



Institute for Logic, Language and Computation









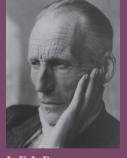
Universiteit van Amsterdam



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# Institute for Logic, Language and Computation

# Annual Report 2005



Universiteit van Amsterdam

# Amsterdam, April 2006

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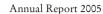




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#### 1.1 Scientific mission

Information has become a crucial theme for scientific studies across many disciplines. Encoding, transmission and comprehension of information are the central topics of research at the Institute for Logic, Language and Computation (ILLC) of the Universiteit van Amsterdam. The broader context in which the ILLC sees itself is that of an information science that is concerned with information flow in natural and formal languages, as well as many other means of communication, including music and images of various kinds. Developing logical systems that can handle this rich variety of information, making use of insights across such disciplines as linguistics, computer science, cognitive science, artificial intelligence and philosophy are research aims at the ILLC. Whenever relevant, additional methods, ranging from statistics to argumentation theory, are actively pursued as well. In addition to its specific research goals, ILLC aims to overcome traditional borderlines between faculties and disciplines and serves as a rallying point for information scientists across computer science, linguistics, philosophy, and the social sciences. The resulting view of information science transcends the boundaries of the university. The ILLC is also committed to dissemination of its results into the broader world of general education, vocational training and industrial research. Moreover, ILLC strives to build strong alliances with institutes which share this view. In 2005 an agreement of cooperation was signed with The Institute of Logic and Cognition of the Institute of Sun Yat-sen University in Guangzhou, China.

# 1.2 Teaching

As an interdisciplinary institute, ILLC participates in a great number of teaching programs. In the year 2005 courses were given in the Beta-Gamma bachelor, the master of Rhetoric, Argumentation & Philosophy, the master of Cognitive Science and the bachelor and master tracks of Philosophy, Computer science, Artificial Intelligence, Linguistics, and Mathematics.

Still, the main thrust of our teaching activities centers on the Master of Logic, a two year international research master. The wide range of courses in logic and its applications offered in this program attracts many students from all over the world. Currently there are 49 active students coming from 18 different countries. The number of students graduated by Januray 1st 2006 is 68, 50 of which took up a PhD position, either here at ILLC (17) or elsewhere (33). These numbers make us optimistic about the chances for accreditation in 2006.

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1. Annual Survey



As the project reports in chapter 2 will show, the two spearheads identified in ILLC's long term research program, 'Cognitive Modelling' and 'Logic and Games' are now firmly established as distinctive elements of ILLC's research profile. In 2005, the field of 'Logic and Games' got a major new impulse by the Marie Curie Programme of the European Community which funded a Research Training Site at ILLC. It is called 'GloRiClass', which is an acronym for 'Games in Logic Reaching out for Classical Game Theory'. Under this heading ILLC got funding for eight PhD positions, each for a period of three years. The training site is coordinated by Krzysztof Apt, Johan van Benthem, Paul Dekker, and Benedikt

Another major accomplishment was the VICI grant awarded to Yde Venema for his project 'Algebra and Coalgebra: the mathematical environment of modal logic'. Venema will receive funding for 3 PhD students (each for a period of 4 years) and 2 postdocs (each for 2 years). An additional reason to be happy about this grant is that it shows that NWO is still prepared to fund purely theoretical research in which no concessions to any 'market' are being made.

More new externally funded projects: In the framework 'Programmatisch onderzoek' of NWO Geesteswetenschappen, Wolfram Hinzen was awarded funding for his project 'Origins of truth and the sentence'. The subsidy is for the appointment of one PhD student and one postdoc. EmCAP (Emergent Cognition through Active Perception) is an EU research project in the field of Music Cognition awarded to Henkjan Honing. It covers the salary and other costs of 1 postdoctoral researcher and 0.5 PhD-student.

MuSeUM (Multiple-collection Searching Using Metadata) is a project awarded within the CATCH program of NWO. Here, Jaap Kamps will receive funding to appoint a postdoctoral researcher (3 years), a PhD student (4 years) and a scientific programmer (3 years).

All in all this means that by the end of 2006 ILLC will employ at least 4 new postdocs and 10 new PhD students. Indeed, the year 2005 was a good year for external funding --- the best ILLC has had so far.

In addition to these research grants the year 2005 also brought some prizes. Our master student Boaz Leskes received the 5th UvA Thesis Award at the University Day on Saturday June 11th, for his Master thesis 'The value of agreement: a new boost algorithm'. The award was presented to him by Jit Peters, Dean of the

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Faculty of Law and head of the award committee. In his thesis Boaz, supervised by Leen Torenvliet, developed an entirely new model for automated learning. Not only did he conceive and develop the mathematical basis for this model, he also put his work into practice with extensive programming.

The Praemium Erasmianum Foundation yearly awards a maximum of five prizes with a value of EURO 3000 in recognition of an extraordinary dissertation from young scholarly researchers in the humanities. We are very proud that our PhD student Boudewijn de Bruin is one of the researchers who received this prize in 2005 for his thesis 'Explaining Games. On the Logic of Game Theoretic Explanations'. Johan ven Benthem and Martin Stokhof were his supervisors.

#### 1.4 Administration

A remark that has been made a number of times in ILLC's annual reports concerns its awkward position in the university's administrative structure. Being part of two faculties, with two different types of financial organization, human resources management, employment regulations, and so on, creates a complicated and time-consuming environment in which ILLC's administrators have to operate. Roughly put ILLC has twice the administrative overhead of an ordinary research institute. That this situation needs to be remedied, as it hampers effective employment of resources, has been acknowledged by all parties. But very little has been done about it. On pain of being repetitious: this is a problem that needs to be solved.

Another concern is the disproportionate amount of time that members of ILLC, in particular the senior staff, spend on administrative duties and in administrative functions in and outside the University of Amasterdam. In some cases, when such work is combined with a normal teaching load, this leads to unacceptably small amounts of time for research. This situation is one that needs attention, both internally and externally. Within the institute it needs to be investigated whether a better division of labor is possible or whether some tasks can be given up. But external measures are needed as well: the faculties and the university should provide better compensation, e.g., by providing additional financial means for diminishing the teaching load of staff that have time-consuming administrative duties.

Whatever measures are taken in this respect, in 2006 the administrative work load will not decrease as we have to prepare ourselves for two external reviews. One concerns our teaching: the accreditation of the Master of Logic; the other is the external Research Evaluation over the years 2000-2005. Hopefully, in the next

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1.3

Research

Löwe. The latter was the main applicant.



annual report we can report that both had a positive outcome.

The next annual report will also contain more information on ILLC's new reserach plan. As of January 1st 2006 ILLC's research has been restructured. The following are the three new core projects:

- Logic & Computation (LoCo): project leader: successor Dick de Jongh, deputy: Leen Torenvliet
- Logic & Language (LoLa): project leader: Jeroen Groenendijk, deputy: Paul Dekker
- Language & Computation (LaCo): project leader: Remko Scha, deputy: Khalil Sima'an

The projects serve as the main logistic unities in the institute. Each has its own research program, and all contribute to ILLC's two research spearheads for 2006-2010: 'Cognitive modelling', and 'Logic and Games'.

Frank Veltman Director



# 2. Fundamental Research

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# 2.1 Research projects

ILLC's research program is divided into projects oriented toward a particular subject matter. This division also reflects the way research is actually carried out. Projects cut across the various groups that make up ILLC. The 2005 project reports can be found below

- 2.2.1 Theory of Interpretation
- 2.2.2 Cognitive Systems and Information Processing
- 2.2.3 Constructive and Intensional Logic
- 2.2.4 Algorithmics and Complexity Theory

# 2.2 Project reports

#### 2.2.1 Theory of Interpretation

#### Project Leaders

Jeroen Groenendijk, Martin Stokhof

#### Characterization

The project investigates formal and philosophical foundations of theories of interpretation. Its main goal is the development of formal and conceptual tools for adequate interpretation of natural language, testing these against both empirical data as well as methodological and philosophical constraints, and cognitive plausiblity.

#### Main Themes

The three main themes in the project are: interpretation in conversation; cognitive aspects; and philosophical backgrounds.

Research on *interpretation in conversation* focuses on interpretation as an element in the process of linguistic information exchange. It builds on earlier research on the dynamics of interpretation at sentence level, applying the results of that research to phenomena that play a key role in the structuring of discourse. Relevant empirical phenomena that are studied here include question-answering, the structure of information in conversational exchange, and the use of mood and intonation. Increasingly the research in this theme makes use of decision theory, game theory and epistemic logic in the analysis of the procedures used by rational communicative agents in both production and interpretation. Innovative is the general perspective on these issues, which takes into account formal (syntactic, typological, and prosodic) and pragmatic (conversational) aspects, paying due



attention to the cognitive and social nature of these agents.

Central in the second theme, *cognitive aspects*, is the framework of 'dynamic conceptual semantics' (DCS), a formal model of the way in which concepts arise from (relatively) unstructured data. This model is closely connected with the data-oriented approach towards information processing that is used in the project Logic and Cognitive Systems. Currently, research in DCS is directed towards the role of memory (general and specific historical memory) in the understanding of situations and linguistic utterances. Another topic in this theme is concerned with the clarification of the roles of experience and appreciation in skillful coping as source of (linguistic) normativity.

Research on *philosophical foundations* involves coming to grips with the presuppositions and limitations of the kind of theories developed in the first two themes. Historical and philosophical analyses of various key notions used there also bring out connections with different paradigms. Topics addressed within this theme include origins, development and employment of the notion of an ideal language; backgrounds and status of the principle of compositionality; the status of formal semantics as a scientific discipline; Wittgenstein's notion of 'perspicuous representation' in relation to installation art; and the nature and consequences of a Wittgensteinian analysis of subjectivity.

In 2006 the project will receive a wider orientation, and be subsumed under the heading 'Logic and Language'.

#### 2005

#### Interpretation in conversation

Research within the first theme, interpretation in conversation, saw several interesting developments. Questions, conversational implicatures, and the notion of relevance have been studied further. The focus has been on the particular ways in which linguistic means guide cognitive agents in structuring information in context, and the way in which that fits in with other rational activities. Innovative is the general perspective on these issues, which takes into account formal (syntactic and prosodic) and pragmatic (conversational) aspects, thereby paying due attention to the cognitive and social nature of these agents. Evolutionary game theory is used to give a functional motivation of why linguistic rules that enhance efficient and reliable communication evolve more naturally than ones that don't.

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#### The Amsterdam Colloquium

The Amsterdam Colloquium (AC) is the oldest, and one of the most important series of international congresses on the semantics of natural language, broadly conceived.

The Amsterdam Colloquia aim at bringing together linguists, philosophers, logicians and computer scientists who share an interest in the formal study of the semantics and pragmatics of natural and formal languages. The spectrum of topics covered ranges from descriptive (syntactic and semantic analyses of all kinds of expressions) to theoretical (logical and computational properties of semantic theories, philosophical foundations, evolution and learning of language).

The Fifteenth Amsterdam
Colloquium was held in
Amsterdam December 19-21,
2005. The program consisted
of four invited lectures by
Sigrid Beck, Nissim Francez,
Manfred Krifka and Lawrence
5. Moss, the 2005 Vienna Circle
evening lecture by Hannes
Leitgeb, 30 contributed



papers, and two thematic workshops, one on Language and Learning (speakers: James Cussens, Jacqueline van Kampen, Makoto Kanazawa, and Claire Nedellec) and one on Semantics Universals (speakers: Johan van der Auwera, David Gil, Helen de Hoop, and Ed Keenan).

The Colloquium was visited by around 100 researchers, junior and senior, most from continental Europe and the US. For the organization of the Fifteenth Colloquium financial support was received from: the Royal Dutch Academy of Sciences (KNAW), the Netherlands Organization for Scientific Research (NWO), the ILLC, the NWO -funded project 'Formal Language Games', the Beth stichting, Springer, and the Municipality of Amsterdam, which is gratefully acknowledged.

Paul Dekker Chair organization committee



Methodologically, the connections between dynamic semantics, game theory, and decision theory have been strengthened. Philosophical foundations of such theories are tested by investigating how and to what extent the evolution and use of natural language relies on a balance between cognitive (rationality) and social (conventional) aspects and these are tested in collaboration with colleagues in Brussels. Paul Dekker's project 'Formal Language games' entered its last year, and he worked further on the notions of an optimal discourse and of strategic inference; Robert van Rooij started with his VIDI-grant on 'The Economics of Language'. The goal of this project is to explain the structure and use of language in terms of economic forces. Standard and Evolutionary Game Theory, as well as epistemic and non-monotonic logic, are important tools being used here. Michael Franke and Samson de Jager will be the new PhD students working on this project. An early result of the project is a book called 'Game Theory and Pragmatics', which will come out in 2006. Robert van Rooij also worked (in collaboration with Katrin Schulz) on conversational implicatures, and on a modal analysis of presuppositions and modal subordination. Maria Aloni continued her NWO Veni-research on 'Semantic Structure and Dynamics in Natural Language Interpretation'. The idea at the heart of this research is that semantic structures normally held to play a role in the analysis of questions and focus may enter the recursive characterization of the semantics of a much wider range of natural language expressions including free choice indefinites, disjunctions, modals, and imperatives. Marie Safarova continued experimental work on the semantics of intonation, and achieved experimental results which definitely invite a reconsideration of some truisms in the theoretical linguistic literature. These will be developed further in her thesis which is due in 2006. Balder ten Cate defended his PhD thesis on Model theory for extended modal languages. More directly related to the research project on the theory of interpretation is the paper he wrote together with Chung-chieh Shan on Axiomatizing Groenendijk's Logic of Interrogation. Kata Balogh continued her PhD project, which aims at a cross-linguistic analysis of exhaustification, relating different syntactic and semantic approaches. In 2005 she wrote a number of papers which deal with the interpretation of 'only', exhaustification, and (multiple) focus in Hungarian. Floris Roelofsen started a new PhD project, which investigates the possibility of refinements of the partition approach to questions and answers, making use of new developments in dynamic semantics and dynamic epistemic logic, with the aim of improving analyses of discourse coherence.

#### Cognitive aspects

As for the second theme, cognitive aspects, Renate Bartsch published her book Memory and Understanding. Consciousness in Proust's 'A la recherche du

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temps perdu', in 2005 in the series Advances in Consciousness Research with John Benjamins Publishing Company. The new book is a further elaboration and application of the theory of Dynamic Conceptual Semantics (1998) and Consciousness Emerging (2002) with respect to the general and specific (historical, episodic) memory and its role in understanding. Characteristic for the method of this research is the parallel development of a phenomenological and semantic approach with a connectionist model of neuro-activation as an architecture that takes into account recent neuro-scientific findings about the working of the memory. Erik Rietveld spent part of the year in Berkely, working with Hubert Dreyfus, Walter Freeman and Alva Noe. He further developed his work on phenomenological and neuroscientific aspects of 'affordances'. Preliminary results were presented at two conferences in Oxford.

#### Philosophical backgrounds

In the third theme, philosophical backgrounds, Jaap Maat brought his book on Leibniz's rational grammar, containing English translations of Leibniz's Latin texts on the subject, near completion. He also worked on an interactive website meant as a tool for teaching and research in seventeenth-century science and linguistics, in collaboration with the University of Oxford. Theo Janssen has, in collaboration with Caicedo (Bogota) and Dechesne (Eindhoven) obtained several results concerning a generalization of Hintikka's original IF-system: it was shown that the traditional prenex normal form theorems do not hold and that a new notion of equivalence is required. A publication is in preparation. Jeroen Groenendijk and Martin Stokhof published a paper that investigates some philosophical assumptions of the use of compositionality in modern semantics. Tine Wilde published some initial results of her investigation of Wittgenstein's notion of a 'perspicuous representation' and his remarks on color, and investigated the role of imagination, and the relationship with art. Chantal Bax published preliminary results of her investigation into Wittgenstein's views on psychology and religion, and started working on Wittgenstein and politics.

#### People

Senior Staff

Paul Dekker, Jeroen Groenendijk, Theo Janssen, Robert van Rooij, Martin Stokhof

PhD students

Kata Balogh, Chantal Bax, Erik Rietveld, Floris Roelofsen, Marie Safarova, Tine Wilde







#### Key publications

- Maria Aloni, 2005, 'A Formal Treatment of the Pragmatics of Questions and Attitudes'. Linguistics and Philosophy, vol. 28, nr. 5, pp. 505-539.
- Maria Aloni, 2005, 'Individual Concepts in Modal Predicate Logic'. Journal of Philosophical Logic, 2005, vol. 34, nr. 1, pp. 1-64.
- Renate Bartsch, 2005, Memory and Understanding, Benjamins, Amsterdam.
- Chantal Bax, 2005, 'Interioriteit en Religiositeit. Een confrontatie van Wittgensteins 'psychologie' met Wittgensteins 'theologie', Tijdschrift voor Filosofie.
- Jeroen Groenendijk & Martin Stokhof, 2005, 'Why Compositionality?', in: Greg Carlson & Jeff Pelletier (eds): Reference and Generality: The Partee Effect, CSLI, Stanford, pp. 83-106.
- Erik Rietveld (et al.), 2005, 'Situated Normativity: From Wittgenstein to Neurophenomenology', Algemeen Nederlands Tijdschrift voor Wijsbegeerte.
- Tine Wilde, 2005, 'Wittgenstein over kleurconcepten en kleurervaring', Kleurenvisie, 3.

#### 2.2.2 Cognitive systems and information processing

# Project leaders

Michiel van Lambalgen, Remko Scha

#### Characterization

CSIP collects a number of researchers who engage in empirically oriented investigations on language, logical reasoning, and music. These empirical methods include use of large corpora, psychological experiments and brain imaging, in addition to developing mathematical and computational models for the data obtained. The output of the research can vary from the usual scientific articles and books to software and diagnostic tests for medical use.

#### 2005

The research has in the past year concentrated on the following themes (researchers involved in parentheses):

- Music cognition (Honing, Smith, Ladinig, Bod, Honingh, Spiro)
- Logic and cognition (van Lambalgen, Counihan, Fitz, Hindsill)
- Mood and Modality (Veltman, Mastop, Nauze, Schulz)
- Computational models of discourse and context (Blutner, Zeevat, Kamps)
- Data-oriented parsing (Scha, Bod, Sima'an, Prescher, Tsarfaty)
- Philosophy of mind (Hinzen)For each theme, we single out some highlights below.

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#### Outreach: "Gee, that you can study that."

It must be all too familiar to any scientist: at a party or during a visit at the hairdresser you're asked what you do in your daily life. After a few sentences about your research and the beautiful problems you are working on you see the eyes drifting away, with reactions like "really complicated indeed" or "gee, that you can study that". Luckily in my research, music cognition, that problem is less apparent since most people have a passion for music and wonder about things like why does music move us so directly, what makes the timing of a certain performer so special, why do certain melodies stick in your mind, or is it possible to make a hit-machine?

Like most topics studied in the ILLC, music cognition is characterized by being essentially interdisciplinary, bridging methodologies and philosophical constraints from the humanities with those from psychology and computer science. This domain could perhaps serve as an example of how to reach a more general audience that is potentially interested in the research we do at the ILLC.

In outreach the main challenge is to find a common ground or shared experience with a general public, as well as to show the relevance of research outside the academic world. And indeed, also topics like computational linguistics, modal logic or complexity theory have the potential to be communicated to such an audience and were shown to be able to contribute to non-academic issues. Like Johan van Benthem who used riddles and games as a meeting ground with children to talk about logic, like Michiel van Lambalgen who warned for the abuse of statistics in a recent court case, or like the work by Tine de Wilde who uses unexpected formats to communicate philosophy to an art audience, to mention just a few ILLC-related projects.

Outreach is, however, not the same as 'going on your knees' to explain your research to a young audience or making populist interpretations of your field. You are in fact challenged to explain your research and insights in different terms. And that can be very rewarding and even influence to your own thinking. With regard to my own research, I could start talking about the computational modeling of music cognition, and the theoretical, empirical and computational methods that we use, but I'm sure a general audience will quickly loose me. A common trick is to think of a typical example that speaks to everyone's imagination. I often explain my research in terms of the scientific challenge to make a listening machine.



Imagine what that would be like? A machine that can listen and react in a human and musical way. And, of course, it should make the same mistakes! It allows you to explain all kinds of computational modeling notions, what should such a machine know, what should it listen for, and how can we compare and evaluate them (see illustration)?

However, such an idea will also generate confusion, like 'oh, so you actually want to replace a musician by a computer.' Interestingly, such a remark gives you the opportunity to explain that you're interested in what the machine cannot do: that what we cannot put in formal terms is not yet really understood. As such you end up with a far more general message then discussing the specifics we all have to work on as well, a message that communicates the essence of your research.

And I'm sure most of the ILLC-members can think of such an example in their own field of expertise. An example that, besides being a possible application of your work, reveals your scientific interests, beliefs and methods used. It will communicate to a larger audience the sheer pleasure of figuring things out, as well as revealing all the energy that goes into formalizing these ideas and trying to convince yourself and others that these formalizations might be right.

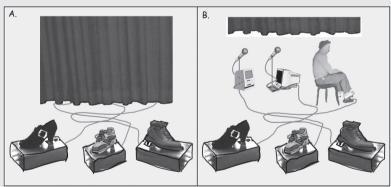


Figure 1. Mock-up for a demonstration of 'listening machines' (models of beat induction or 'foot-tapping') using a limited turing test (adapted from proposal to NWO-Cognition 2003).

Henkjan Honing
ILLC/Department of Musicology (FGW)



#### Annual Report 2005

#### Music cognition

cognition, aiming to further substantiate this methodology, as well as elaborating ways of evaluating and select among computational models.

In 2005 two new research projects started. The first project, named 'Music as a social, psychological, and acoustical phenomenon: a cognitive revolution in musicology' (funded by NWO-GW 'Foundations of the Humanities' programme), investigates the 'cognitive revolution' in music research.

The second project, named 'Emergent Cognition through Active Perception (EmCAP)' (funded by the European FP6-IST programme), is a collaborative research project in the field of Music Cognition. The goal of this project is to investigate how complex cognitive behavior in artificial systems can emerge through interacting with an environment, and how, by becoming sensitive to the properties of the environment, such systems can develop effective representations and processing structures autonomously.

This research project is concerned with the computational modeling of music

#### Logic and cognition

An important area of research here is the use of logical languages as high-level specifications of cognitive functions (the 'computational level' in the sense of Marr). Sometimes the logical model leads to predictions at the level of brain processes, a topic that is investigated in the NWO project 'Reasoning and the brain', a cooperation of ILLC and the F.C. Donders Centre for Cognitive Neuroimaging (Nijmegen).

Together with Stenning (Edinburgh), van Lambalgen wrote the book 'Human reasoning and cognitive science' which will be published by MIT Press in 2006. The book shows that modern mathematical logic is essential in explaining human reasoning behaviour, despite current opinion in cognitive science to the contrary. The book also offers a neural implementation of (nonmonotonic) logic that can be related to executive dysfunction in autism and to genetics.

#### Mood and modality

An important topic of investigation here is the (im)possibility of mixing moods and modalities. Sometimes mixing is possible, as in 'Do as I say, or you'll go to your room' (felicitous mixing of imperative and indicative mood). In other cases mixing is impossible, as '\*It ought to be case that he might be ill' (infelicitous mixing of deontic and epistemic modality). The task here is to investigate these patterns in several languages via a typological study and then to provide a formal semantics for the data. Nauze presented the first results in this area at the 10<sup>th</sup> 'Sinn und Bedeutung' conference in Berlin. Mastop completed his doctoral dissertation 'What can you do? Imperative mood in semantic theory' on the







imperative mood. Veltman presented the framework used in Mastop's dissertation in a key note address at the conference on 'Language and Uncertainty' in Kyoto, thereby elaborating on the logical properties this framework assigns to commands and permissions.

#### Computational models of discourse and context

The book Optimal Communication by Blutner, de Hoop (Nijmegen) and Hendriks (Groningen) has been finished and published (by CSLI). The book presents cutting-edge research within the areas of the syntax/semantics interface and formal semantics/pragmatics and provides an overview of recent developments within semantic theory. Applying ideas from Optimality Theory to the domain of interpretation, optimal meanings are viewed as the result of a process of conflict resolution between competing constraints.

The interpretation theory 'OT pragmatics' that Zeevat proposed in 2000 turns out to be directly applicable to rhetorical structure and the semantics of plurals where it leads to conceptual simplifications and a better integration of

semantics and pragmatics. A breakthrough was achieved with regards to the

implementation of OT-syntax leading to really simple models of generation.

#### Data-oriented parsing

Bod supervises two NWO projects: NWO Exact project 'Unsupervised Stochastic Grammar Induction from Unlabeled Data', and NWO innovation-impulse project 'Towards a Unifying Model for Linguistic, Musical and Visual Processing'. In the latter, a general model for bootstrapping structure in language and music was developed. This model initially assigns all possible binary trees to input strings, and next uses all subtrees from these binary trees to predict the most probable trees for new strings. The model was tested on a number of benchmarks, and was extended to bootstrapping derivation trees for scientific (equational) reasoning given minimally annotated data.

Scha and Sima'an also supervise two NWO projects, to wit 'Learning Stochastic Tree Grammars from Treebanks' (LeStoGram) on devising well-

Scha and Sima an also supervise two NWO projects, to wit 'Learning Stochastic Tree Grammars from Treebanks' (LeStoGram) on devising well-behaved statistical estimators for Data-Oriented Parsing (DOP) models, and 'Probabilistic Models of Morphology and Syntax for Hebrew' (in cooperation with the Technion Haifa). Work on the latter project resulted in the first accurate segmenter and POS tagger for Hebrew. Reut Tsarfaty worked last year on linguistic aspects of Hebrew morphology and syntax and on devising baseline probabilistic parsing systems for Modern Hebrew. In the summer of 2005 Khalil Sima'an received a grant to participate as senior researcher in the natural language technology summer workshop at Johns Hopkins University (JHU). A carefully selected international group of seven researchers worked together on a project

for statistical adaption of a parser from a resource-rich language to a language for which there exist no resources.

# Philosophy of mind

The most important event here was the award of an NWO Open Competition Program, entitled 'The Origins of Truth and the Origins of the Sentence', to Hinzen. The basic idea of this project is that our human ability to make judgements of truth depends on very specific structural preconditions intrinsic to the human mind. Thus a mind judging the truth has to be a propositional mind, and there is a good question to ask to what extent a propositional mind is necessarily also a linguistic one. More specifically, to what extent is the evolution of our sense of truth premised by an evolution of the sentence? And how do we best describe the sentence, as a particular hierarchical structure that correlates with propositional meanings?

#### People

# Senior Staff

Rens Bod, Reinhard Blutner, Wolfram Hinzen, Henkjan Honing, Jaap Kamps, Karen Kwast, Michiel van Lambalgen, Remko Scha, Khalil Sima'an, Frank Veltman, Henk Zeevat

#### Temporary Staff

Detlef Prescher, Leigh Smith, Jelle Zuidema

#### PhD students

Marian Counihan, Hartmut Fitz, Michael Franke, Darrin Hindsill, Aline Honingh, Samson de Jager, Olivia Ladinig, Rosja Mastop, Fabrice Nauze, Katrin Schulz, Neta Spiro, Reut Tsarfaty

#### **Key Publications**

- Blutner, K.R., H. de Hoop, H., & P.C.J. Hendriks, 2005, *Optimal Communication*. Stanford: CSLI.
- Bod, R., Fitz, H., & Zuidema, W.H., 2005, 'On the Structural Ambiguity in Natural Language that the Neural Architecture Cannot Deal With', *Behavioral and Brain Sciences*, 28(4), to appear.
- Honing, H.J. (2005). Is there a perception-based alternative to kinematic models of tempo rubato? Music Perception, 23(1), 79-85.

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#### 2.2.3 Constructive and Intensional Logic

#### Project leaders

Johan van Benthem, successor De Jongh (vacancy)

#### Characterization

The project Constructive and Intensional Logic continues a long-standing Amsterdam tradition in mathematical logic, going back to the chairs of Brouwer in the foundations of mathematics and that of Beth in general logic. The project research deals with foundational questions about the principles of mathematical and ordinary reasoning and attempts to capture the mechanisms of reasoning in mathematical models. Traditionally, the main mathematical models covered were intuitionistic and modal logic, and this historical perspective is honoured in the terms 'Constructive' and 'Intensional' in the project title.

Current research extends beyond this traditional scope to include game-theoretic and set-theoretic approaches and combine them with the constructive and intensional techniques. The game-theoretic approach has become a very important paradigm of the project and created many connections to other projects inside the ILLC, developing a vertical theme through many of the ILLC projects.

More specifically, the project deals with the themes Logic of Communication and Learning, Logic and Games, Mathematical theory of modal logic, and Foundations of Mathematics. There are many links between these four themes that allow to see our research as aspects of one important foundational question, the most obvious of them being the methodological theme of games.

#### 2005

#### Logic of Communication and Learning

Modal logics are well-suited for analysing knowledge, action and communication in systems with many agents. We study a wide range of modal systems for information update and interaction, aiming for a framework combining broad coverage with elegant mathematical foundations.

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The core of this theme is the research group around Johan van Benthem, including his PhD students Fenrong Liu, Sieuwert van Otterloo and Olivier Roy. In the year 2005, this group developed new preference logics for analyzing game solutions, with also a matching dynamic epistemic version for describing preference change in models. Active in this group were also the postdoctoral researchers Maricarmen Martínez (until October 2005) and Eric Pacuit (from August 2005).

In the area of 'learning', Yoav Seginer developed an algorithm to induce a dependency parser from an unannotated natural language corpus.

In September, the group around van Benthem organized a workshop entitled Interfacing Probabilistic and Epistemic Update which aimed at exploring shared topics between the communities in dynamic epistemic logic and in Bayesian update.

Olivier Roy initiated a mini-series of workshops between Paris and Amsterdam, called PALMYR ('Paris-Amsterdam Logic Meeting of Young Researchers'). The idea of these workshops was to bring together young researchers in logic, language and theories of rationality from Paris and Amsterdam. The series will be continued and a third meeting is planned for June 2006. In addition to the Paris-Amsterdam exchange, Roy was also an organizer of the Recherches Québecoises en Logique, a first interdisciplinary logic meeting in Quebec.

#### Logic and Games

The research area of Logic and Games developed from an important subfield of the work in this project into something more fundamental in 2005. Over the past years, it had become obvious that several research projects of the ILLC are connected by their common interest in games. This includes the work of Peter van Emde Boas, Robert van Rooij, Paul Dekker. On the global level, it had been understood for a while that the interaction between logic and game theory in both directions is a blooming area of research. This and the important role of the ILLC researchers had been foreshadowed by the successful FotFS IV conference in 2004.

The tradition of FotFS IV was continued this year with a similar high-level workshop, the 7th Augustus de Morgan Workshop in London on the topic of 'Interactive Logic'. Organized by Johan van Benthem, Dov Gabbay and Benedikt Löwe, it brought together the researchers in the intersection of epistemic logic, mathematical logic and game theory and incited debate and collaboration. The positive impetus of the bustling international activity was followed by an







enormous success of the ILLC: we managed to get funding for a Marie Curie Research Training Site funding eight PhD students over a project period of four years from the European Commission. This site is coordinated by Krzysztof Apt, Johan van Benthem, Paul Dekker, and Benedikt Löwe and will start its work in February 2006

In addition to the international workshop in London, the national Dutch workshop series on Logic and Games, GLLC ('Games in Logic, Language and Computation') continued in 2005, now coordinated by Fenrong Liu. In 2005, two GLLC workshops were organized: GLLC X in Tilburg and GLLC 11 in Amsterdam.

As for the research in this area, Bold and Löwe have continued their work on the consequences of game-theoretic axioms for infinitary combinatorics. Semmes work concerned game-theoretic characterisations of nice classes of functions. Olivier Roy was also very active in research on games and continued his work on plans and intentions in game theory and the development of a modal logic of preferences and solution concepts in game theory.

# Mathematical theory of modal logic

Our general goal is to obtain a deeper understanding of the properties of modal formalisms by embedding modal logic in its wider mathematical environment. Modal languages are designed to strike a balance between reasonable expressive power and manageable computational complexity. An in-depth study of this trade-off links modal logic with areas like automata theory, and (finite) model theory. Algebraic logic, the study of systematic connections between logic and classes of algebras, is another key perspective for understanding modal logic: our investigations center around questions of correspondence, duality and canonicity. And finally, a promising recent perspective on modal logic that we are taking on modal logic is that of coalgebra, the study of state-based systems in their most abstract form.

This theme in our project received highest honours in December 2005 when Yde Venema received a VICI grant of the NWO for his project Algebra and Coalgebra. Broadly conceived, the project considers logic at the intersection between algebra ('construction') and coalgebra ('observation'). In the future supported by three PhD students and two postdocs, Venema will continue to do high-level research in this area. Also, a new PhD student, Levan Uridia, joined Venema's group in 2005. The influx of new students will make sure that the group in algebraic logic will continue their work at their high level.

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#### ILLC & ILC

Being a Chinese student at ILLC, the best thing I could possibly hope for was that ILLC would establish a cooperation agreement with some sister institute in China. On December 16th this hope was fulfilled when a Chinese delegation came from Guangzhou to Amsterdam to sign a Memorandum of Understanding between ILLC and ILC, the Institute for Logic



The agreement is signed by ILLC director Frank Veltman and ILC director Shier Ju

and Cognition of Sun Yat-Sen University. The vice-president of Sun Yat-Sen University, Prof. G. Liang, the dean of the Faculty of Science of the UvA, Prof. K. Gaemers, the dean of the Faculty of Humanities of the UvA, Prof. A. Hulk, and many ILLC members attended the ceremony.

In honour of this occasion a minisymposium on 'Logic and Cognition' was held. Johan van Benthem gave a talk entitled 'Encounters, Discussions, and Games: Origins of Logic in Interaction'. Professor Shier Ju, the director of ILC, talked about logic and cognition from a Chinese perspective. Then Henkjan Honing's 'Computational Modeling of Music Cognition: a case study on model selection', and Michiel van Lambalgen's 'Logic in Psychiatry' followed. I, too, was invited to give a talk, and had the pleasure of telling my stories of studying logic here at ILLC.

As commented by Johan van Benthem at the end of the ceremony, cooperation means that we have an official platform to exchange ideas, interact with each other, and do things together. I hope logicians on both sides can contribute to it in the future. It is good to see that already this year teachers from ILLC will visit ILC to teach some courses. Of course, this will be of great benefit to Chinese students.

Fenrong Liu PhD student



of semantics and automated deduction, the geometry of proof procedures and the application of logic to learning theory. As such, C@lculus links our themes Foundations of Mathematics and Logics of Learning.

Another development bridging the different research projects in the ILLC is the collaboration CiE ('Computability in Europe'). CiE is a European network of about 70 universities with groups working on various theoretical aspects of computability. Among others, the notions of infinitary computation (connected to descriptive set theory and definability theory) are being covered in CiE. The Amsterdam group is centered around Löwe (coordinator), van Emde Boas and Torenvliet. Löwe is a member of the management group of CiE, and was successful in attracting the conference CiE 2005 to Amsterdam. CiE 2005 was the first of a series of annual conferences organized by the network, and it was a tremendous success: there were 200 participants and CiE 2005 ended up being the biggest logic conference of the year. The enormous success of CiE 2005 resulted in the establishment of a series which has been planned until 2010 (with conferences in Swansea, Siena, Athens, Heidelberg and Lisbon).

#### People

# Senior Staff

Johan van Benthem, Ulle Endriss, Dick de Jongh (emeritus), Benedikt Löwe, Maricarmen Martinez Baldares, Eric Pacuit, Anne Troelstra (emeritus), Yde Venema

# Temporary staff Lex Hendriks, Joop Niekus

#### PhD students

Nick Bezhanishvili, Stefan Bold, Clemens Kupke, Fenrong Liu, Olivier Roy, Yoav Seginer, Brian Semmes, Joel Uckelman, Sara Uckelman, Levan Uridia

#### **Key Publications**

- Benthem, J.F.A.K. van, 2005, 'Minimal Predicates, Fixed-Points and Definability'. *Journal of Symbolic Logic*, 70(3), 696-712.
- Kühnberger, K.-U., B. Löwe, M. Möllerfeld, & P.D. Welch, 2005, 'Comparing inductive and circular definitions: parameters, complexities and games'. *Studia Logica*, 81, 79-98.
- Gehrke, M., J. Harding, & Y. Venema, 2005, 'MacNeille completions and canonical extensions'. *Transactions of the American Mathematical Society*, 358,

573-590.

 Kupke, C.A., A. Kurz, & D. Pattinson, 2005, 'Ultrafilter extensions for coalgebras'. In J.L. Fiadeiro & N. Harman (Eds.), Algebra and Coalgebra in Computer Science, Vol. 3629. Lecture Notes in Computer Science, Springer, pp.263-277,.

# 2.2.4 Algorithms and Complexity Theory

#### Project leaders

Peter van Emde Boas, Leen Torenvliet

#### Characterization

The algorithmic approach is a unifying paradigm between alpha, beta and gamma disciplines. Potential domains of interaction range from quantum computing (physics and technology) and games (economics and social sciences), to learning theory (cognitive science) and nature based computing (biology and physics). Algorithmic methods and complexity analysis are core themes of our project.

More specific topics which have recurred over the past years are:

- Time, space, and communication trade-offs between quantum and classical computation models.
- The minimal description length principle as a guiding ideology for improved data compression methods, object classification and learning.
- Kolmogorov complexity and its use in improving complexity estimates both for specific algorithmic problem and in some more abstract structural contexts.
- Games, both as computational models and in the context of providing a more algorithmically based foundation for solution concepts.

#### 2005

Krzysztof Apt returned from his three year residence in Singapore. His former active involvement in the Theory of Constraint Solving Systems resulted in two PhD students granted on this topic in 2005: Willem Jan van Hoeve and Peter Zoeteweij. In the meantime Apt's research interest has shifted to the field of games and social choice theory, where he applied his computer science experience in giving a in depth analysis of the concept of rationalizability.

Harry Buhrman was involved in a number of projects on improving the results on separation between classical and quantum computational complexity bounds in time, space and communication. Together with the junior researchers in his VICI project, he obtained impressive results on limits on the non-locality

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#### Computability in Europe

The event that really surprised us in the impact and effect it had on the community was the conference CiE 2005 in Amsterdam. The collaboration CiE ("Computability in Europe") had decided in 2004 that there should be a meeting of the researchers in order to decide on the future directions for the collaboration. The original intention was to organize a meeting in Amsterdam for the coordinators of the 14 nodes of the collaboration together with some other researchers. Out of this original intention grew the idea of adding a conference to this business meeting.

Since CiE is interdisciplinary and evenly split between computer scientists and mathematicians, the members of CiE had different opinions about what it means to "organize a conference". The main difference between the mathematics conference and a computer science conference is the status of the presentations:

In mathematics, a presentation at a conference is not considered a publication. Every reasonable submission to mathematical conferences is normally given the chance of a presentation, and this is not seen as a stamp of approval, let alone a stamp of quality by the mathematicians. For a submission to a mathematics conference, you typically submit the title of a talk together with a few lines of text; you never prepare a full paper. If a conference has a proceedings volume, the paper will be written after the conference and then thoroughly refereed to journal standards.

In computer science, conference presentations are seen as publications. There is an acute and effective refereeing procedure making sure that only the highest ranking submissions are accepted. As a consequence, submissions to computer science conferences must be full papers that can be judged by a referee.

The difference in the organization of conferences between mathematics and computer science has been a topic of concern for logicians for a while. With parts of the logic community in mathematical institutions and other parts in computer science departments, they need to reach out to both communities. The pressure on the conference CiE 2005 to be a meeting for the whole CiE community created an incentive to finally deal with this problem. As a consequence, the organizers of the conference



(van Emde Boas, Löwe and Torenvliet for the ILLC and the CiE coordinator Barry Cooper from Leeds) decided to develop a hybrid model with submissions in the style of computer science and a preconference refereeing procedure, and then a category of "informal talks" for mathematicians.

This first serious attempt to join the two organizational models of conferences worked perfectly, and what was intended to be a business meeting of the node coordinators grew into a substantial conference. With over 200 participants, CiE 2005 was the biggest logic conference in the world in 2005, even bigger than the Logic Colloquium in Athens. It was not just a singular success: other nodes of the CiE network volunteered to organize CiE conferences in the years to come, and CiE 2006 was announced at the end of the Amsterdam conference by the programme committee chair Arnold Beckmann from Swansea.

In the meantime, CiE 2005 has developed into a new conference series CiE-CS that has been acknowledged by the computer science community as a new and important addition to the conferences in theoretical computer science, and has been planned until 2010 with meetings in Swansea, Siena, Athens, Heidelberg and Lisbon. The ILLC researchers van Emde Boas and Löwe are on the steering committee for this conference series.

Benedikt Löwe
Chair CiE Conference Series Steering Committee

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phenomenon in quantum mechanics.

Troy Lee continued his investigations on the trade-off between quantum computing and classical computing in the traditional field of query computing. His PhD thesis was completed in 2005 and defended in January 2006.

Paul Vitanyi, together with his PhD student Rudi Cilibrasi, continued his research on using a Kolmogorov complexity based distance function as a practical tool for classification in various application areas, including the current spreading of the bird-flu (H5N1) virus geographically and among bird species. A new twist of this research is the use of Google page counts on the Web as a tool for automatic meaning assignment to words and phrases in natural language, a research project which obtained media exposure in the popular press. Vitany and Grünwald together continued their research linking the MDL principle with the theory of Kolmogorov's Structure function. Vitany and Vereshchagin (Moscow State University) proposed and developed a rate-distortion theory in the Kolmogorov Complexity setting. This gives a theory of lossy compression of individual data objects, using computable regularities of the data, and a formal basis for decoding. Initial experiments by Steven de Rooij confirm the theoretical predictions precisely.

Merlijn Sevenster continued his research on specific imperfect information games, and IF-like logics. With the NWO sponsored summer guest Tero Tulenheimo he investigated the various options for designing an IF version of modal logic. He also showed that for a specific popular imperfect information game – Scotland Yard – the expected computational penalty for moving to the realm of imperfect information exhibits an unusual twist: under total absense of information on the whereabouts of the mysterious mr. X the game becomes extremely hard to play but only NP-hard to analyse, contrary to the general case of complete or partial information which he showed to be complete for PSPACE.

Leen Torenvliet continued with Buhrman the project on structural properties of complete sets for complexity classes. They obtained a precise location for sparse self-reducible sets in the polynomial hierarchy. The research on reconstructing the topology of the Web based on measurements of transmission delays culminated in the PhD defence of the student involved in the project, J.P. van Best at the TUD.

During 2005 a number of very interesting master student projects were completed. Boaz Leskes defended his joint master study in computational science and logic with a thesis on an agreement based boosting strategy for

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computational learning. For this thesis he obtained the first prize in the thesis competition of the University of Amsterdam. Thijs van Remmen, graduated in Theoretical Computer Science, on a revolutionary proposal for a mechanism for coalition building in a parliamentary system: rather than voting on representatives the people vote on issues, resulting in a social optimum platform; subsequently a coalition is constructed such that its effective platform is an optimal approximation of the social outcome of the election. The system gives rise to a number of open problems in combinatorics and approximation algorithms.

### People

Senior Staff

Paul Dekker, Jeroen Groenendijk, Theo Janssen, Robert van Rooij, Martin Stokhof

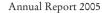
PhD students

Kata Balogh, Chantal Bax, Erik Rietveld, Floris Roelofsen, Marie Safarova, Tine Wilde

#### Key publications

- R. Cilibrasi & P.M.B. Vitanyi, 2005, 'Automatic meaning discovery using Google', http://xxx.lanl.gov/abs/cs.CL/0412098
- K.R. Apt, 2005, 'Order independence and Rationalizability', *Proceedings TARK 10*, Singapore, pp 22-38.
- H. Buhrman, L. Torenvliet & F. Unger, 'Sparse selfreducible sets and polynomial size circuit lower bounds', *Proceedings STACS 2006*, to appear.
- M. Sevenster, 2005, 'The complexity of Scottland Yard', *Proceedings. A.M. de Morgan Workshop*, Oct 2005, London, submitted.
- B. Leskes & L. Torenvliet, 'The value of agreement: a new boosting algorithm', *Journal of Computer and System Sciences*, to appear.





# 3.1 The MSc in Logic

The MSc in Logic started in 1995 and had its first graduates in 1997. During the first seven years of its existence it was organized solely by the ILLC as a purely international programme and it developed into the foremost interdisciplinary logic programme in the world, combining philosophy, mathematics, computer science and linguistics in the unique fashion that underlies the research in the ILLC.

In front of the ILLC background, the MSc in Logic is a research-oriented programme for highly motivated and excellent students, based on Interdisciplinarity, Internationality, and Individuality. The MSc in Logic is

interdisciplinary as the teaching follows the mission statement of the ILLC. We strongly believe that logic is an important research area between mathematics, computer science, philosophy and linguistics, with important applications in the social sciences. Its coherence is generated by the formal methodology and the general technique of formalization. Its strength comes from its flexibility and applicability.

international as its student body is constituted by students from all continents. We strongly believe that a wide variety of nationalities is as much of a factor in the success of the MSc Logic as is the wide variety of academic backgrounds. The majority of our students is international, and moved to Amsterdam in order to study logic; this distinguishes the MSc Logic students from other students, and results in a high motivation to work hard while in Amsterdam. As a group of foreigners new in a novel environment, our students form a social network that goes far beyond attendance of classes.

individual as its main educational goal is the formation of a research personality on the basis of the strengths and interests of the student. There are very few obligatory courses, all other courses are discussed in detail with the dedicated academic mentors: every student is assigned a mentor who discusses all choices of courses with him or her, advises the student in academic questions up to the choice of a Master's thesis supervisor.

In 2005, the MSc in Logic was coordinated by MSc administrator Tanja Kassenaar and the *opleidingsdirecteur* Benedikt Löwe. Since September 2005, this team was enlarged by Yde Venema who is coordinating the accreditation procedure, in particular the self-evaluation of the MSc in Logic. Due to the focus on individual

3. Teaching Activities

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training, the group of mentors plays an important role in the MSc in Logic. The mentors of 2005 were: Dick de Jongh, Jeroen Groenendijk, Benedikt Löwe, Eric Pacuit (from summer 2005), Robert van Rooij, Khalil Sima'an, and Henk Zeevat.

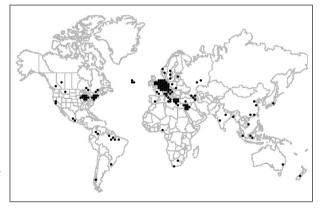
# 3.2 Student Population

The MSc in Logic is experiencing an enormous amount of growth in the past few years. This trend continued this year. We had 33 new students entering the MSc in Logic in 2005 (four in February, 29 in September), of which 30.3 % were Dutch. The percentage of Dutch students was lower than the year before. Currently (as of March 2006), we have 49 active students in our programme from 18 different countries (40.8% Dutch). The integration of the Dutch students into the MoL student community worked again better in 2005 than in the previous years which was partly because of the so-called MoL room, which serves as the central workplace for the students.

The map below shows the origins of all MSc students from 1995 until the present population.

# 3.3 Excellence

In 2005, one of the Logic graduates, Boaz Leskes, was selected for the UvA Scriptieprijs for the best MSc thesis written at the university. We are very proud of his achievements. Leskes received a double degree in Logic and Computational Science.



We have just been informed by the *Evert Willem Beth Stichting* that our agreement for excellent student grants has been extended beyond the year 2007. This enables us to attract excellent students who could not come to the Netherlands without support. The 2004/05 Beth Scholar Yanjing Wang graduated in 2006 (with a thesis supervised by Martínez and Veltman). In 2005, three new Beth scholars started their studies at the ILLC: Raul Leal (Colombia), Martin Müller (Germany) and Jonathan Zvesper (United Kingdom). In addition to that, we had 5 HUYGENS scholars, one JSPS (Japan Society for the Promotion of Science) scholar, one FNRS (Fonds National de la Recherche

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Scientifique, Belgium) scholar and one CNCT (Consejo Nacional de Ciencia y Tecnologia, Mexico) scholar among our students. The *Arend Heyting Stichting* provided a partial scholarship for a student interested in mathematical logic.

#### 3.4 Graduations

In 2005, we had nine graduations of students. Of these nine graduations, six were *cum laude*.

Reut Tsarfaty graduated on January 26 with a thesis entitled "binyanim" ba'avir': An investigation of Aspect Semantics in Modern Hebrew" supervised by Michiel van Lambalgen. She is now a PhD student at the ILLC funded by an NWO Mozaiek grant. Evangelos Tzanis graduated on February 23 with a thesis entitled "Algebraizing Hybrid Logic" supervised by Peter van Emde Boas. He is now a PhD student at University College of London. Boaz Leskes graduated on February 25 with a thesis entitled "The Value of Agreement: a new Boosting Algorithm" supervised by Leen Torenvliet (for which he won the UvA Scriptieprijs 2005). Michael Franke graduated on June 21 with a thesis entitled "Pseudo-Imperatives" supervised by Robert van Rooij. He is now a PhD student in van Rooij's VIDI project at ILLC. Floris Roelofsen graduated on August 29 with a thesis entitled "Exploring Logical Perspectives on Distributed Information and its Dynamics" supervised by Johan van Benthem. He is now a PhD student at ILLC. Samson de Jager graduated the same day with a thesis entitled "Analysing the complexity of games on graphs" supervised by Benedikt Löwe, and became the second PhD student in van Rooij's VIDI project afterwards. Teresita Mijangos graduated on September 26 with a thesis on "Penalty Logic and Genomic Encoding" supervised by Reinhard Blutner. Scott Grimm graduated on December 12 with a thesis entitled "The Lattice of Case and Agentivity" supervised by Henk Zeevat. He was just accepted for the PhD programme in linguistics at Stanford University. Gustavo Lacerda graduated on December 7 with a thesis entitled "Automating Normal Science: Reusing Exemplars in Quantitative Experiments" supervised by Rens Bod.

Benedikt Löwe Opleidingsdirecteur MSc in Logic



# 4. Management



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# 4.1 People, research input

In appendix 1 the research input of the ILLC staff members is represented. A comparison with 2004 shows that the number of staff more or less remained the same. The total number of FTE (Full Time Equivalent) grew with almost 4 FTE but this is mainly because the number of our guest (or external) PhD students rose. Guest PhD students are PhD students without a paid position at the UvA but preparing a promotion at the UvA under supervision of one of the ILLC professors. At the end of 2005 we had 10 of such students and this number seems to be increasing.

The relation UvA-NWO-EU funded staff is: 1-0.75-0.02. The share of EU funded staff is still small, but as two new EU projects have been awarded in 2005 this share will considerably rise in 2006. Already in March 2006 we will have as many as 5 PhD students and one postdoc working on EU money.

Also, with the award of the VICI grant to Yde Venema, the CATCH grant to Jaap Kamps, and three projects in the NWO open competitie (Wolfram Hinzen, Johan van Benthem, Jaap Kamps), the number of NWO funded staff will show a high rise as well. And finally, we expect that in September 2006 all our vacancies are filled which means that also the UvA funded FTE will grow. All in all, 2005 may be considered as a year of consolidation, but 2006 will be one of growth without any doubt.

# 4.2 Publications, research output

The people working at ILLC together produced publications in the following METIS categories:

Articles in journals: 50 Articles in proceedings: 66 Book chapters: 26 Edited volumes: 6 Monographs: 2 Dissertations: 5

which is an average of 3.4 refereed publications per research FTE: 142 divided by 42.08.

N.B. The 142 figure corresponds with the sum of articles in journals, articles in proceedings and book chapters. 42.08 is based on all staff and PhD students (including guest PhD students) that have produced these publications. See appendix 1 for the research FTE.



#### 4.3 Communication

ILLC communicates by means of the following media:

- our website www.illc.uva.nl
- ILLC News, our weekly news letter announcing upcoming local events, job openings, funding opportunities, new publications etc., sent to more than 250 internal and external subscribers.
- ILLC Conferences Mailing, a monthly news letter announcing national and international conferences, calls for proposals etc., sent to the same subscribers as ILLC News.
- Current Affairs at ILLC, a monthly internal news letter, announcing current administrative matters, sent to ILLC members only.
- ILLC Magazine; a yearly magazine, mainly for our MSc and PhD alumni but sent to the ILLC community and interested parties as well.

# 4.4 External funding

The year 2005 was an amazingly successful year with regards to awarded project proposals, both from NWO and EU. In appendix 3 you will find an overview.

ILLC researchers managed to attract as much as

- 12.5 new PhD students for either 3 or 4 years; in total 41.5 PhD student years
- 4 postdoctoral researchers for either 2 or 3 years: in total 10 postdoc years
- 1 scientific programmer for 3 years

covering a total amount of 3,9 Million EURO

#### 4.5 Financial statement 2005

Providing a financial statement for the ILLC as a whole is a somewhat arbitrary task. This is because the ILLC management holds financial responsibility where the FNWI part is concerned but does not have any responsibility for the FGW part. (This responsibility lies in the 'afdeling'.) Still, we will here also give an overview of the personnel and other costs of the FGW-part of ILLC, but it should be taken into account that:

- the *personnel costs* for the FGW part are based on GPL-amounts (average salary costs) and the FNWI part is based on real costs.
- the *personnel costs* for the FGW include teaching time that formally does not belong to the ILLC
- the *other costs* for the FGW include only travel and subsistence money for the

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FGW employees, where the other costs for the FNWI part also include general ILLC expenses, housing, equipment and matching of the Vernieuwingsimpuls project of Rens Bod.

#### Financial Statement 2005 in kEURO

Eerste geldstroom (UvA)	FNWI	FGW (GPL)
Budget	1,137	=
Other income	209	-
Personnel costs	953	940
Other costs	180	28
Result eerste geldstroom	213	-
Tweede geldstroom (NWO)		
Income	430	332
Personnel costs	383	309
Other costs	44	23
Result tweede geldstroom	3	0
Derde geldstroom (EU)		
Income	105	None
Personnel costs	52	None
Other costs	30	None
Result derde geldstroom	23	-
Total result	239	-





# 4.6 Managing an interfacultary institute

Although the ILLC is unique in the sense that it brings together scientists from a variety of disciplines, the interfacultary character of the institute brings forth some specific problems for management. These problems are already touched on by the director in chapter 1, but we like to give some concrete examples here.

- The administrative structure of the Faculty of Science differs from the structure of the other faculties in the sense that the administrative centres of the Faculty are the research institutes; the departments do not really play a role. At the Faculty of Humanities it is the department where the action takes place. This means that the management of the ILLC is responsible for financial and personnel matters as far as the Science researchers are concerned, but is dependent on the administrations of the various departments in the case of the Humanities Faculty.
- The two faculties work with different indicators, rules and procedures. For example as of September 1 an appointment as a PhD student at the Faculty of Humanities is shortened to 3 years where it remains 4 years at the Science Faculty. Another example: the standard research FTE at the Humanities faculty is 0.4 (HGL/UHD/UD) and 1.0 for PhD students and postdocs. At the Science Faculty these numbers are: 0.5 for (HGL/UHD/UD), 0.75 for PhD students and 0.9 for postdocs.
- As for administrative overhead: the number of meetings that the director
  and the manager have to attend is twice the number that other directors and
  managers have to attend.
- The housing situation of the ILLC continues to be far from ideal, because the people of ILLC work in as much as 4 different locations including the two main locations: Euclides (Roeterseiland Complex) for the Science part and the Nieuwe Doelenstraat (Binnengasthuisterrein) for the Humanities part. Besides practical and organizational problems it would be so much better for the institute as a whole to simply have one location.

#### 4.7 Events

The number of events that ILLC is organizing is relatively high. We have as much as 5 regular lecture series, most of them bi-weekly. On top of this we organized 7 one day workshops in 2005, and 4 conferences. In appendix 4 you will find an overview.

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#### 4.8 Administrative staff

- Scientific director: Prof. dr F.J.M.M. Veltman
- Director MSc in Logic: Dr B. Löwe
- Manager (Bedrijfsvoerder): Ms Drs. I.M. van Loon
- Secretary (ILLC Office): Ms M. Veldhuisen
- Secretary (MSc in Logic): Ms Drs T. Kassenaar
- System administrator and web master: Dr. M. Vervoort

Ingrid van Loon Manager ILLC







# Appendix 1. Research FTE

# Research Input 2005

	Funding	FGW	FNWI	Total
Full professor	UvA	1.60	0.70	2.30
	NWO			
	EU			
	Other		1.00	1.00
Associate Professor	UvA	0.60	0.60	1.20
110100001	NWO			
	EU			
	Other			
Assistant Professor	UvA	1.08	2.30	3.38
	NWO			
	EU			
	Other			
Postdoc	UvA			
	NWO	2.20	2.65	4.85
	EU		0.15	0.15
	Other		0.20	0.20
PhD Student	UvA	6.45	3.19	9.63
	NWO	4.49	3.60	8.09
	EU		0.25	0.25
	Other		9.33	9.33
Other/guests	UvA			
	NWO			
	EU			
	Other		1.70	1.70
Total research FTE		16.42	25.67	42.08
Total Human Resou	rce FTE: 66	.63		

This table is based on the following research FTE figures:

#### Standard Research FTE FGW:

Full/assoc./assist. professor: 0.4 FTE PhD student/postdoc/guest: 1.0 FTE

#### Standard Research FTE FNWI:

Full/assoc./assist. professor: 0.5 Postdocs: 0.9 PhD student (UvA/NWO funded, 4 years): 0.75 PhD student (EU funded, 3 years): 1.0 Guest: 1.0

FTE = Full Time Equivalent

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5. Appendices



# Appendix 2. Publications

# 2.1 Theory of Interpretation

#### Articles in refereed journals

Aloni, M.

A Formal Treatment of the Pragmatics of Questions and Attitudes. *Linguistics and Philosophy*, 28(5), 505-539.

Aloni, M.

Individual Concepts in Modal Predicate Logic. *Journal of Philosophical Logic*, 34(1), 1-64.

Bax, C.

Interioriteit en religiositeit. Een confrontatie van Wittgensteins 'psychologie' met Wittgensteins 'theologie'. *Tijdschrift voor Filosofie*, *67(3)*, 501.

Cate, B.D. ten

Interpolation for extended modal languages. *Journal of Symbolic Logic*, 70(1), 223-234.

Rooii, R.A.M. van

A Modal Analysis of Presupposition and Modal Subordination. *Journal of Semantics*, 22, 281-305.

Stokhof, M.J.B.

De hang naar zuiverheid. Hermans' interpretatie van Wittgenstein. De Gids, 168, 984-996.

Wilde, M.

Wittgenstein over kleurconcepten en kleurervaring. Kleurenvisie, 58(3), 11-13.

#### **Book chapters**

Cram, D.F., & Maat, J.

Universal Language Schemes in the 17th Century. In Keith Brown (Ed.), *Encyclopedia of Language and Linguistics*, 2nd ed., Vol. 13 (pp. 259-264). Oxford: Elsevier.

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Annual Report 2005

Groenendijk, J.A.G., & Stokhof, M.J.B.

Dynamic Interpretation. In K. Brown & et Al. (Eds.), *The Encyclopedia of Language and Linguistics Vol.4* (pp. 28-32). Amsterdam: Elsevier.

Maat, J.

Dummett, Michael Anthony Eardley (b. 1925). In Keith Brown (Ed.), *Encyclopedia of Language and Linguistics*, 2nd ed., Vol. 4 (pp. 12). Oxford: Elsevier.

Maat, J.

Geach, Peter Thomas (b.1916). In Keith Brown (Ed.), Encyclopedia of Language and Linguistics, 2nd. ed., Vol. 4 (pp. 729). Oxford: Elsevier.

Maat, J.

Habermas, Jurgen (b. 1929). In Keith Brown (Ed.), Encyclopedia of Language and Linguistics, 2nd. ed., Vol. 5 (pp. 189-190). Oxford: Elsevier.

Rooij, R.A.M. van, & Sevenster, M.

Different Faces of Risky Speech. In Anton Benz, Gerhard Jeager, Robert van Rooij (Eds.) *Game Theory and Pragmatics* (Palgrave Studies in Pragmatics, Language and Cognition) (pp. 152-174). Hamshire.

Safarova, M.

Lacan. In S. Chapman & C. Routledge (Eds.), Key Thinkers in Linguistics and the Philosophy of Language. Edinburgh: Edinburgh University Press.

Safarova, M.

Quine. In S. Chapman & C. Routledge (Eds.), Key Thinkers in Linguistics and the Philosophy of Language. Edinburgh: Edinburgh University Press.

Safarova, M.

What's in a Question? In E. Leheckova & J. Taborsky (Eds.), Festschrift for Oldrich Ulicny. Prague: Karolinum.

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Why compositionality? In G. Carlson & J. Pelletier (Eds.), *Reference and generality: The Partee Effect* (pp. 83-106). Stanford: CSLI Press.





#### Articles in proceedings

#### Aloni, M.

Utility and Implicatures of Imperatives. In *Proceedings of DIALOR'05*. Nancy.

#### Balogh, K.

'Only' and Exhaustivity in Hungarian. In Helen.de Hoop & Joost Zwarts (Eds.), Proceedings of the ESSLLI 2005 workshop on Formal Semantics and Cross-Linguistic Data.

#### Balogh, K.

Interpreting Focus and 'Only' in Hungarian. In L. Afanasiev, B. ten Cate, & H. Zeevat (Eds.), *Proceedings of the 6th International Tbilisi Symposium*. CSLA Tbilisi/ILLC Amsterdam.

#### Balogh, K.

Problems with Multiple Focus and 'Only' in Hungarian. In Chiara Ghidini, Bich-Lien Doan, & Patrick Brezillon (Eds.), Proceedings of the Doctoral Consortium associated with the Fifth International and Inderdisciplinary Conference on Modelling and Using Context (Context'05) (pp.11-20).

#### Bax, C.

Narrative Identity and the Case for Wittgensteinian Metaphysics. In F.M. Stadler & M. Stoeltzner (Eds.), *Time and History. Papers of the 28th International Wittgenstein Symposium Vol. XIII. Contributions of the Austrian Ludwig Wittgenstein Society*, (pp.21-23). Kirchberg am Wechsel: ALWS.

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Minimal and Absent Information in Contexts. In *International Joint Conference on Artificial Intelligence* (pp.558-563).

#### Roelofsen, F., & Serafini, L.

Minimality and Non-Determinism in Multi-Context Systems. In *International* and *Interdisciplinary Conference on Modeling and Using Context* (pp.424-435).

#### Safarova, M.

On the Semantics of Final Rises in English. In E. Maier, C. Bary, & J. Huitink (Eds.), *Proceedings of Sinn und Bedeutung 9.* Nijmegen: Radboud Universiteit.

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Dekker, P.J.E., & Franke, M. (Eds.).

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# 2.2 Cognitive Systems and Information Processing

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Hinzen, W.

Eine Rekonstruktion und Verteidigung von Descartes' Argument für die Existenz Gottes in Principia §§13-20. Conceptus, 86-88, 243-261.

Honing, H.J.

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The Importance of Length Normalization for XML Retrieval. *Information Retrieval*, 8(4), 631-654.

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Wat zeggen al die getallen eigenlijk? Over het gebruik van statistiek in het proces tegen Lucia de B. *Nieuwe Wiskrant*, 24-4.

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Logic, 22) (pp. 97-122). Wellesley, MA: Association for Symbolic Logic.

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Multiple Modals Construction. In *Proceedings of SuB10*. Berlin: ZAS Working Papersin Linguistics.

Prescher, D.H.J.K.

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Inducing Head-Driven PCFGs with Latent Heads: Refining a Tree-bank Grammar for Parsing. In *Proceedings of the 16th European Conference on Machine Learning (ECML-05)*. LNCS series.

Scha, R.J.H.

Wat is het medium van het denken? In M.B. 't Veld & R. de Groot (Eds.), Beelddenken en Begripsdenken: een paradox? (pp.18-28). Utrecht: Agiel.

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Tsarfati, R.

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Zeevat, H.W.

Contexts of Interpretation. In C. Bary, J. Huitink, E. Maier (Ed.), *Proceedings Sinn und Bedeutung 2004.* 

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# 2.3 Constructive and Intensional Logic

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Benthem, J.F.A.K. van

Guards, Bounds and Generalized Semantics. *Journal of Logic, Language and Information*, 14, 263-279.

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Löwe, B.

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Löwe, B.

The pointwise view of Determinacy: Arboreal forcings, measurability, and weak measurability. *Rocky Mountain Journal of Mathematics*, *35*, 1233-1249.



#### Niekus, J.M.

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#### Benthem, J.F.A.K. van

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#### Benthem, J.F.A.K. van

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#### Benthem, J.F.A.K. van, & Sarenac, D.

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#### Benthem, J.F.A.K. van

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#### Troelstra, A.S.

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PP-2005-01

Reinhard Blutner. Neural Networks, Penalty Logic and Optimality Theory.

PP-2005-02

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PP-2005-03

Floris Roelofsen. Minimality, Non-Determinism, and Absent Information in Multi-Context Systems.

PP-2005-04

Massimo Franceschet. XpathMark: an XPath benchmark for XMark.

PP-2005-05

Isadora Stojanovic. A Different Story about Indexicals.

PP-2005-06

Johan van Benthem. Open Problems in Logical Dynamics.

PP-2005-07

Johan van Benthem. Guards, Bounds, and Generalized Semantics.

PP-2005-08

Johan van Benthem. Modal Frame Correspondence Generalized.

PP-2005-09

Johan van Benthem, Jan van Eijck, Barteld Kooi. Logics of Communication and Change.

PP-2005-10

Johan van Benthem. Cognition as Interaction.

PP-2005-11

Johan van Benthem. An Essay on Sabotage and Obstruction.

PP-2005-12

Patrick Girard. From Onions to Broccoli: Generalizing Lewis's counterfactual logic.

PP-2005-13

Olivier Roy. What does Game Theory have to do with Plans?.

PP-2005-14

Dmitry Sustretov. Hybrid Definability in Topological Spaces.

PP-2005-15

Evan Goris, Joost J. Joosten. The many faces of interpretability.

PP-2005-16

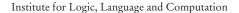
Lev D. Beklemishev, Joost J. Joosten, Marco Vervoort. A finitary treatment of the closed fragment of Japaridze's provability logic.

PP-2005-17

Theo M.V. Janssen, Francien Dechesne. Signalling in IF games: a tricky business.

PP-2005-18

Benedikt Löwe, Thomas Müller. Mathematical Knowledge is Context Dependent.





#### PP-2005-30

Willem Zuidema, Bart de Boer. The Evolution of Combinatorial Phonology.

#### PP-2005-19

Stefan Bold, Benedikt Löwe. A simple inductive measure analysis for cardinals under the Axiom of Determinacy.

#### PP-2005-20

Johan van Benthem. Epistemic Logic and Epistemology, the state of their affairs.

#### PP-2005-21

Johan van Benthem. Logic in Philosophy.

#### PP-2005-22

Johan van Benthem. Where is Logic Going, and Should It?.

#### PP-2005-23

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Issues in Multiagent Resource Allocation.

#### PP-2005-24

Benedikt Löwe. Extensions of the Axiom of Blackwell Determinacy.

#### PP-2005-25

Ulle Endriss. Temporal Logics for Representing Agent Communication Protocols.

#### PP-2005-26

Joel David Hamkins, Benedikt Löwe. The Modal Logic of Forcing.

#### PP-2005-27

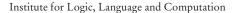
Joop Niekus. Brouwer's incomplete objects.

#### PP-2005-28

Johan van Benthem, Sieuwert van Otterloo, Olivier Roy. Preference logic, conditionals and solution concepts in games.

#### PP-2005-29

Johan van Benthem, Fenrong Liu. Dynamic Logic of Preference Upgrade.







# Appendix 3. Projects and Awards

# 3.1 Projects

#### VICI award: Yde Venema

The VICI research proposal of Yde Venema has been selected by NWO Exacte Wetenschappen. He is awarded the sum of 1.43 Million EURO for his project "Algebra and Coalgebra: the mathematical environment of modal logic", consisting of 3 PhD students (4 years) and 2 postdocs (2 years). The expected starting date of the project is September 2006.

#### Marie Curie subsidy (EU): Benedikt Löwe

GLoRiClass ("Games in Logic: Reaching Out To Classical Game Theory") is a project with Benedikt Löwe as main applicant that is awarded in the Marie Curie program of the EU. The proposal covers the costs of 8 PhD students for 3 years (1.25 million EURO).

#### NWO 'Programmatisch onderzoek' subsidy: Wolfram Hinzen

In the framework of Programmatisch onderzoek, NWO Geesteswetenschappen, ILLC colleague Wolfram Hinzen was awarded funding for his project "Origins of truth and the sentence". The subsidy ampunts to 375.568 EURO for the appointment of a PhD student and a postdoc.

#### EU subsidy: Henkjan Honing

EmCAP (Emergent Cognition through Active Perception) is an EU research project in the field of Music Cognition awarded to Henkjan Honing. It covers the salary and other costs of 1 postdoctoral researcher and 0.5 PhD student up to 323 kEURO. The project started in October 2005 and will finish by September 2008.

#### NWO CATCH subsidy: Jaap Kamps

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MuSeUM (Multiple-collection Searching Using Metadata) is a project awarded within the CATCH program of NWO. Jaap Kamps will receive funding of almost 545 kEURO to appoint a postdoctoral researcher (3 years), a PhD student (4 years) and a scientific programmer (3 years).

#### 3.2 Prizes

#### Boaz Leskes receives UvA Thesis award 2005

Master of Logic and Computer Science student Boaz Leskes (FNWI) received the 5th UvA Thesis Award at the University Day on Saturday June 11th, for his thesis 'The value of agreement: a new boost algorithm'. The award was presented to him by Jit Peters, Dean of the Faculty of Law and head of the award committee. This is the third year in a row that an FNWI student wins the UvA Thesis award. In his thesis Boaz Leskes, supervised by Leen Torenvliet, develops an entirely new model for automated learning. Not only did Leskes conceive and develop the mathematical basis for this model, he also puts it into practice with extensive programming.

# Boudewijn de Bruin receives Praemium Erasmianum research prize

The Praemium Erasmianum Foundation yearly awards a maximum of five prizes with a value of EURO 3000 in recognition of an extraordinary dissertation from young scholarly researchers in the humanities. We are very proud that Boudewijn de Bruin is one of the researchers who received this prize in 2005 for his ILLC thesis "Explaining Games On the Logic of Game Theoretic Explanations", supervised by Martin Stokhof and Johan van Benthem.





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# Appendix 4. Events

# 4.1 Regular events

#### **DIP Colloquium**

The DIP colloquium is a bi-weekly colloquium of the ILLC members at the Department of Philosophy, University of Amsterdam. The program of the colloquium reflects the current research interests of the group: cognition and reasoning, formal semantics and pragmatics, computational linguistics and philosophy of language.

14 January 2005

Speaker: Cory Wright (UCSD)

Title: The Adequacy Thesis and minimalist explanations of truth

28 January 2005

Speaker: Fred D'Agostino (Vonhoff-leerstoel Groningen, University of Oueensland)

Title: Judgment and Decision with Multiple Criteria. A Research Program at the Intersection of Psychology, Sociology, Economics, Philosophy, and Jurisprudence.

11 February 2005

Speaker: Isidora Stojanovic (Stanford University)

Title: Indexicals and Direct Reference: Against the Received View

11 March 2005

Speaker: Kriszta Szendroi (University of Utrecht)

Title: Interpretative ambiguity and children - resolving the paradox of the

acquisition of focus

14 March 2005

Speaker: Hans Kamp (IMS Stuttgart)

Title: Temporal Reference in and outside of Attitudinal Contexts

24 March 2005

Speaker: Kai-Uwe Kühnberger (Institute of Cognitive Science, Osnabrück

University)

Title: First-Order Inferences and Neural Networks

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Annual Report 2005

1 April 2005

Speaker: Tatjana Heyde-Zybatow (Institut für Linguistik, University of Leipzig)

Title: Achievements: Experimental studies and semantic analysis

15 April 2005

Speaker: Jelle Gerbrandy Title: Logics for Games

22 April 2005

Speaker: Simon Kirby (University of Edinburgh)

Title: Iterated Learning and the Origins of Linguistic Structure

2 June 2005

Speaker: Nicholas Asher (University of Texas at Austin)

Title: Principles and Constraints in SDRT

17 June 2005

Speaker: Cleo Condoravdi (Palo Alto Research Center / Stanford University)

Title: Not Knowing or Caring Who

9 September 2005

Speaker: Nathan Salmon (UCSB)

Title: Terms in Bondage

21 October 2005

Speaker: Arie Verhagen (Leiden)

Title: Intersubjectivity in grammatical meaning

18 November 2005

Speaker: Peter Bosch (Osnabrück)

Title: Productivity, Polysemy, and Predicate Indexicality

2 December 2005

Speaker: Anna Pilatova

Title: Possible Worlds, Proper Names, and Necessity

The Logic Tea

The Logic Tea is a series of talks for students in philosophy, mathematics, computer science, artificial intelligence and related fields of interest. In particular, it addresses the Master of Logic and Ph.D. students of the Institute for Logic,



Language, and Computation. The series covers a large variety of topics reflecting the interdisciplinary character of the institute. Speakers include Masters and PhD students from the institute as well as from other universities and research institutions. Most of the talks aim at being accessible to the entire ILLC audience.

15 February 2005 Speaker: Ichiro Hasuo

Title: Formal Languages as Coalgebraic Behavior

8 March 2005

Speaker: Brian Semmes

Title: Infinite Games and \Delta\_3^0 Functions

4 April 2005

Speaker: D.C. McCarty, The Logic Program, Indiana University Title: An Incompleteness Argument from the 19th Century

5 April 2005

Speaker: Rosja Mastop

Title: Ross' problem vindicated in a constructive update semantics

12 April 2005

Speaker: Balder ten Cate

Title: Playing with ultrafilter extensions

26 April 2005

Speaker: Chantal Bax

Title: Subjectivity after Wittgenstein

10 May 2005

Speaker: Reut Tsarfaty

Title: Aspectual Choice in Modern Hebrew

31 May 2005

Speaker: Clemens Kupke Title: Coalgebra Automata

5 July 2005

Speaker: Tero Tulenheimo (Lille/Helsinki)

Title: IF Modal Logics

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26 September 2005, Logic Tea Speaker: Yuri Gurevich (Microsoft) Title: Interactive Algorithms

18 October 2005, Logic Tea Speaker: Martin Bentzen

Title: The Semantics of Imperatives

1 November 2005

Speaker: Göran Sundholm (Leiden)

Title: The Expulsion of the Judging Subject from Logical Paradise: The History

of Logic

from Aristotle until the Present Day.

8 November 2005

Speaker: Tomoyuki Yamada (Hokkaido University) Title: Acts of Commanding and Changing Obligations

15 November 2005

Speaker: Dale Jacquette (Pennsylvania State University)

Title: Logical Models of Scientific Law

22 November 2005

Speaker: Murdoch J. Gabbay (King's College London)

Title: a-Logic

29 November 2005

Speaker: Martin van Hees (Groningen)

Title: Counterfactual Success and Negative Freedom

13 December 2005

Speaker: Henkjan Honing (UvA)

Title: From Time to Time: The Representation of Timing and Tempo in Music

Colloquium on Mathematical Logic

The Colloquium on Mathematical Logic is a joint event organized by the logicians at the Universiteit van Amsterdam and the Universiteit Utrecht. The CML meets biweekly on Fridays, alternately in Amsterdam and in Utrecht. The Colloquium intends to bring together researchers working in Mathematical Logic and Logic related areas of Theoretical Computer Science. It is also meant as a









forum for (PhD) students and recent PhD's to present their own work.

21 January 2005

Speaker: Bart Kastermans (Ann Arbor, Michigan)

Title: A weak form of diamond and cardinal characteristics related to the symmetry group of the natural numbers

21 January 2005

Speaker: R. Yavorsky (Steklov, Moscow)

Title: Gurevich abstract state machines: theory and practice

18 March 2005

Speaker: Xavier Caicedo Ferrer Title: The Logic of Extended Objects

8 April 2005

Speaker: D.C. McCarty, The Logic Program, Indiana University Title: An Incompleteness Argument from the 19th Century

28 April 2005

Speaker: C. Tapp (München)

Title: Georg Cantor, the founder of set theory, in contact with catholic + theologians of his time

29 April 2005

Speaker: Emil Jerabek (München) Title: Admissible rules of modal logics

27 May 2005

Speaker: Andreas Weiermann (Utrecht)

Title: Analyzing Ramsey's theorem for pairs via non standard models

3 June 2005, Colloquium on Mathematical Logic

Speaker: Joel Hamkins

Title: Forcing axioms arising from a modal view of set theory

14 October 2005

Speaker: Nikolay Vereshchagin (Moscow University, CWI)

Title: Game semantics for intuitionistic propositional calculus IPC30 September

2005

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Speaker: Edwin Mares

Title: Semantics for Quantified Substructural Logic

18 November 2005

Speaker: Jaap van Oosten (Utrecht) Title: A general form of relative recursion

28 November 2005

Speaker: Daisuke Ikegami (Nagoya)

Title: A characterization of Sacks measurability in terms of Sacks absoluteness

2 December 2005

Speaker: Jamie (Murdoch) Gabbay (King's College, London)

Title: One-and-a-Halfth order logic

8 December 2005

Speaker: Greg Restall (Melbourne)

Title: Proofnets for S5: sequents and natural deduction for modal logic

Computational Social Choice Seminar

The Computational Social Choice Seminar is a new series of talks organized at the ILLC since the beginning of the academic year 2005/2006. It covers a range of topics at the interface of the formal socio-economic sciences, in particular social choice and game theory, on the one hand; and computer science, artificial intelligence, and logic on the other. Speakers come both from within the ILLC and from outside.

7 October 2005

Speaker: Ulle Endriss (ILLC)

Title: Negotiating Socially Optimal Allocations of Resources

20 October 2005

Speaker: Eric Pacuit (ILLC) Title: Adjusted Winner

17 November 2005

Speaker: Agnieszka Rusinowska (Nijmegen)

Title: An Interdisciplinary Approach to Coalition Formation

**(** 



1 December 2005

Speaker: Krzysztof Apt (CWI and ILLC)

Title: On the order of strategy elimination procedures in strategic games

#### Computational Linguistics Seminar

The Computational Linguistics Seminar is a biweekly seminar for the computational linguists of the ILLC, with talks from ILLC members and invited external speakers. Topics cover the full range of computational linguistics -- that is, research that is or can be implemented in a computer program, and tries to process or account for natural language data (which includes language modeling, statistical modeling, pattern recognition and machine learning methods, formal linguistic grammars, speech recognition, machine translation, computational semantics, and other topics that one currently finds at ACL, COLING, or in the CL journal).

28 September 2005

Speaker: Detlef Presscher (ILLC)

Title: Head-Driven PCFGs with Latent-Head Statistics

9 November 2005

Speaker: Yoav Seginer (ILLC)

Title: Induction of a Dependency Parser

23 November 2005

Speaker: Jelle Zuidema (ILLC)

Title: Data-Oriented Language Learning - from weights to frequencies and back again

#### 4. 2 Conferences

CiE 2005: New Computational Paradigms, UvA

Date: 8-12 June 2005 Place: Amsterdam

The conference CiE2005 covered many aspects of "Computability in Europe" (CiE), with a particular focus on New Computational Paradigms. These include prominently higher mathematical models of computation (e.g., infinitary computation or real computation), and connections between computation and physical systems (e.g., quantum computation, neural nets, molecular computation).

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There were tutorials on Quantum Computing (H. Buhrman) and Computable Analysis (K. Weihrauch). Invited Speakers: Samson Abramsky (Oxford), Joel D. Hamkins (New York NY), Ulrich Kohlenbach (Darmstadt), Jan van Leeuwen (Utrecht), Yuri Matiyasevich (St.Petersburg), Yiannis Moschovakis (Athens / Los Angeles CA), Uwe Schöning (Ulm), Viggo Stoltenberg-Hansen (Uppsala)

# The Sixth International Tbilisi Symposium on Language, Logic and Computation,

Date: 12-16 September 2005 Place: Batumi, Georgia

The sixth Tbilisi Symposium on Language, Logic and Computation took place in the Black Sea coastal resort Batumi from September 12 to September 16, 2005. The Symposium was organized by the Centre for Language, Logic and Speech of the Tbilisi State University in conjunction with the Institute for Logic, Language and Computation (ILLC) of the University of Amsterdam. Everybody who has been at previous occasions can confirm that these symposia constitute an unforgettable experience.

# 16th Meeting of Computational Linguistics in the Netherlands

Date: 16 December 2005

Place: Amsterdam

CLIN 2005, the 16th meeting of computational linguistics in The Netherlands took place on Friday December 16, 2005, in Amsterdam, prior to the Amsterdam Colloquium. The CLIN 2005 program consisted of contributed papers, poster presentations, as well as two invited talks, by Edward Hovy (ISI, USC) and Hermann Ney (RWTH).

### The Fifteenth Amsterdam Colloquium

Date:19 -21 December 2005

Place: Amsterdam

Invited speakers: Johan van de Auwera, Sigrid Beck, Nissim Francez, David Gil, Helen de Hoop, Makoto Kanazawa, Ed Keenan, Manfred Krifka, , Hannes Leitgeb, Larry Moss.

The Amsterdam Colloquia aim at bringing together linguists, philosophers, logicians and computer scientists who share an interest in the formal study of the semantics and pragmatics of natural and formal languages. The spectrum of topics



covered ranges from descriptive (syntactic and semantic analyses of all kinds of expressions) to theoretical (logical and computational properties of semantic theories, philosophical foundations, evolution and learning of language).

# 4.3 Workshops

#### ILLC/ACLC seminar on Modality

Date: 18 February 2005 Place: Amsterdam

Four speakers of both ILLC and ACLC presented a paper on the subject of Modality.

# Workshop on Modal Logic, Model Theory and (Co) Algebras

Date: 25 February 2005 Place: Amsterdam

On the occasion of the PhD defense of Balder ten Cate a workshop took place on modal logic, model theory and (co)algebras. Speakers: Johan van Benthem, Mai Gehrke, Valentin Goranko, Ian Hodkinson, Maarten Marx, Jouko Vaananen and Yde Venema.

# First Paris-Amsterdam Logic Meeting of Young Researchers (PALMYR)

Date: 25 June 2005 Place: Amsterdam

The PALMYR is a one day workshop. Young researchers from Paris give presentations about their current interests; each presentation being commented by a fellow researcher from Amsterdam. There will be a mirror event in Paris next fall, where Amsterdam young researchers will give presentations and Paris colleagues will comment.

#### Workshop on Language Evolution

Date: 2-3 September 2005

Place: Amsterdam

Title: Formal Modeling meets Empirical data

Language is a defining characteristic of the human species. Theories of the biological evolution of the capacity for language and the cultural evolution of languages have often been speculative in nature. Recently, techniques from

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mathematical biology and computer science have allowed for more rigorous tests of the internal coherence of theories. At the same time, researchers in comparative biology and historical and developmental linguistics have started to test their consistency with empirical data.

The workshop will highlight and strengthen these developments, by bringing together world-class researchers from the relevant disciplines, and by presenting exciting new approaches to make interesting theories testable.

#### Interfacing Probabilistic and Epistemic Update

Date: 7 September 2005 Place: Amsterdam

The aim of this workshop was to investigate shared topics between the communities in dynamic epistemic logic and in Bayesian update. The speakers are open-minded spokespersons for both traditions

#### Games in Logic, Language and Computation Workshop

Date: 19 September 2005

Place: Amsterdam

The eleventh episode of the workshop series "Games in Logic, Language and Computation" was a one day workshop in which a strong line-up of international speakers (including Wilfrid Hodges, Michael Wooldridge and Bernard Walliser) presented aspects and applications related to logic, game theory, social science and computer science.

# 7th Augustus de Morgan Workshop: Interactive Logic: Games and Social Software

Date: 4 November 2005 - 7 November 2005

Place: King's College, London

Traditionally, logic has dealt with the zero-agent notion of truth and the one-agent notion of reasoning. In the last decades, research focus in logic shifted from these topics to the vast field of "interactive logic", encompassing logics of communication and interaction. The main applications of this move to nagent notions are logical approaches to games and social software. The wealth of applications in these areas will be the focus of the 7th Augustus de Morgan Workshop.







# ILLC Workshop "Whither DOP?"

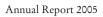
Date: 9 December 2005 Place: Amsterdam

This workshop aims to provide an informal discussion platform on DOP and is open to everyone. Each talk will discuss one or more open problems and will be followed by ample discussion. The workshop is also meant to give an overview of the projects and/or recently founded research groups on DOP at the University of Amsterdam, the University of St Andrews, at Dublin City University and the University of Essex.





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# Appendix 5. Address list (March 2006)

Last name	Initials	First name	Faculty	Location	Phone	E-mail
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Balogh	K.	Kata	FGW	ND15	020-525 4544	K.Balogh@uva.nl
Bax	Ch.	Chantal	FGW	ND15	020-525 4542	C.Bax@uva.nl
Benthem, van	J.F.A.K.	Johan	FNWI	PM24	020-525 5807	johan@science.uva.nl
Bezhanishvili	J.I.A.K. N.	Nick	FNWI	PM24	020-525 6925	nbezhani@science.uva.nl
Blutner	K.R.	Reinhard	FNWI/FGW		020 525 4528	K.R.Blutner@uva.nl
Bod	L.W.M.	Rens	FNWI	PM24	020-525 5360	rens@science.uva.nl
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						buhrman@cwi.nl
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