of the meaning of the progressive tense is that an event so described must be completed in all its 'inertia' worlds or situations which are its meaningful future options, is criticized on theoretical and empirical grounds. It is proposed to represent incomplete events in structured domains by event-types which contain indeterminates that are only partly realized (anchored) in the ongoing event. That part of the object that is realized constrains the possible extensions of the given anchor. A structure for the domain of indeterminates will be developed, and a formal account of how an indeterminate may be partly realized by a semantic object will be presented.

### *The Ethics of Murder* *(A Simple Solution to the "Deepest" Paradox in Deontic Logic)*

J.-J. Ch. Meyer  
Department of Mathematics and Computer Science  
Free University of Amsterdam

A variant of the Good Samaritan Paradox, which was recently discovered by James Forrester and which is claimed by some to be a "deeper" paradox than the original one, will be presented and discussed. It will be argued that, although somewhat trickier than the original paradox, the Forrester paradox can be resolved adequately. A system of Propositional Deontic Logic, based on propositional dynamic logic, will be presented and it is shown how it should be extended to deal with the Forrester paradox. This extension comes down to extending the expressiveness of liability to sanctions. It will be shown that the extended system is also sufficiently expressive to solve the "backward" Chisholm paradox.

*Properties and Propositions*

Robert C. Moore  
SRI International  
Cambridge/Stanford

An adequate theory of propositions needs to conform to two sets of intuitions that pull in quite different directions. One set of intuitions concerning entailments (or, more specifically, the *lack* of entailments) among attitude reports pulls towards a very fine-grained notion of proposition. Propositions seemingly must be individuated almost as finely as sentences of a natural language. On the other hand, other intuitions seem to require that propositions not be specifically linguistic entities - that they be proper 'semantical' objects, whatever that comes to. This talk argues that it is possible to develop a theory of propositions that does justice to both sets of intuitions - and does so in a way that the required fine-grainedness of the propositions emerges naturally from the underlying semantical assumptions of the theory - provided that properties and propositions are taken sufficiently seriously as first class entities. The theory treats a proposition as a first class entity composed of an  $n$ -ary property and  $n$  objects of the sorts the property is defined over. (Thus according to this theory, all propositions are singular propositions, in Kaplan's sense.) The fine-grainedness of propositions comes from the very natural assumption that changing the components of an abstract object changes the identity of the object. Moreover, being first-class entities, propositions can enter into other relations, such as propositional attitude relations. Fleshing these ideas out into an adequate theory of propositions requires solving two problems. First, the theory must provide enough properties to account for all the propositions that intuition says that there are, and second, it must solve the problem of proper names in attitude reports. In the talk, solutions to both these problems will be proposed.

*Giving Partial and Relational in Montague Grammar*

Reinhard Muskens  
ITLI, Departments of Philosophy and Mathematics  
University of Amsterdam

The purpose of the present paper is to show that Barwise's analysis of neutral perception verbs and Barwise & Perry's treatment of the propositional attitudes can be formalized within Montague Grammar. To this end a new, partialized, modeltheoretic semantics will be given for the fragment of natural language defined in Montague's PTQ. The result will clearly fall within the limits of Montague Semantics but can also be seen as a version of Barwise & Perry's system. Situation Semantics, provided that a liberal definition of the latter is employed.

*Comparatives, Plurals, and Quantifiers*

Manfred Pinkal  
Fraunhofer-Institut für Arbeitswirtschaft und Organisation  
Stuttgart

The semantics of comparatives containing quantified noun phrases in their complements is reconsidered (esp. the *or/any* cases). Several arguments in favor of a unified analysis of comparatives (both phrasal and sentential ones) as simple two-place relations are presented. It is argued that the embedded QNP, though not having narrow scope with respect to the comparative operator, need not be extracted from the complement. An interpretation of comparative complements is proposed which parallels the semantic structure of plural functional term + QNP constructions in their collective use.

*Distributivity*

Craige Roberts  
CSLI  
Stanford

I will present a simple theory of the group/distributive ambiguity in examples such as *Four men lifted a piano*. One element in this theory is a principled classification of NPs into two types, quantificational and individual- (or group-) denoting. In examples with individual-denoting subjects, distributivity may arise from an adverbial distributivity operator, either implicit, as in the example above, or explicit, e.g. the English floated quantifier *each*. In addition to distributive phenomena considered in the literature, the theory will be shown to account for facts about anaphoric possibilities in examples involving distributivity.

## *Presupposition and Discourse Structure*

Rob van der Sandt  
Department of Philosophy  
University of Nijmegen

In the literature on presuppositions two conceptions have been dominant: the view that presupposition is a property of sentences (e.g. Karttunen & Peters, Seuren); and the view that it is a property of utterances (e.g. Gazdar, Soames, van der Sandt). Although the literature contains an enormous number of examples aiming to show that the first view cannot be upheld, recently various proposals have been put forward in the context of discourse representation theory to save this analysis (e.g. by Seuren, Heim, Landman). These proposals will be discussed and various weaknesses will be pointed out. It will be shown that discourse structures that can be argued for on independent grounds, solve only part of the projection cases and it will be argued that any such theory has to be supplemented by the method of contextual acceptability. Also it will be argued that such a 'mixed' approach is nevertheless preferable to an approach which only relies on contextual acceptability.

## *Three Theories of Focusing Operators*

Arnim von Stechow  
Fachbereich Sprachwissenschaft  
Philosophische Fakultät  
Universität Konstanz

The first theory, which is due to L. Karttunen and S. Peters, treats a focusing particle (e.g. *only*) plus its associated focus like a nominal, which binds a variable left at the original focus position by means of  $\lambda$ -abstraction. It can be shown that this theory can't adequately handle the case where two or more foci are associated with the particle. Hence, it isn't general enough. The second theory, which is developed by J. Jacobs and myself lets the focusing particle operate on a structured meaning, a concept developed by M. Cresswell and myself. This theory is general enough and is motivated on independent grounds (e.g. the analysis of attitudes, Dretske sentences and other phenomena). The third theory is due to M. Rooth. It assumes a two-dimensional framework, where one dimension is the usual content and the other dimension are entities that play the role to determine the focus alternatives. This theory is general enough. The second and the third theory will be compared and it will be shown that they are equivalent. Furthermore it will be argued that the only purpose of the second dimension in Rooth's theory is to keep track of the 'focus-variable', an information that can't be expressed on the content level. No other genuine use of the second dimension is made, which, in principle, allows for the expression of much more powerful operators. On the other hand, a structured meaning approach yields no more and no less than what is needed.

## *Bound Variables in Syntax*

Anna Szabolcsi  
Hungarian Academy of Sciences  
Budapest

The Government-Binding theory of grammar and most theories of categorial grammar and phrase structure grammar are similar in the following respect: all assume that structural relations are essentially local. Hence, they meet the same problems and offer similar solutions. One set of problems is provided by extraction. One solution is to add 'place-holder' variables in the syntax. It will be argued that the common association between such place-holders and variables in logic leads to expectations which are not borne out by the facts, and that therefore this approach calls for the addition of heavy filtering mechanisms. It will also be argued that another solution, adding functional composition, will fail since it assumes a one-to-one correspondence between 'extracted constituents' and 'gaps', which does not exist, in view of cases of multiple binding. It will be pointed out that the latter cases can be dealt with if we add another operation, that of *connection*. The parallels between composition and connection on the one hand and variables and filtering mechanisms on the other, will be discussed, and their formal relationship will be characterized. Further, a new approach to the analysis of reflexives will be outlined.

## *Aspect, Quantification and Negation*

H.J. Verkuyl  
Department of Linguistics  
University of Utrecht

Sentences like (i) *Three men lifted the table*, and (ii) *Three men lifted three tables* are important in the study of plural quantification, but also in the study of aspect: they are terminative as becomes clear in e.g. (iii) *Three men lifted the table for an hour*. In an asymmetrical approach to aspect terminative events as in (i) are analyzed in terms of functions yielding (possible) structures of the form: (iva)  $\langle m_1, \langle T_1, i_1 \rangle \rangle \cup \langle m_2, \langle T_1, i_2 \rangle \rangle \cup \langle m_3, \langle T_1, i_3 \rangle \rangle$  (Distributive), and (ivb)  $\langle m_1, \langle T_1, i_1 \rangle \rangle \cup \langle m_2, \langle T_1, i_2 \rangle \rangle \cup \langle m_3, \langle T_1, i_1 \rangle \rangle$  (Collective), where  $m_1 \dots m_3$  are individuals,  $T_1$  is a singleton mapped into  $i_1 \dots i_3$ , which are intervals generated by the verb. Of particular interest are sentences like (v) *Three men did not lift the table*, and (vi) *Three men did not lift three tables*. Not only is the termination aspect neutralized into a durative aspect expressing a state, but also the difference between distributive and collective readings breaks down: it would be totally irrelevant to distinguish in (vi) between a reading in which the three men did not lift collectively (nine tables) or individually (three tables): they are simply not involved in lifting tables (apart from specific situations with contrastive stress, but even in those cases the type of involvement is not relevant). Thus there seems to be a systematic relation between aspect and quantification.

## *A Representation Language with Indices*

Henk Zeevat  
Centre of Cognitive Science  
University of Edinburgh

In the course of work on the problem of giving an almost compositional method of inducing DRS-like semantical representations in a polymorphic categorial unification grammar for English, we have found it useful to make the following assumption about the representation language: every expression has a special variable called its *index*. This leads to the concept of a formula, where both conjunctions and implications carry an index as well. In this way, a version of DRT appears, dubbed *InL*, that assigns considerably more structure to the formulas than is customary. The paper presents the arguments for this representation language, and considers some of the phenomena that can be handled by the extra structure. In the first part indices will be motivated by formalising a Davidsonian treatment of modifiers in DRT. In the second part, some remarks will be made on the philosophical and logical interpretation of the language thus developed, and in the third part the language will be applied to some problems in text grammar.

## *Intensional Logic and Two-Sorted Type Theory*

Thomas Ede Zimmermann  
Forschungsstelle für natürlichsprachliche Systeme  
Universität Tübingen

Gallin has shown that there exists a simple and natural translation  $*$  of Montague's IL into the extensional language Ty2 of two-sorted type theory. Following Gallin's translation procedure, it is even possible to conceive of IL as a highly restricted sub-language of Ty2, viz. as that part which only contains expressions of certain intensional types plus one variable of the basic type of indices. This sub-language has less expressive power than the whole of Ty2. However, by a certain amount of coding one can translate Ty2 into IL, but this re-translation is not an inversion of  $*$ . In fact, there cannot be any inversion of  $*$  that translates all of Ty2 into IL. The question arises whether there is a re-translation for those Ty2 expressions that are of intensional categories and which contain parameters that are either intensional or identical to the sole index variable occurring in the  $*$ -image of IL. A positive answer to this question will be given.