



Institute for Language, Logic and Information

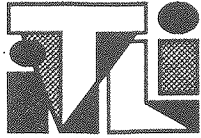
a b s t r a c t s a n d p r o g r a m

Seventh Amsterdam Colloquium

December 19-22, 1989

University of Amsterdam

Department of Philosophy
Nieuwe Doelenstraat 15
1012 CP Amsterdam
The Netherlands



Institute for Language, Logic and Information

Organization and funding

The present edition of the Amsterdam Colloquium is the seventh in a series which started in 1976. Initially an initiative of the Department of Philosophy, it is now organized by the *Institute for Language, Logic and Information* (ITLI), in which the Department of Philosophy and the Department of Mathematics and Computer Science of the University of Amsterdam cooperate. For the organization of the Seventh Amsterdam Colloquium additional financial support was received from the *Koninklijke Nederlandse Akademie van Wetenschappen* (the Royal Dutch Academy of Sciences), which is gratefully acknowledged.

Locations

The colloquium will be held in the *Oudemanhuispoort*, one of the buildings of the University of Amsterdam, located in the vicinity of the Department of Philosophy. The address is:

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

The *lectures* will be given in rooms D.118, F.001 (Tuesday), and D.118, C.017, C.217 (Wednesday, Thursday and Friday).

Coffee and tea will be served in room C.117 (not on Tuesday, however).

Lunches will be served in the *Atrium*, the restaurant of the University of Amsterdam, which is located near the Oudemanhuispoort.

On Tuesday evening, after the final lecture of that day, a *reception* will be held at the Department of Philosophy.

All locations are marked on the map overleaf.

All locations can be reached from the Central Station by public transportation as follows: take tramline 4, 9, 16, 24 or 25, get off at the (second) stop 'Spui'. From the Spui, proceed as follows: take the narrow street with the diamond factory 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.

Lunch

The lunch counter of the *Atrium* is open from 12.00-14.00. A special section of the restaurant is reserved for the participants of the colloquium, on Tuesday from 12.00-13.00, on Wednesday, Thursday and Friday from 12.30-13.30.

Please note that the conference fee includes all costs of lunch, except those of alcoholic beverages.

Registration

All participants are requested to get their conference papers on Tuesday morning at the registration desk in front of the main lecture hall, D.118. The registration desk will be open from 9.00-12.00. It is important that you get your conference papers before the lunch break, as you need the conference badge to identify yourself as a conference participant at the restaurant chash desk.

Secretary

During the colloquium the secretary, Mrs. Marjorie Pigge, can be reached at the Department of Philosophy, room 2.26 (second floor), phone: 020-5254552/5254500.

Further information

For all inquiries contact:

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Program Tuesday, December 19

09.00-09.45	REGISTRATION AND COFFEE (D.118)
09.45-10.00	OPENING by Johan van Benthem (D.118)
10.00-11.00	INVITED LECTURE (D.118) Richmond H. Thomason <i>Propagating Epistemic Coordination Through Mutual Defaults</i>
11.00-11.45	PARALLEL SESSIONS (D.118 and F.001) Nirit Kadmon and Fred Landman (D.118) <i>Polarity Sensitive 'Any'</i> Hing-Kai Hung (F.001) <i>Applications of Intensional Logic to Program Semantics</i>
11.45-13.30	LUNCH BREAK
13.30-14.15	PARALLEL SESSIONS (D.118 and F.001) Manfred Krifka (D.118) <i>Polarity Phenomena and Alternative Semantics</i> Theo M.V. Janssen (F.001) <i>Models for Discourse Markers</i>
14.15-15.00	PARALLEL SESSIONS (D.118 and F.001) Michael Morreau (D.118) <i>Epistemic Semantics for Conditionals</i> Martin H. van den Berg (F.001) <i>A Dynamic Logic for Plurals</i>
15.00-15.30	TEA BREAK (D.118)
15.30-16.15	PARALLEL SESSIONS (D.118 and F.001) Frans Voorbraak (D.118) <i>Conditionals, Probability, and Belief Revision</i> Jeroen Groenendijk, Martin Stokhof and Roel de Vrijer (F.001) <i>Dynamic deduction</i>
16.15-17.15	INVITED LECTURE (D.118) Peter Gärdenfors <i>The Emergence of Meaning</i>
17.30	RECEPTION (at the Department of Philosophy, ground floor)

Program Wednesday, December 20

09.00-09.20	COFFEE (C.117)
09.30-10.30	INVITED LECTURE (D.118) Gordon Plotkin <i>to be announced</i>
10.30-11.00	COFFEE BREAK (C.117)
11.00-11.45	PARALLEL SESSIONS (C.217 and C.017) Wojciech Buszkowski (C.217) <i>Remarks on Autoepistemic Logic</i> JanTore Lønning (C.017) <i>Plurality and Secondorderization</i>
11.45-12.30	PARALLEL SESSIONS (C.217 and C.017) Elias G.C. Thijsse (C.217) <i>Partial Logic and Modal Logic: a Systematic Survey</i> Roger Schwarzschild (C.017) <i>Against Groups</i>
12.30-14.15	LUNCH BREAK
14.15-15.00	PARALLEL SESSIONS (C.217 and C.017) Jack Hoeksema (C.217) <i>Exploring Exception Phrases</i> Nicholas Asher (C.017) <i>Semantics for Derived Nominal and Gerundive Constructions</i>
15.00-15.30	TEA BREAK (C.117)
15.30-16.15	PARALLEL SESSIONS (C.217 and C.017) Tamás Mihálydeák(C.217) <i>Extended Partiality in Intensional Logic</i> Jaap van der Does (C.017) <i>A Generalized Quantifier Logic for Naked Infinitives</i>
16.15-17.00	PARALLEL SESSIONS (C.217 and C.017) László Kálmán(C.217) <i>Deferred Information Representation Theory</i> Alessandro Zucchi (C.017) <i>The Propositional Interpretation of Noun Phrases</i>

Program Thursday, December 21

09.00-09.20	COFFEE (C.117)
09.30-10.30	INVITED LECTURE (D.118) Gennaro Chierchia <i>Anaphora and Dynamic Logic</i>
10.30-11.00	COFFEE BREAK (C.117)
11.00-11.45	PARALLEL SESSIONS (C.217 and C.017) Kees van Deemter (C.217) <i>Forward References in Natural Language</i> J.-J. Ch. Meyer (C.017) <i>An Analysis of the Yale Shooting Problem by Means of Dynamic Epistemic Logic</i>
11.45-12.30	PARALLEL SESSIONS (C.217 and C.017) Hub Prüst and Remko H. Scha (C.217) <i>A Discourse Perspective on VP Anaphora</i> Huang Zhisheng (C.017) <i>Dependency of Belief in Distributed Systems</i>
12.30-14.15	LUNCH BREAK
14.15-15.00	PARALLEL SESSIONS (C.217 and C.017) Paul Dekker (C.217) <i>Dynamic Interpretation, Flexibility and Monotonicity</i> Friederike Moltmann (C.017) <i>The Determination of Part Structures in Natural Language</i>
15.00-15.30	TEA BREAK (C.117)
15.30-16.15	PARALLEL SESSIONS (C.217 and C.017) Martin Emms (C.217) <i>Polymorphic Quantifiers</i> Joost Zwarts (C.017) <i>Kinds and Generic Terms</i>
16.15-17.00	PARALLEL SESSIONS (C.217 and C.017) Herman Hendriks (C.217) <i>Flexible Montague Grammar</i> Henk Verkuyl (C.017) <i>Did the Guns of Navarone Hit Miles Twice?</i>

Program Friday, December 22

09.00-09.20	COFFEE (C.117)
09.30-10.30	INVITED LECTURE (D.118) Stanley H. Peters <i>The Meaning of Reciprocals</i>
10.30-11.00	COFFEE BREAK (C.117)
11.00-11.45	PARALLEL SESSIONS (C.217 and C.017) Hanna Walinska de Hackbeil(C.217) <i>The Syntax of Slavic Aspect</i> Michael Moortgat(C.017) <i>Cut Elimination and the Elimination of Spurious Ambiguity</i>
11.45-12.30	PARALLEL SESSIONS (C.217 and C.017) Maria Stambolieva(C.217) <i>Notes on Aspect in Bulgarian and English</i> Glyn Morill (C.017) <i>Grammar and Logical Types</i>
12.30-14.15	LUNCH BREAK
14.15-15.00	PARALLEL SESSIONS (C.217 and C.017) Stephan Berman (C.217) <i>Towards the Semantics of Open Sentences: Wh-phrases and Indefinites</i> Alice ter Meulen (C.017) <i>English Adverbial Verbs as Generalized Quantifiers</i>
15.00-15.30	TEA BREAK (C.117)
15.30-16.15	PARALLEL SESSIONS (C.217 and C.017) Anna Szabolcsi and Frans Zwarts (C.217) <i>Functional Composition in Combinatory Grammar and the Distribution of Wh-quantifiers</i> Henriëtte de Swart (C.017) <i>Non-quantificational Readings of Adverbs</i>
16.15-17.15	INVITED LECTURE (D.118) Hans Kamp <i>Discourse Representation, Mental Representation and Verbal communication</i>

INVITED LECTURES

Gennaro Chierchia

Department of Modern Languages and Linguistics, Cornell University, Ithaca

Anaphora and Dynamic Logic

One appealing feature of Classical DRT (Kamp 1981, Heim 1982) is that it provides a unified semantics for determiners like *every*, *most*, etc. and adverbs of quantification like *always*, *usually*, etc. This, however, is done at the cost of failing to provide a uniform semantics for determiners like *a* vs *every* and a level at which all NPs are interpreted as members of the same semantic category, like the category of generalized quantifiers in Montague Grammar. I will explore the possibility of retaining the advantages of DRT while providing a uniform semantics for all determiners and NPs. This will be done by exploiting a (slight variation of the) dynamic intensional logic (DIL) recently developed by J. Groenendijk and M. Stokhof. Within such a logic the idea that, e.g. *always* and *every* are the same semantic relation can be reconstructed as follows. *Every* can be analyzed as the subset relation to sets of individuals: 'every man runs' is true iff the set of men is a subset of the set of running individuals. *Always* is the subset relation restricted to sets of propositions: 'if John is tired, he always drinks' is analyzed as: the sets of propositions that can be truly conjoined with 'John is tired' can also be truly conjoined with 'John drinks'. In Montague's IL this would amount to analyzing the sentence in question as the conditional 'tired(j) \rightarrow drink(j)'. But in DIL, this is not in general the case and it turns out that this form of quantification over propositions has the same effect as unselective binding in DRT. In DIL sentences get interpreted in terms of what Heim would call their 'context change potential'. This can be represented as a property of propositions. The dynamic value of a sentence S in DIL can be viewed precisely as the property of being a proposition that can be a truthful continuation of S. So just like determiners relate (dynamic) properties of individuals, adverbs of quantification relate in the very same way properties of propositions (i.e. the dynamic values of sentences). I will argue that this line of inquiry provides, among other things, a solution to the proportion problem that is free of construction-specific stipulations and will compare it to other recent discussions of this issue, such as Kratzer 1988 and Heim 1987. I will also explore how definites might be introduced in DIL and discuss how a view of pronouns as bound variables and a view of pronouns as definite descriptions (the E-type pronouns of Evans) might be integrated.

Peter Gärdenfors

Philosophical Institute, University of Lund

The Emergence of Meaning

For a traditional Fregean kind of semantics, the existence of linguistic meaning that is independent of the language users is not a problem since this feature is built into the semantics. However, if one assumes that meaning is a cognitive phenomenon which is determined by the mental states of the language users, then explaining the existence of a common meaning becomes a genuine problem.

In this paper I shall argue that within cognitive semantics a social meaning can be seen as emerging from individual notions of meaning, in analogy with, for example, the emergence of a price vector in an equilibrium market. The main factor determining the emergent meaning is who has semantic power, i.e. who in the linguistic community decides the meaning of various expressions. I shall formulate some general conditions on semantic power and, to some extent in parallel with social choice theory, show how such conditions may constrain the possible forms of social meaning. Basically, one can distinguish between oligarchial and democratic power structures.

By using some elementary notions from model theory, I will then outline how the semantic power structure can determine an emergent social meaning. Finally, I will show how this analysis explains some aspects of language as a convention.

Discourse Representation, Mental Representation and Verbal Communication

The Discourse Representation Structures (DRSs) of Discourse Representation Theory have a number of properties that appear to make them useful for the characterization of propositional thought (i.e. thought having propositional content). This potential has already been exploited in a number of studies (see eg. Asher (1986), (1987), Kamp (1983), (1988)) which contain proposals for representations that can be viewed as clusters of DRSs equipped with certain new features (which played no role in DRT as it was originally conceived).

Mental representations of this sort turn out to be important not only for the analysis of various problems that are overtly on the borderline between the analysis of language and the analysis of mind, but also for some which have been judged to lie squarely within the realm of linguistic semantics. One of these is the phenomenon of 'specific' indefinite descriptions - indefinite noun phrases that are being used to speak of individuals about which the speaker possesses uniquely identifying information. One particular context in which, it has been argued, indefinites must be taken as having been used 'specifically' is that where a (non-generic) indefinite in one sentence is picked up by an anaphoric pronoun in the next sentence. An example of this which has been discussed extensively in the literature (eg. Evans (1977), Helm (1982), Kadmon (1987)) is the two sentence discourse

- (1) *There is a doctor in London. He is Welsh.*

As Evans was (to my knowledge) the first to point out, the anaphoric pronoun *he* carries a very strong implication that its anaphoric antecedent is being used to refer to some particular doctor that the speaker is thinking of and that, if challenged, he should be able to specify which doctor that is.

The analysis of such uses of indefinite NPs involves two separate considerations. First, the specific nature of the indefinite in (1) to which the subsequent pronoun bears witness means that the speaker's mental representation must contain a discourse referent decorated with information sufficient to identify a unique individual in the real world (or, more generally, in the 'world' he is talking about). Secondly, the use of an indefinite, as opposed to a definite, NP is to be explained along the lines of (Helm's version of) the familiarity-novelty doctrine, the doctrine that indefinite NPs are used to refer to objects that are presumed to be already familiar to the audience, and indefinite NPs to speak of individuals that are not yet familiar. Thus, the indefinite in (1) presupposes that the recipient's mental representation contains, at the point when the indefinite NP offers itself to him for processing, no discourse referent with which that for the new NP could be identified. It should be plain that a statement of this two-pronged account cannot make do with a single, undifferentiated concept of background information, but must explicitly distinguish between an information structure for the speaker and one for the recipient. Further considerations show how that additional distinctions are desirable, for instance that between the recipient's real background information and what the speaker takes the recipient's background information to be.

I will develop a framework in which such distinct information structures for speaker and recipient are made explicit, discuss its connections to 'standard' DRT, and show how the new framework can be used to tackle the problem connected with (1) and a number of other problems relating to verbal communication.

References

- Asher, N. (1986), 'Belief in Discourse Representation Theory', in: *Journal of Philosophical Logic*.
 Asher, N. (1987), 'a Typology of Attitudinal Verbs and their Anaphoric Properties', in: *Linguistics and Philosophy*.
 Evans, G. (1980), 'Pronouns', in: *Linguistics Inquiry*.
 Helm, J. (1982), *The Semantics of Definite and Indefinite Noun Phrases*. Ph.D. Dissertation, U. Mass.
 Kadmon, N. (1987), *On Unique and Non-unique Reference and Asymmetric Quantification*. Ph.D. Dissertation, U. Mass.

- Kamp, H. (1983), 'Context, Thought and Communication'. *Proceedings of the Aristotelian Society*.
- Kamp, H. (1988), 'Prolegomena to a Representational Theory of the Attitudes', *Proceedings of the 1988 Conference on Propositional Attitudes, Minneapolis, 1988*.

Stanley H. Peters
 Centre for the Study of Language and Information, Stanford

The Meaning of Reciprocals

Reciprocal expressions such as English *each other* and *one another* have been observed to have a distribution similar in certain respects to reflexive pronouns, but why this should be so has not been explained. I will present a situation semantic analysis of the meaning of reciprocal phrases, bringing out similarities to obligatorily anaphoric pronouns, showing why the 'antecedent' must be plural, displaying the extent to which the meaning of reciprocal phrases can be obtained compositionally from the meanings of their parts, and accounting economically for the multiplicity of interpretations available for such sentences as Higginbotham's *John and Mary told each other that they should leave*. My conclusion is that most peculiarities of reciprocals follow from what they mean and very little has to be stipulated in a binding theory.

Richmond H. Thomason
 Intelligent Systems Program, University of Pittsburgh

Propagating Epistemic Coordination Through Mutual Defaults

This talk explores ways to maintain the coordination of epistemic operators in dynamic environments that allow assertional speech acts. I present some results showing that publicly shared rules of conversation will provide a mechanism for maintaining coordination. Default rules are needed because conversational rules are in general defeasible. Even a preliminary investigation of this topic reveals some interesting technical problems; some of these will be mentioned in the talk.

CONTRIBUTED PAPERS

Nicholas Asher

Center for Cognitive Science, University of Texas at Austin /
(temp.) Institut für Maschinelle Sprachverarbeitung, Universität Stuttgart

Semantics for Derived Nominal and Gerundive Constructions

The semantics of sentential nominals, in particular that of derived nominal and gerundive constructions in English, has several interesting problems whose solution requires a careful investigation of the interaction between semantics and syntax. This paper addresses three basic difficulties. The first concerns the semantic and syntactic correlation between sentences and sentential nominalizations. The second is to account for the wide range of types of semantic denotations of derived nominal and gerundive constructions. The third problem concerns event negation - i.e. what do nominals like *Mary's not smoking* and *the train's non-arrival* denote.

Martin H. van den Berg

Department of Computational Linguistics, University of Amsterdam

A Dynamic Logic for Plurals

In recent years a lot of research has been done to find a formulation for the semantics of discourse that is incremental in the sense that adding a sentence (in general: a discourse unit) to a discourse corresponds semantically to the conjunction of the interpretation of the preceding discourse with the interpretation of this sentence. One attempt is the system of Dynamic Predicate Logic (DPL) of Groenendijk and Stokhof.

An extension of DPL will be presented that is capable of treating plural anaphora and specifically dynamic binding due to universal quantifiers. This logic (Hyper Dynamic Predicate Logic) has a number of interesting consequences for the interpretation of quantifiers and has, contrary to DPL, a reasonably straightforward type-logical equivalent.

Stephan Berman

Department of Linguistics, University of Massachusetts at Amherst

Towards the Semantics of Open Sentences: Wh-phrases and indefinites

It is shown that wh-phrases in indirect questions display variable quantificational force and on this basis it is argued that their logical form contains an essential free variable, following the Lewis/Karip/Helm analysis of indefinite noun phrases. It is further shown that whether a wh-phrase in an indirect question can be quantified depends on whether the latter is presupposed by the matrix predicate; to account for this it is argued that presupposition accommodation, in the sense of Lewis and Helm, applies in deriving the logical form of such sentences. Next it is argued that wh-movement prevents wh-phrases from being bound by an adverbial quantifier within their clause, unlike indefinites. Finally, it is argued that presupposition accommodation of that-clauses has a different effect than that of other clauses, such as if-clauses, accounting for differential quantificational behavior or indefinites within these two clause types.

Wojciech Buszkowski
 Institute of Mathematics, Adam Mickiewicz University, Poznan

Remarks on Autoepistemic Logic

In Moore (1984), (1985), (1988) a system of autoepistemic logic is developed on the basis of earlier ideas of Stalnaker (1980). Autoepistemic logic is a non-monotonic modal logic intended to describe belief systems of ideally rational agents. Actually, its goals are more related to automated reasoning with incomplete information than to psychological or philosophical meaning of belief.

Moore's account for this logic leaves aside some essential aspects which are concerned with interconnections between autoepistemic logic and other modal logics (several authors, e.g. Rauszer (1988) and Fargues et al. (1988), pointed out this failure). In this paper I try to fill the gap. I show, roughly, that S5 can be treated as the internal logic of belief systems, and WS5 (K45) as the external logic of reasoning about beliefs. Specific systems of autoepistemic logic (stable expansions) amount to certain particular S5-systems and can be investigated by means of the methods elaborated for the latter systems.

Kees van Deemter
 Institute for Perception Research, Eindhoven

Forward References in Natural Language

This talk deals with forward, or *kataphoric*, references in English, and their implications for the view that parsing should always proceed from left to right (l-t-r).

First, the l-t-r view of parsing is defended. Second, it is argued that as a linguistic phenomenon, kataphoric constructions cannot simply be explained away. Third, it is shown how popular approaches to anaphora (such as Kamp's DRT) have to sacrifice the principle of l-t-r parsing in order to deal with kataphors.

Finally, a reconciliation between l-t-r parsing and kataphora is proposed in the form of an extension of Discourse Representation Theory, called *PATIENT DRT*. The main idea is that a kataphoric element introduces an *incomplete* discourse entity, to be completed by subsequent material under certain conditions. I intend to show that this approach is applicable to pronominal as well as complex NPs, and has no special difficulties with *mutual* anaphora.

Paul Dekker
 ITLI/Department of Philosophy, University of Amsterdam

Dynamic Interpretation, Flexibility and Monotonicity

In this talk I discuss some basic techniques in a compositional theory of dynamic interpretation, a theory in which a quantifier may bind, semantically, pronominal anaphors that are not in its syntactic scope. Following Groenendijk and Stokhof's *Dynamic Montague Grammar* I use a model of dynamic logic that is a slightly but structurally modified version of intensional logic and use it in the construction of a dynamic Montague-grammar. The adoption of type flexibility in the spirit of Hendriks' *Flexible Montague Grammar* is then shown to suffice for an account of intersentential scope phenomena. Next two general problems in such a theory of dynamic interpretation are discussed. One relates to the directionality of anaphoric binding. The other one concerns the apparent conflict between giving quantifiers of downward monotonicity intersentential scope, and the desire to retain upward monotonicity of information update. A structural solution to both problems is proposed.

Jaap van der Does
ITLI/Department of Philosophy, University of Amsterdam

A Generalized Quantifier Logic for Naked Infinitives

In my talk I shall present a simple set theoretical semantics for 'idealized' versions of sentences of forms (1)–naked infinitive perception reports– and (2)–gerundive perception reports.

- (1) *James saw Samuel eat a fish*
- (2) *James saw Samuel eating a fish*

The semantics is inspired by *A Scenic Tour through the Land of Naked Infinitives* under the guidance of Hans Kamp (1984). It takes a language with generalized quantifiers as point of departure, which enables one to retain the elegance of Kamp's original idea and at the same time study the semantics of \mathcal{M} sentences in full generality. The semantics is also similar in spirit to the one given by Asher and Bonevac (1985, 1987), but there are differences too. First and foremost I do not extend situation semantics with the apparatus necessary for a satisfactory semantic theory of \mathcal{M} sentences. I prefer to capture the phenomena at hand in a 'conservative' manner, thus countering the claim that this is "difficult or even impossible..." (Barwise and Perry, 1983).

The talk will have the following structure. First I shall give an informal overview of some of the logical properties of \mathcal{M} sentences. After having presented the logical semantics—which embodies these properties at the atomic level—I shall give a formal treatment of the inference patterns discussed. Here I shall concentrate on the extent in which the principles assumed for simple sentences can be raised to sentences of a more complex kind. An impression is given of the interplay between two forms of negation which can be discerned within the system, namely the by now familiar pair weak and strong negation from partial logic

Martin Emms
Centre for Cognitive Science, University of Edinburgh

Polymorphic Quantifiers

The question examined is whether it is possible to formulate a model theoretic semantics which chooses the simplest of syntactic algebras, namely a categorial grammar, but is yet semantically sophisticated enough to account for quantifier scope ambiguity. It is first shown that this is not the case if the Generalised Quantifier Interpretation of noun phrases is adopted. A variant of this interpretation is then proposed, making noun phrases denote functions whose domain and codomain span a range of types; that is they become *polymorphic quantifiers*. It is shown that using such quantifiers, a semantics based on Lambek's categorial calculus has the desired property of accounting for quantifier scope ambiguity. It is observed that this proposal to treat quantifiers *polymorphically*, does for these logical constants no more than what has been widely advocated in the case of Negation and Conjunction, for which polymorphic proposals have existed for some time.

Jeroen Groenendijk and Martin Stokhof
 ITLI/Department of Philosophy
 and Department of Computational Linguistics, University of Amsterdam
 Roel de Vrijer
 ITLI/Department of Philosophy, University of Amsterdam
 and Department of Computer Science, Free University, Amsterdam

Dynamic Deduction

The dynamic semantics for the language of first-order predicate logic that recently has been proposed by Groenendijk & Stokhof, 'dynamic predicate logic' (*DPL*), is meant as a compositional alternative to discourse theories such as those of Kamp and Heim. In this paper a proof system is presented for *DPL* which is sound and complete with respect to the proposed semantics. The system is in the format of natural deduction, but also a sequent formulation can be given. (For some of the rules the sequent format seems to be more tractable). The design of the proof system is based on a refined semantic analysis of *DPL*-entailment.

Herman Hendriks
 ITLI/Department of Philosophy, University of Amsterdam

Flexible Montague Grammar

By creating the possibility of generating quantifier scope ambiguities without quantifying-in or storing, the adoption of a non-rigid category-to-type assignment leads to a more adequate division of syntactic and semantic labour. The flexible Montague grammar I propose is an intensional version of a subsystem of the non-directional Lambek/Van Benthem calculus. It will be illustrated with examples concerning (restrictions on) the scope of quantification and coordination. The position of the flexible grammar relative to the principles of compositionality and contextuality will be considered.

Jack Hoeksema
 Department of Linguistics, University of Pennsylvania, Philadelphia

Exploring Exception Phrases

The semantics and distribution of exception phrases show complex and largely unexplored interconnections. This paper compares Dutch *behalve*, German *ausser*, and English *except (for)* as well as a number of less important operators and demonstrates how their distribution is sensitive to various semantic, syntactic and prosodic properties. All exception phrases appear in environments of universal quantification, but the precise characterization of such environments is quite complex, involving matters of scopal interaction with existential quantifiers, structural position, distributivity and genericity, as well as such nonstandard quantificational expressions as *entire*, *complete* and *whole*. The question of homonymy is raised for *behalve* and *ausser*.

Wing-Kai Hung

Department of Computer Science, State University of New York at Buffalo

Applications of Intensional Logic to Program Semantics

We apply intensional logic to semantics of programming languages which contain arrays, blocks and procedures with parameters. Intensional logic is a logic with which one can reason about the intension or sense of an expression. We take the intensional value of an expression as a function from states (possible worlds) to (extensional) values. One of the motivations of applying intensional logic to program semantics is that there are intensional contexts within assignments and parameter passings. Furthermore memory locations can easily be modelled.

Our semantics is given by translating program expressions to intensional logic expressions. We also give a translation of the Hoare logic formulas to intensional logic formulas. The semantics is compositional in which the meaning of a compound expression is a function of the meanings of its parts. We have a nice treatment of pass-by-value, pass-by-address, pass-by-name and pass-by-value-result parameters. In addition there are semantic correspondences between blocks and procedures.

Theo M.V. Janssen

ITLI/Department of Mathematics and Computer Science, University of Amsterdam

Models for Discourse Markers

This contribution deals with a model theoretic problem concerning discourse markers, which will be introduced below. The formal framework in which we work is the extension of Montague grammar as developed by Groenendijk & Stokhof. A related problem arises in the semantics of programming languages when assignments to pointers of arbitrary reference level are considered.

Discourse pronouns (like *he* in *He smiles*) are translated into discourse markers in some logical language. The logical language is interpreted with respect to an (information) state that is determined by the preceding discourse. One might formulate this as follows: 'the discourse markers are updated with respect to the information state'. Any individual can be the interpretation of the discourse marker when a suitable discourse is preceding (e.g. *A man enters. He smiles.*). In this process of updating other discourse markers remain unchanged. These two characteristics are expressed by the *update postulate*:

$$\forall s \succ \forall dm_{i,\tau} \forall i \in D_\tau \exists s' \text{ such that } [dm_{i,\tau}]_s = d \text{ and for all discourse markers } dm$$

with the possible exception of $dm_{i,\tau}$, it holds that $[dm]_s = [dm]_{s'}$.

Not only discourse markers of the type of individuals are needed, but also of other types; an example is *John loves Mary. That is a pleasant feeling for John*. There seems no principled restriction on the possible types of discourse markers. However the combination with the update postulate gives the following problem.

Consider a discourse marker of type $\langle s, e \rangle$. Its interpretation can be any object of type $\langle s, e \rangle$. The update postulate requires that there be an information state in which that object is associated with the discourse marker. So there have to be at least as many states as there are objects of type $\langle s, e \rangle$. However, elementary set theory learns us that $|D_e^S| > |S|$, so here is a contradiction.

In the talk models will be presented in which there are discourse markers of arbitrary types, and in which the update postulate holds.

Nirit Kadmon

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Fred Landman

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Polarity Sensitive Any

Ladusaw's classical analysis says that negative polarity items must occur in downward entailing contexts. However, Ladusaw does not attempt to explain *why* these items should be so constrained. We propose an analysis of polarity sensitive (PS) *any* which is more explanatory, in that it derives the constraint on the contexts in which *any* can occur from semantic and pragmatic properties of *any*. We will discuss a variety of examples that have been presented as problems for the analysis of PS *any*. Here we will (i) argue that explanations follow to a large extent from specific features of the particular case, (ii) show why it is that in many linguistic contexts PS *any* is licensed only under special circumstances (concerning the context of utterance), and (iii) argue that our analysis of PS *any* provides some empirical advantages over Ladusaw's account. Finally, we will indicate briefly how our analysis might be extended to cover free choice *any* as well and explain the two uses of *any* while keeping *any* lexically unambiguous.

László Kálmán

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Deferred Information Representation Theory

D.I.R.T. differs from current versions of DKT (c.g. Kamp 1981) in (1) allowing for operations defined at the DR level; (2) its procedural interpretation of DRs and (3) relying on underspecified conditions in DRs. These features make it possible to represent underspecified ('vague') meanings and their disambiguation by subsequent discourse. All representational operations monotonously increase the information content of DRs. We claim that discourse phenomena related to scope ambiguities and implicit information can be accounted for in this framework. In addition to outlining the representation language and its interpretation, we will show how D.I.R.T. treats verb phrase ellipsis and generics.

Manfred Krifka

Seminar für natürlich-sprachliche Systeme, University of Tübingen
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Polarity Phenomena and Alternative Semantics

In this talk I will present an explanative theory of negative and positive polarity items (NPIs, PPIs). It is based on Ladusaw (1979), but covers a wider range of phenomena (for example, NPIs in questions and directives) and makes more adequate predictions in certain cases (for example, NPIs in the protasis of conditionals and in adversative clauses). I will introduce the notion of a basic polarity lattice as an expression with an ordered set of alternatives (in the sense of Rooth 1985), of which the polarity item denotes a deliberately small or large element. Under certain semantic compositions, these alternatives and their order relation is projected to complex expressions, thereby producing derived polarity lattices of the same or the reverse polarity. Pragmatic rules, finally, restrict the possible choices for whole sentences; for instance, an assertive sentence cannot be based on a sentential NPI.

Jan Tore Jonsson
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Plurality and Secondorderization

Does the use of plural NP's, e.g. *Some boys bought a boat together*, show that English is a second order language? After establishing a formal framework for representing the problem, the paper proceeds to discuss which constructions involving collectively read plural NP's might support the claim. Definite NP's, e.g. *the boys*, can be represented to a complete logic. If an indefinite NP, like *some boys*, shall give rise to a true second order formula, it must either co-occur with a negated verb with a certain scope reading or with an anaphoric pronoun with a certain reading. Sentences supposed to exhibit one of the two phenomena have a tendency to avoid the intended reading, however. One reason might be that the indefinite NP's in question are used referentially, in which case they might be represented with a complete logic

Alice ter Meulen
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English Aspectual Verbs as Generalized Quantifiers

Aspectual verbs (e.g. *start, stop, finish, end, terminate, continue, keep*) are analyzed as generalized quantifiers, interpreted as relations between the contextually determined reference-time t and an event-type E corresponding to the complement. A fundamental semantic distinction is made between event-internal aspectual verbs which take only gerundive complements and event-external ones which generally take either infinitival or gerundive complements. With a gerundive complement an aspectual verb quantifies over the internal stages of an event, but with an infinitival complement it quantifies over occurrences of the same type of event. The theory developed in Barwise and Cooper (1981) for NPs as generalized quantifiers is extended to include aspectual event-quantification. The traditional square of opposition of logical quantifiers, based on their semantic properties, is developed into a diagram which represents a three-dimensional cube of oppositions between aspectual verbs. Causative and non-causative aspectual verbs form two opposing sides of this cube and event-internal versus event-external the other opposing sides. The semantic automata (Van Benthem) are applied to event-quantification and a simple algorithm for presupposition projection of aspectual verbs is given, based on the cube.

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An analysis of the Yale Shooting Problem by Means of Dynamic Epistemic Logic

In AI literature the so-called Yale Shooting Problem has caused problems of formalisation. A version of this problem reads:

John loads his gun;
John waits one second;
John fires his gun aiming at Fred;
Fred is dead

To represent this situation formally and efficiently one needs to assume actions to behave in a default-like manner, thus introducing a form of non-monotonic reasoning originating from dealing with uncertainties: by default, an action is not supposed to change an aspect of a state. This default nature of the situation causes the problems.

In this talk we analyse the Yale Shooting Problem using a dynamic version of epistemic logic in the sense that besides epistemic operators also operators are available that can express a change by means of an action, and see that we thus can represent its common-sense reading better. We use epistemic logic for expressing preferred beliefs corresponding to the biases in defaults.

Tamás Mihálydeák

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Extended Partiality in Intensional Logic

Joining to the intensional logic of R. Montague and to the semantic-value-gap theory of intensional logic developed by I. Ruzsa, a new partial semantic theory of (tensed and typed) intensional logic (called partial intensional logic) is introduced. In this system, the distinction of extensional and intensional functors is avoided on the level of syntax (thus, only the extensional type theory is used), and the distinction takes place only in the semantics (i.e., it depends on the particular interpretation whether a given functor is an extensional or an intensional one). By means of extension of semantic value gap to intensions, partial intensional logic gives us a complete logical tool to model semantic partiality of natural language expressions. This approach leads to the possibility that some syntactically well-formed expressions might be 'meaningless' in certain interpretations.

Friederike Moltmann

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The Determination of Part Structures in Natural Language

Part structures have generally been treated, in philosophy as well as in semantics, on the basis of mereological part relations, i.e. partial orderings that are closed under sum formation or suprema and are 'extensional'. In this paper I present a different theory of part structures for semantics, a theory of 'situated' part structures. These part structures differ fundamentally from mereologies in that they are not extensional and do not in general satisfy any of the characteristic formal properties of mereological part structures such as transitivity. Crucial properties of these part structures are not inherent to the part relation itself, but rather are determined by the information about an entity given in a particular context. This information may be specific to mass nouns, plurals, singular count nouns, particular lexical items, or just information given by the nonlinguistic context. I present various conditions on the formal properties of the part relation when applied to an entity in a given situation. To an extent these conditions determine properties such as closure under sum formation, transitivity and reflexivity. One of the diagnostics for these part structures is constructions involving quantification over parts. This theory of part structures allows for correct generalizations about selectional requirements of certain predicates, semantic operations (e.g. reciprocals), and semantic principles. I show that part structures individuated in the way described are relevant parameters in sortal correctness conditions, not the singular count - plural - mass distinction itself, as is often assumed.

Michael Moortgat
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Cut Elimination and the Elimination of Spurious Ambiguity

Categorial derivations in the Lambek systems allow a semantic interpretation along the lines of the 'formulas as types' paradigm from Lambda Calculus as shown in Van Benthem (1986), Buszkowski (1989) and Moortgat (1988) for different axiomatizations. In this paper we show how the effective correspondence between categorial proofs and their lambda terms can be exploited to solve the major computational tractability problem for flexible categorial systems - the problem of spurious ambiguity. ('Semantics-driven parsing' instead of 'Type-driven translation'.)

To place the discussion into proper context, we need an enumeration procedure generating the set of possible readings for a consequent $T \Rightarrow X$:t (read: 'the sequence of types T derives type X with lambda recipe t'). We obtain such a procedure by showing that Cut Elimination preserves *strong recognizing capacity*: modulo logical equivalence, all possible readings for L derivations can be obtained in cut-free fashion.

Cut elimination does not remove all sources of spurious ambiguity: the finite number of cut-free proofs for an L sequent may still include alternative derivations for one and the same reading. We trace this problem to the *don't-care non-determinism* of the Elimination inferences $[E/], [E\backslash]$ in the standard axiomatization of L. This form of non-determinism can be removed by replacing the $[E/], [E\backslash]$ inferences in the derivation of a sequent $T \Rightarrow X$ by their *unfolding* (partial execution) with respect to the antecedent types in T. The unfolding transformation recasts the goal selection strategies proposed in König 1989 in a declarative way, and produces Pareschi's (1988) Definite Clause interpretation of Lambek-style categorial systems as a side-effect.

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Epistemic Semantics for Conditionals

The semantic idea underlying most accounts of conditional sentences goes back to a suggestion by Frank Ramsey, which Stalnaker turned into truth conditions. More natural would be to interpret Ramsey's suggestion *epistemically*: a conditional is to be accepted in a body of beliefs just in case adjusting them so as to accommodate the antecedent results in believing the consequent. This accommodation in the case of counterfactuals involves *revision*, or suspending old beliefs to make way for new.

Peter Gärdenfors has introduced the notion of belief revision models in order to study revision, but any hope of using these to provide an epistemic semantics for conditionals would seem to have been dashed by his own trivialisation theorem.

Here it will be shown how belief revision models nevertheless provide a natural epistemic semantics for conditionals if only a peripheral assumption of this theorem is abandoned. A syntactic characterisation of the resulting conditional logic will be given, and Tichy's mysterious man with the bat will provide a reason for liking the semantics.

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Grammar and Logical Types

The syntactic calculus of Lambek (1958) forms the implicational fragment of non-cumulative linear logic. The characteristic feature of this logic is an absence of structural rules: theoremhood is contingent on relevance, occurrence, and order of premises, with analogy to the non-preservation of sentencehood under addition, deletion, or permutation of words. Linguistic derivations are logical proofs that are associated with functional terms constructing sentence meanings out of word meanings (Van Benthem 1983; Moortgat 1988). This paper develops Morrill (1989a,b) in augmenting the implicational system with a modal operator and linear additives and exponentials.

I give natural deduction axiomatisations of the relations between types. While implication introduction and elimination are interpreted by the complementary operations of abstraction and application, product is interpreted by pairing and projection, and necessity, intension and extension; the functional terms embodying well-typedness proofs are LISP-like programs representing meaning. The system is applied to bounded reflexivisation, unbounded relativisation and islands, polymorphisms, iteration, optionality, and word order. I conclude with possible applications of first- and higher-order types.

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A Discourse Perspective on VP Anaphora

A Verb Phrase anaphor may be viewed as a placeholder for a missing constituent of a sentence. In most theories, VP anaphors are therefore resolved by copying VP's/predicates from elsewhere in the sentence or discourse. In this paper we investigate under which conditions a VP/predicate in a discourse can serve as an antecedent for an intersentential VP anaphor. We point out semantic constraints on the occurrence of VP anaphors that have been ignored so far. In particular we show that an account of the interaction between VP anaphora, quantifier scope and pronominal reference must involve the entire structure of the clauses in which the anaphor and its antecedent occur: a VP anaphor induces syntactic/semantic parallelism between the 'anaphoric clause' and the 'antecedent clause'.

We propose a treatment of VP anaphora which checks for parallelism by matching the syntactic/semantic structures of the relevant clauses. This pattern matching process uses Flexible Montague Grammar for sentence level compositional semantic interpretation. We demonstrate that the matching process is independently motivated by other semantic phenomena in discourse, such as topic/focus articulation and coherence.

Roger Schwarzschild
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Against Groups

Researchers have employed a non-associative group forming operation for the interpretation of plurals. The motivation has been to allow for finer grained predicates that can at the same time apply truthfully to *the boys and the girls* but not to *the children*. I will argue that such an account cannot easily be maintained along with a compositional semantics for plural NPs. Instead I will attempt to analyze the relevant intuitions by exploring (1) the contribution of certain adverbials (e.g. *by-rank*, *by-age*, *as a group*, *together*) to verb phrase denotations and (2) examples where the meanings of such adverbials arise, I claim, by implication from the syntactic structure of sentences lacking explicit adverbials (compare temporal adverbial information that arises through the structure of the discourse).

Maria Stambolieva
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Notes on Aspect in Bulgarian and English

The paper, touching upon some general problems of the definition and treatment of aspectuality, is mainly devoted to the realization of this category in Bulgarian and English. Aspectuality in Bulgarian is described in terms of an interplay of Action Mode, Aspect and Aspect-cum-Tense distinctions. 'Perfective' meanings involve a semantic component 'Change of state' and can be topologically defined as a boundary-crossing effect. The interplay of the three main aspectual oppositions \pm Resultative, \pm Change of state and \pm Bounded can be reduced, for Bulgarian, to six main topological patterns. Aspectual classes in English can be described with the help of a Lexical Additives Test as consisting of two main groups: Imperfectiva Tantum and BI-aspectuals. Noun Phrases play a relatively minor part for aspect disambiguation. These considerations seem to minimize the validity of the so-called 'Imperfective Paradox'.

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Non-quantificational Readings of Adverbs

In terms of Discourse Representation Theory, quantificational NPs trigger 'splitting of boxes' and are thus interpreted as two-place operators, denoting relations between sets of individuals. Non-quantificational (readings of) NPs do not create tripartite structures; they function as predicates of a group. This paper extends the distinction between quantificational/non-quantificational interpretations to the domain of adverbs of quantification (*often*, *always*). In many contexts these expressions are correctly interpreted as binary operators, but sometimes the meaning of the adverb does not fit the typical tripartite structure. I will discuss three contexts in which the interpretation of the adverb has to be characterized as non-quantificational in nature. Alternative analyses will be developed for iterative adverbs (*twice*), weak frequency adverbs (*sometimes*, *often*) and a special use of universal/existential adverbs.

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Frans Zwarts
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Functional Composition in Combinatory Grammar and the Distribution of Wh-quantifiers

In a recent paper, Zwarts has proposed a treatment of negative polarity items that crucially depends on the use of functional composition and that combines the insights of generalized quantifier theory and combinatory grammar. Our talk is concerned with a potential application of this methodology in the domain of Wh-constructions. We will suggest that recent work by Obenauer and Rizzi is highly reminiscent of earlier results concerning the distribution of negative polarity items and should be explained in terms of semantical restrictions on the use of composition.

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Partial Logic and Modal Logic: a Systematic Survey

The flowering of partiality has led to a wild bunch of new logics, or old logics with a new semantics: intuitionistic logic, relevance logic, Veltman's data logic, the situational system of Barwise (1981) and Kamp (1983), Levesque's logic of explicit belief, Muskens's partial type theory, or even classical logic with the implicitly partial approach by semantic tableaux due to Beth. Though this proliferation be madness, yet there is method in it. The aim of the paper is to reveal this meta-system.

Some restrictions are necessary to make such an enterprise feasible. We will focus on the purely propositional and modal part of partial logics. Even then, not all values of the relevant parameters controlling the art of the logic can be dealt with. The parameters are connected to the basic notions of model-theoretic interpretation:

- The nature of the semantic primitives: partial or total, coherent or incoherent valuation - located here in worlds or situations; keywords: *partiality* and *coherence*.
- Truth and falsity conditions; e.g. the choice between the strong Kleene or some 'eventual' interpretation of connectives.
- The notion of validity involved; (unrestricted) 'true everywhere' (= *verification*) vs. 'false nowhere' (= *falsifiability*), or a restricted version?
- Logical consequence: does this relate only (modal) tautologies or also contingent formulas? To appreciate the difference: cf. the (relative) rule *modus ponens* ($\phi, \phi \rightarrow \psi \vdash \psi$) and the (absolute) rule of *Necessitation* ($\vdash \phi \Rightarrow \vdash \Box \phi$).

These different aspects interact in an interesting way. To reduce the multitude of emerging systems, we will establish a number of connections between them, and axiomatize the most obvious instantiations. An exemplary reduction concerns (possibly partial and incoherent) situations: for this largest class of models both types of unrestricted validation amount to the same; dealing with the relative type of consequence, one obtains the rules of relevance logic - and no tautologies. Many similar results are reported, with sometimes diverging behaviour of valid formulas and rules.

Within the modal language things are a lot more complicated and the completeness proofs soon become rather involved. It is here that some questions are still open: Is the description of the modal counterpart of the situational system complete? How about modal definability results? Yet, the theory developed so far is adequate in describing the partial logics mentioned. Extending a result in Van Benthem (1986) we will show that absolute falsifiability on coherent models yields the smallest normal modal system **K**. We shall also treat other applications in more detail.

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Henk Verkuyl

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Did the Guns of Navarone Hit Miles Twice?

The point I would like to make is that events are not primitives but rather constructed by the use of language: the denotations of certain sentences or parts thereof are licensed as events given certain conditions that can be specified quite accurately. Intervals are essential to this, but not in the way the so-called interval semantics of the seventies proposed. My talk will focus on the fact that the notion of event introduced by philosophers is contaminated by considerations concerning agency, like so many notions. So I shall critically examine the argument that interval semantics is not able to distinguish between two different events taking place at the same interval. The discussion is important in view of the close relationship between problems concerning event structure and problems concerning distributive and collective quantification.

Frans Voorbraak

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Conditionals, Probability, and Belief Revision

A famous result obtained in the mid-seventies by David Lewis shows that a straightforward interpretation of probabilities of conditionals as conditional probabilities runs into serious trouble. In this paper we try to circumvent this trouble by defining extensions of probability functions, called *conditional probability functions*. We further defend the position that rational partial beliefs (about conditionals) are better represented by sets of (conditional) probability functions satisfying certain constraints than by a *single* (conditional) probability function. From this position it is possible to distinguish several notions of belief updating, which results in questioning the intimate relation some authors have claimed to exist between the Ramsey test for conditionals and belief revision.

Hanna Walinska de Hackbeil

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The Syntax of Slavic Aspect

The aspect literature assumes a fundamental difference between the Slavonic aktionsart and the Germanic aspect. The paper presents a syntactic theory of verb structure which reduces these contrasts. Arguments are given that Polish aspect-formation is inflectional and that aspectual prefixes are SP(VP) and SP(\bar{V}). These two positions are landing sites for the perfective-forming Affect P. I.e. (i) P-insertion, (ii) movement of directional Ps to SP(\bar{V}) and (iii) movement of quantificational Ps to SP(VP). (\bar{V})-aspect rules are formally identical with English verb-forming rules, where, however, the prefixes do not c-command their traces, thus P-doubling is precluded. The formal convergence of Affect P in Polish and English strongly supports the syntactic approach to inflectional and derivational morphology.

Huang Zisheng

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Dependency of Belief in Distributed Systems

In recent years, reasoning about knowledge in distributed systems has been viewed as an important topic of investigation for analyzing distributed systems. This paper investigates the problem of dependency of belief in distributed environments, where an agent may take others' beliefs as its own beliefs. Kripke-models for dependency of belief in distributed systems are presented. The notion of dependency of belief can be viewed as an intuitive extension to the notion of awareness, which generally is introduced in the systems of knowledge and belief. Synchronous distributed systems with dependency of belief are formalized. The corresponding logic system, S5-DIn, is offered.

Alessandro Zucchi

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The Propositional Interpretation of Noun Phrases

Derived NPs like *Mary's arrival* are appropriately paraphrased by a that-clause when they occur in object position of *is informed of*, but not when they occur as objects of *remember*. An account of this fact is provided by Vendler's theory of semantic selection and by Vendler's hypothesis that derived NPs are ambiguous between denoting events and denoting propositional entities. The ambiguity hypothesis fails to account for some instances of propositional interpretation of derived nominals and runs into a problem with the predicate *remember*. I show how the interpretation of derived NPs in different contexts may be accounted for without assuming that they denote propositional entities. This account is compared with the Vendlerian account. In the last part of the paper, I present a semantics for derived NPs and English gerundive NPs based on Kratzer's semantics of situations.

Joost Zwarts

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Kinds and Generic Terms

In my talk I will be concerned with the analysis of two types of generic noun phrases: bare plurals like *cats* and definite generics like *the cats*. In Carlson (1978) the generic bare plural is basically treated as a proper name for a kind. In Carlson (1979), however, the bare plural is analysed as a definite description of a kind in order to allow restrictive modification. Should the definite generic also be treated as a kind-denoting proper name or rather as a definite description? After a comparison of these two types of generics I will propose to analyse the definite generic as a proper name but the bare plural as a special sort of definite description.

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