Annual Report 2009

Institute for Logic, Language and Computation

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Common acronyms used throughout the annual report

CWI:	Centrum voor Wiskunde en Informatica (Centre for Mathematics and Computer Science)
FGW:	Faculteit der Geesteswetenschappen (Faculty of Humanities)
FNWI:	Faculteit der Natuurwetenschappen, Wiskunde en Informatica (Faculty of Science)
FTE:	Full Time Equivalent (1.0 FTE= 38 work hours)
ILLC:	Institute for Logic, Language and Computation
IvI:	Informatics Institute
LaCo:	Language and Computation
LoCo:	Logic and Computation
LoLa:	Logic and Language
NWO:	Nederlandse Organisatie voor Wetenschappelijk Onderzoek (Netherlands Organisation for Scientific Research)
Research FTE:	Part of FTE officially dedicated to research
UvA:	Universiteit van Amsterdam

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Chapter 1 Annual Survey

The year 2009 has been a very interesting and turbulent year for the ILLC. There were a lot of personnel changes. Frank Veltman ended his term as ILLC's director in December, to be followed by Jeroen Groenendijk, who in turn was succeeded by Leen Torenvliet in September. There were also other changes in personnel that had important consequences for the ILLC. The long foreseen change of generations, that will reach its maximum around 2014 has started. Paul Vitányi retired in the summer, and Peter van Emde Boas retired in October. Jouko Väänänen returned to Helsinki, and Bas Terwijn unfortunately ended his appointment with the ILLC early. Fortunately for him though, to accept a permanent position at the University of Nijmegen.

The changes also implied a rotation of functions on the level of programme leadership. Väänänen was succeeded as leader of the LoCo programme by Yde Venema. The LoCo programme also welcomed a new deputy programme leader, Ulle Endriss, who took over from Leen Torenvliet. Jeroen Groenendijk accepted leadership of the LoLa programme. On the positive side of the personnel balance, the ILLC welcomes Alessandra Palmigiano as a new UD in the LoCo programme.

2009 was also the year of the great move. ILLC people from the Plantage Muidergracht and the Binnengasthuis terrain packed up their things in May to move to the new and wonderful Science Park. Of course, there are some initial flaws in the new location. The temperature takes some time to settle to an ideal point, the sunshades are not yet optimally configured, and the building has a whole other noise level than we were used to in the old location. To this stand many advantages. Not only is (almost) all of the ILLC together now, which makes communication a whole lot easier, but also the new building has many nice facilities. Everybody is working hard to optimize this new building, which will soon become a real home to the ILLC. The advantages of having not only the colleagues of the ILLC, but also other institutes that ILLC has close cooperation with, and service departments of the Science Faculty literally within walking distance, cannot be overrated.

Notwithstanding the impact that the move had on research personnel and staff, the year 2009 has been a successful year research wise. Khalil Sima'an and Jeroen Groenendijk won projects in NWO's open competition and the Gloriclass project, nearing its completion, produced no less than five PhD defences in this year. As things stand today it seems that this project will be a 100% success and that all eight students who started their research in this project will have obtained their PhD by the end of 2010. The number of projects obtaining funding in 2009 was somewhat less than what is usual in the ILLC. This is a worry, but on the other hand, the matching system changed in 2009, which on the one hand makes the financial situation regarding projects much clearer, but also makes it clear that not all projects can be taken off-hand to be profitable, or even doable, for the institute. Conclusion: yes we need to regain the level of funding, but have to do so with care.

The PhD defences in the LoLa programme have also reached what seems an all time high. The system of return on investment regarding PhD's is different in the Faculties of Sciences and Humanities. The Faculty of Humanities still has the concept of directly funded PhD students, and the number of students granted to a research institute depends on a multi-year average of PhD defences in the past. The fact that LoLa has been so successful in this system means more PhD students in the years

to come, which will of course be welcomed by the ILLC. This effect will however not immediately be visible in 2010.

Next year, 2010, will also be the year of the midterm review. A new scientific advisory board, consisting of Angelika Kratzer, Mark Steedman and Wolfgang Thomas will evaluate the ILLC's research on the basis of a new self-study report and the recommendations made by their predecessors in the 2006 evaluation of the period 2000-2005. This review was originally planned to take place in 2009, but circumstances like the change of directors and the move to the science park resulted in the postponement of this event to May of 2010. The midterm will cover the years 2006-2008.

As these lines are written, the report is already printed. The facts and figures in the report tell us that the ILLC can look forward to the midterm review with confidence.

The year 2009 was a year of great changes, and the end of these changes are not yet in sight. The period until 2014 will be a period of rejuvenation, in which the ILLC will pick up new momentum and a new generation will take over from the founding fathers of the ILLC. Fortunately, the ILLC has the support of both faculties that it is in, and a strong body of new leaders who will shape the ILLC to meet with modern times built upon a strong foundation. We therefore look forward to this period.

Chapter 2 Research

2.1 Language and Computation

Programme leaders: Remko Scha (until May)/Rens Bod (as of May) and Khalil Sima'an (deputy)

Research area

This programme is concerned with computational models of natural language processing and music perception. Its main goal is to further our understanding of the human mind by building realistic models of these cognitive processes. The ideas developed for this purpose are sometimes extended to deal with practically useful applications, such as Machine Translation. The programme tries to synthesize the insights from traditional generative grammar and logical semantics with probabilistic and connectionist approaches.

A major focus of the programme is the development of statistical models for natural language processing and cognition. Our work in this area deals with syntactic and morphological disambiguation, language acquisition and processing, and automatic translation. It builds on our experience with the Data-Oriented Parsing model, which was developed and refined in this programme in the course of the last fifteen years. Our current models work with monolingual and bilingual corpora which may consist of raw text or be (completely or partially) syntactically annotated, as well as with corpora containing reading time data. We tackle challenges such as grammar and structure induction, domain adaptation, first language acquisition, modelling reading time, and syntax-enriched machine translation. We also investigate the adequacy of the syntactic/morphological annotations in treebanks for languages with more complex morphology than English.

Another important application area is information storage and retrieval. Here we pursue system-centred as well as user-centred approaches, in ways that contribute to our understanding of the cultural and societal context of information access. We concentrate on innovative techniques which exploit textual information in combination with additional data, such as document structure, Web-link structure, and other meta-data.

In cooperation with the programme 'Logic and Language', we develop models of linguistic processes at the level of pragmatics and discourse. Here we employ the framework of 'Optimality Theory' to articulate complex models as hierarchies of competing constraints.

Our research on music cognition and computational musicology focuses on aspects of music that are fundamental but ill-understood: the perception of temporal and melodic aspects of music. We develop computational models which implement mathematically articulated theories, and we validate these models through both psychological experiments with human listeners and on huge collections of musical data using the Data-Oriented Parsing approach. The models developed here can be applied in algorithms for automatic transcription, automatic accompaniment, automatic style recognition and music generation.

Language research and music research deal with significantly different domains; they cannot be expected to use exactly the same concepts, tools, and techniques. But language and music do have

important features in common: both are sign systems evolved in human society, which rely on the human ability to perceive complex hierarchical structures in linear sequences. We believe it is useful, therefore, to explore these two domains jointly. Some convergence can be observed already.

Highlights

- Avi Arampatzis, Jaap Kamps, and Stephen Robertson. Where to stop reading a ranked list? Threshold optimization using truncated score distributions. *Proceedings of the 32nd Annual International ACM SIGIR Conference on Research and Development in Information Retrieval,* pages 524-531. ACM Press, New York NY, USA, 2009.
- Rens Bod, 2009. From Exemplar to Grammar: A Probabilistic Analogy-based Model of Language Learning*, Cognitive Science*, 33(5), 752-793.
- Gideon Borensztajn, Willem Zuidema and Rens Bod, 2009, Children's grammars grow more abstract with age - Evidence from an automatic procedure for identifying the productive units of language. *TopiCS in Cognitive Science* 1:175-188. Best paper award on applied cognitive modeling.
- Shlomo Geva, Jaap Kamps, Carol Peters, Tetsuya Sakai, Andrew Trotman, and Ellen Voorhees, editors. *Proceedings of the SIGIR 2009 Workshop on the Future of IR Evaluation*. IR Publications, Amsterdam, 2009.
- Caroline van Heijningen, Jos de Visser, Willem Zuidema and Carel ten Cate, Simple rules can explain discrimination of putative recursive syntactic structures by a songbird species, *Proceeding National Academy of Sciences (PNAS),* December 1, 2009, vol. 106, no. 48, pp.20538-20543
- Henkjan Honing, 2009. *Iedereen is muzikaal. Wat we weten over het luisteren naar muziek*. Nieuw Amsterdam Uitgevers.
- Khalil Sima'an, Granted (Euro 216k) project proposal in the Free Competition of NWO Exact Sciences Board (11 proposals granted out of 58 submissions). Title: Machine Translation When Exact Pattern Match Fails.
- Winkler, I., Haden, G., Ladinig, O., Sziller, I., & Honing, H. (2009). Newborn infants detect the beat in music. *Proceedings of the National Academy of Sciences (PNAS)*, 106, 2468-2471.
- PhD defence by Hany Hassan. *Lexical Syntax for Statistical Machine Translation*, January 12, 2009 at DCU. Supervisors: Andy Way and Khalil Sima'an.
- PhD defence by Olivia Ladinig. *Temporal expectations and their violations*. October 27, 2009. Supervisors: Remko Scha and Henkjan Honing

Dissemination and valorisation

- Henkjan Honing. *De onoplettende luisteraar: wat we weten over het luisteren naar muziek (zelfs als we iets anders doen)*, Universiteit van Maastricht i.s.m. Nederlands Instituut voor Beeld en Geluid, Hilversum, NL (20.11.2009)
- Henkjan Honing. *Do newborn infants have a sense of rhythm?* European Society for Cognitive and Affective Neuroscience (ESCAN), Amsterdam, NL (11.12.2009)
- Henkjan Honing. *Is beat induction innate or learned*? Annual Meeting of the Experimental Psychology Society, York, UK (09.07.2009)
- Jaap Kamps. NWO/CATCH Symposium on "*Museum 2.0*" in the Gemeentemuseum, The Hague, on February 20, 2009

- Markos Mylonakis. AmbLex Software Package available for download under GNU GPL Licence. An implementation in Java of the Bi-EM algorithm as implemented for the Hidden Markov Models. Reut Tsarfaty. Modern Hebrew Treebank for Relational Realizational Parsing. Downloadable including a software package for enhanced linguistic annotation and emulation software for different state-of-the-art models.
- Khalil Sima'an. Invited talk at *Computational Linguistics in the United Kingdom and Ireland* (CLUKI), Dublin, Ireland. Title: Machine Translation Challenges.
  Rens Bod and William Sakas. Organization of *PsychoCompLA 2009*, Psychocomputational Models of Language Acquisition, CogSci 2009, Amsterdam.
- Rens Bod. Keynote lecture *Taalgala 2009,* Utrecht, 13 November 2009.

People

Programme	Position	Name	FTE
Language and Computation	Full professor	Scha	1.00
	Associate professor	Bod	1.00
		Honing	1.00
		Zeevat	1.00
	Assistant professor	Blutner	1.00
		Kamps	1.00
		Sima'an	1.00
	Lecturer	Deoskar	0.50
	Postdoc	Arampatzis	0.33
		Deoskar	0.50
		Frank	1.00
		Honingh	0.80
		Khalilov	1.00
		Zuidema	1.00
	PhD student	Borensztajn	1.00
		Bruin	1.00
		Fachry	1.00
		Kaptein	0.77
		Koolen	1.00
		Ladinig	0.75
		Mylonakis	1.00
		Sangati	1.00
		Tsarfaty	0.50
		Zhang	1.00
Language and Computation Total			21.15

2.1 Logic and Computation

Programme leaders: Jouko Väänänen (until October)/Yde Venema (as of November) and Leen Torenvliet (until September)/Ulle Endriss (as of September)

Research area

The Logic and Computation group strives to get a better understanding of the nature of information and computational processes, in a formal and precise way. In the tradition of Brouwer, Heyting and Beth this naturally leads us to the study of foundational issues in mathematics, computer science, and some related areas. Our focus being on the formal side of the representation and processing of information, symbolic logic is the foremost tool for our research. Traditionally, mathematical logic was the study of the representation of mathematical information and mathematical reasoning. Over the years, the scope of logic has widened considerably, with a shift towards dynamic, procedural aspects of reasoning and other forms of information processing, such as the exchange of information during interactive multi-agent processes. As a consequence of this shift, logic has found natural applications in other areas besides mathematics, such as computer science, linguistics, and economics. During this development the relation between logic and the theory of computation has remained close and intricate: On the one hand, logic has many tools on offer to interpret the meaning and investigate the nature of computational problems and processes. On the other hand, viewing logical reasoning itself as a process, we may analyze it using machinery originating from the theory of computation. Our group's areas of expertise range from pure mathematics to applications in computer science and the social sciences. On the mathematical side of the spectrum we cover classical areas of mathematical logic and the foundations of mathematics, such as model theory, algebraic logic, and set theory. In theoretical computer science our group investigates fundamental problems in algorithmics and complexity theory, but also explores relatively new fields like quantum computing and bio-informatics. Our group is actively involved in the development of a theory of games and interaction, which takes interactive processes between various agents as its prime object of study, with a focus on the flow of information in such processes. Group members are also participating in the emerging field of coalgebra as a general mathematical framework of state-based evolving systems. Finally, the group has acquired a strong interest and expertise in the research area of computational social choice, where the central goal is to develop a formal theory of collective decision making. Transcending this diversity of research areas, what binds the Logic and Computation group together, is not only a strong overlap of research interests over individual group members, but also a number of unifying horizontal connections between the group's subprograms: To start with, 'logic' in Amsterdam often means 'nonclassical logic', in particular modal or intuitionistic logic. Many of our specific application-driven formalisms are based on modal logic, nowadays the most widely applied logical formalism by far. This importance of modal logic also justifies its position as one of the group's main areas of mathematical investigations. Second, over the last decade, game theory has evolved into a prominent ILLC-wide research theme. In the Logic and Computation group, games are used as an important mathematical proof tool and as a source for complexity models, but also, being key examples of interactive processes with a significant information angle, they are themselves also prime objects of study. And finally, complexity issues, omnipresent in most subjects involving computational behaviour, lie at the heart of some of the group's research, and are highly relevant for almost all group members.

Highlights

- Davide Grossi has started his VENI project, Norm Implementation via Mechanisms, on 15 January 2009. His aim is to develop formal tools for the specification and verification of how norms can be implemented within a society of rational agents.
- Bas Terwijn, Leen Torenvliet and Paul Vitanyi solved an old open problem in recursion theory concerning the complexity of the notion of information distance. Specifically, they pinpoint its arithmetical complexity exactly by showing that it is neither upper nor lower semi-computable.
- In July 2009, the ILLC hosted the conference Topology, Algebra and Categories in Logic (TACL 2009), which attracted more than 120 participants from 28 countries. The local organization was in the hands of the Algebra/Coalgebra group, led by Alessandra Palmigiano and Yde Venema.
- The book, Verification of Sequential and Concurrent Programs (Third Edition), by Krzysztof Apt, Frank de Boer and Ernst-Rüdiger Olderog appeared with Springer in October 2009. The foreword was written by the late Amir Pnueli, winner of the 1996 ACM Turing Award.
- Johan van Benthem and Pieter Adriaans were among the five editors of the Handbook of Philosophy of Information (Elsevier). This book brings together the most important perspectives on the fundamental notion of information, and may be instrumental in shaping a new area.
- In a joint paper with Samson Abramsky, From IF to BI - A Tale of Dependence and Separation, Jouko Väänänen initiated a completely new approach to dependence and IF logic, one which builds on intuitionistic logic and may lead to deeper understanding of the concept of dependence.
- The theory of Blackwell determinacy had been defying attempts to understand it better for many years; together with Hugh Woodin, Daisuke Ikegami managed a breakthrough by calculating the consistency strength of Bl-ADR_R
- Ongoing collaboration with Marta Bílková led Alessandra Palmigiano and Yde Venema to a very satisfactory result in the theory of coalgebraic modal logic, namely, the introduction of a sound and complete, cutfree calculus for the finitary version of Moss' coalgebraic logic.
- A paper on a novel approach to abduction in description logics, based on the MSc Logic thesis of our former student Szymon Klarman, has been accepted for publication in the Journal of Automated Reasoning. Co-authors are Ulle Endriss and Stefan Schlobach.
- Many LoCo members were involved in the conference Logic, Rationality and Interaction (LORI-II, Chongqing, China, October 2009). On the initiative of Johan van Benthem, a very successful day was organized to foster interaction and cooperation between Western and Chinese logicians.

Dissemination and valorisation

- Krzysztof Apt organized an internship at the CWI for 7 pupils of an Amsterdam high school.
- Peter van Emde Boas gave a five week course in Guangzhou (China) on Logic, Language and Computation to academics from other fields.
- Johan van Benthem initiated the publication of the book “Geestdrift. Wat cognitiewetenschappers bezielt”, a book of interviews with Dutch cognitive scientists written by science journalist B. Mols.
- Van Benthem also wrote the Preface to this book, he was one of the interviewed scientists, and he appeared in the radio program “Hoe? Zo!” to promote the book.

People

Programme	Position	NAME	Total
Logic and Computation	Full professor	Apt	0.20
		Benthem	1.00
		Buhrman	0.20
		Emde Boas	0.60
		Väänänen	0.92
		Vitanyi	0.10
	Associate professor	Torenvliet	1.00
		Venema	1.00
	Assistant professor	Endriss	1.00
		Löwe	1.00
		Palmigiano	1.00
		Terwijn	1.00
	Emeritus	Emde Boas	0.20
		Jongh	1.00
		Vitanyi	0.20
	Guest PhD student	Briët	1.00
		Erven	1.00
		García Soriano	1.00
		Kontinen	1.00
		Koolen-Wijkstra	1.00
		Loff	1.00
		Minica	1.00
		Semmes	0.40
		Velazquez-Quesada	1.00
	Lecturer	Barmpalias	0.50
		Jager	0.50
		Linnebank	0.00
	Postdoc	Airiau	1.00
		Barmpalias	0.50
		Grossi	1.00
		Porello	1.00
		Uckelman, S.	1.00
	PhD student	Dégremont	1.00
		Fontaine	1.00
		Galliani	1.00
		Gheerbrant	1.00
		Gierasimczuk	1.00
		Grandi	1.00
		Ikegami	1.00
		Keskinen	1.00
		Khomskii	1.00
		Kurzen	1.00
		Leal Rodriguez	1.00
		Vosmaer	1.00
		Witzel	0.58
		Zvesper	0.66
		Uckelman, J.	0.42
		Uckelman, S.	0.83
Logic and Computation Total			38.82

2.2 Logic and Language

Programme leaders: Frank Veltman (until September) /Jeroen Groenendijk (as of September) and Paul Dekker (deputy)

Research area

Logic and Language (LoLa) is a broad research programme in logic and the philosophy of language, crossing the borders with linguistics and cognitive science. Human reasoning and the interpretation of natural language are the major themes. Logical and philosophical analysis is the basic scientific method. Empirical ratification of analytical work is the main touchstone for success. Binding force is the conviction that interpretation should be studied as a dynamic cognitive process that is embedded in both social practices and the external environment. Hence, the integration of semantics and pragmatics is a dominant long-term research aim. The various systematic investigations concentrate on empirical phenomena that are intrinsically related to the way in which information is structured in conversations.

Our view on how logic and language connect has obvious philosophical roots in the writings of Aristotle, Leibniz, Frege, Wittgenstein, Montague, and Grice. Systematic and historical study of the works of these intellectual forebears forms a substantial part of the project, also to stimulate critical reflection on current systematic research. In our investigations of reasoning processes we aim to show that logical languages can be fruitfully used as high-level specifications of cognitive functions. The outlook on interpretation as a cognitive process embedded in social practices also makes a strong bond between interpretation and reasoning on the one hand and the evolution of rational human behaviour on the other. The work is carried out under four headings.

Semantics and Pragmatics. When semanticists refer to the *Amsterdam School* in semantics they usually have in mind the work done at ILLC on dynamic semantics that started in early nineties and has since been at the centre of our activities. The work presently involves the program of Groenendijk's Inquisitive Semantics, Dekker's canonical formulation of Amsterdam-style dynamic semantics, and Aloni and other's (ILLC and ACLC) crosslinguistic work on indefinites and mood.

Vagueness and Granularity. In 2009 a large scale project on *Vagueness and Granularity* has started. A VENI grant for Raquel Fernandez, a grant in the LOGICCC programme of the European Science Foundation for Robert van Rooij, and a grant in the Free Competition of NWO's division of Humanities for Frank Veltman, has lead to a research team in which two senior researchers, two post-docs and three PhD students participate. Vagueness is an excellent domain for studying the ways in which speakers coordinate their language to promote mutual understanding.

Logic and Cognition. In this area it is constructively shown that formal logic can be used in explaining informal human reasoning. To achieve these aims logical and computational models are paired with methods from empirical psychology and neuro-science in an innovative way. Much of the theory behind these applications can be found in the book by Keith Stenning and Michiel van Lambalgen 'Human reasoning and cognitive science' (MIT Press 2008). Robert van Rooij, Michael Franke and Tikitu de Jager have applied game- and decision-theoretical approaches to reasoning in interpretation in the area of linguistic pragmatics.

Philosophical Foundations. In this area Catarina Dutilh Novaes works on a VENI grant from NWO on the philosophical and methodological foundations of formalisation in logic. Michiel van Lambalgen, together with Dora Achourioti, have furthered their work on Immanuel Kant's logic. It turns out, that Kant's logic is actually very subtle and requires for its formalisation techniques that were developed only in the late 20th century. Its formalisation proves to be illuminating for Kant's own argumentation. Martin Stokhof further his investigations in philosophical theories of interpretation, and their relation with theories of "embodied cognition".

Highlights

- The Logic and Language group witnessed 6 successful PhD defences, by Kata Balogh "Theme with Variations", Chantal Bax "Subjectivity after Wittgenstein", Harmut Fitz "Neural Syntax", Michael Franke "Signal to Act", Tikitu de Jager "Now that you Mention it, I wonder ..." and Jakub Szymanik "Quantifiers in TIME and SPACE".
- Robert van Rooij finalized his project on "The Economics of Language", with two successful dissertations and defences by Michael Franke and Tikitu de Jager, and a joint paper: "Relevance in Cooperation and Conflict", in the Journal of Logic and Computation.
- Robert van Rooij and Frank Veltman started their European project on Vagueness with two new appointments, and a workshop on the ESSLLI Summer School in Bordeaux, August.
- Jeroen Groenendijk was awarded a Humanities Free Competition grant for the project "The Inquisitive Turn: A New perspective on Semantics. Logic and Pragmatics." Floris Roelofsen will return to the ILLC as postdoc on the project, two new PhD-students will be selected.
- Dora Achourioti and Michiel van Lambalgen established a formalisation of Kant's transcendental logic, and shown that it coincides with what is known as geometric logic. With the help of this logic, Kant's arguments in the Transcendental Deductions can be made a good deal more perspicuous.
- Catarina Dutilh Novaes, published her "Lessons on sentential meaning from medieval solutions to the Liar paradox", 2009, Philosophical Quarterly 59, pp. 682-704.
- Theo Janssen has proved a prenex normal form theorem for independence friendly logic, by means of which various results in this area were corrected or generalised.
- Katrin Schulz gave an invited plenary lecture "Conditionals from top to bottom" at Sinn und Bedeutung 14, Vienna, September, 2009.
- Martin Stokhof (together with Hans Kamp) published a contribution "Information in Natural Language" in the Handbook of the Philosophy of Information.
- Members of the Logic and Language research group have been the key organizers of the Symposium on Logic and 17th-century Scientific Thought, April, 2009, the Workshop Practice-based Philosophy of Logic and Mathematics, August, 2009, the Tbilisi Symposium on Language, Logic and Computation, September, 2009, the Amsterdam Graduate Philosophy Conference, October, 2009, and the Amsterdam Colloquium on Formal Semantics, December, 2009.

Dissemination

- Most members of the Logic and Language group act on the editorial boards of leading journals like Linguistics and Philosophy, the Journal of Semantics, the Journal of Philosophical Logic, Natural Language Semantics.
- Raquel Fernández is one of the founding and managing editors of the new international journal Dialogue and Discourse, the first journal dedicated exclusively to work that deals with language "beyond the single sentence" from a theoretical as well as an experimental and technical perspective.
- Theo Janssen gives promotional guest lectures on secondary schools about logic and information.
- Michiel van Lambalgen teaches advanced mathematics and logic to talented pupils on primary schools.
- Frank Veltman has been appointed a guest professorship at Beijing University for the study of Logic and Information in China.

People

Programme	Position	Name	FTE
Logic and Language	Full professor	Groenendijk	1.00
		Lambalgen	0.50
		Stokhof	1.00
		Veltman	1.00
	Associate professor	Lambalgen	0.34
	Assistant professor	Dekker	1.00
		Janssen	0.60
		Rooij	1.00
		Schulz	0.50
	Guest PhD student	Bentzen	0.50
		Gakis	1.25
		Karawani	0.50
		Zagan	1.00
	Postdoc	Aloni	0.80
		Arsenijevic	0.75
		Dutilh-Novaes	0.75
		Fernández Rovira	1.00
		Roelofsen	0.18
		Rooij	1.00
		Schulz	0.50
		Weidman Sassoon	1.21
	PhD student	Achourioti	0.75
		Andrade-Lotero	1.00
		Bastiaanse	1.00
		Franke	0.58
		Gakis	0.50
		Jager	0.62
		Port	1.47
		Staudacher	1.00
		Szymanik	0.08
		Wolf	1.00
Logic and Language Total			24.38

Chapter 3 The ILLC and the Faculties

In this chapter we sketch the research ambitions and the research achievements of the ILLC, in the year 2009, in the background of the research ambitions of the two faculties that the ILLC is a member of. These ambitions were laid down by the respective faculties in documents called management covenants , which is an agreement between the faculty and the university board for three years. The inforce covenant with the Faculty of Humanities was signed in 2009. The Faculty of Science did not have a convenant in 2009, but a new convenant was signed in 2010. As this is now the inforce covenant, the text below uses this covenant as its point of reference.

The ILLC is an institute of both the Faculty of Science and the Faculty of Humanities. As such, the research ambitions of both faculties are relevant and a priority for the ILLC. However, as personnel involvement varies over the projects, so does the type and nature of the research, and so does the research ambition. Both faculties are involved in the Universities Research Focus Point “Cognition”, The Faculty of Humanities more so than the Faculty of Science, since Cognitive Modelling & Learnability was declared a Faculty spearhead as well as a University focus. The Faculty of Science has as Faculty spearheads astro-particle physics, e-science and system biology. The ILLC is not involved in any of these activities. In Cognition, the ILLC is involved in several of the projects forming the Amsterdam Centre for Cognitive Science (ACCS) Cooperation with the other institutes involved in cognition, especially the ACLC (Amsterdam Center for Language and Communication, FGW), IvI (Informatics Institute, FNWI)and IBED (Institute for Biodiversity and Ecosystem Dynamics, FNWI) will be expanded and intensified.

Both Faculties face serious financial problems concerning direct funding. The ILLC has always had rather a small basis in direct funding and continues to do so in 2009. Within the Faculty of Science the cost of directly funded personnel has decreased in 2009 by about 20%. In 2009 there were about 12 research fte directly funded, on a total of 67, which is less than 20%. Some larger projects, most notably the Gloriclass project, will end in 2010, which will bring back some of the balance. Other projects ending (only in 2011), among which are VIDI and VICI projects, will imply a shift from indirectly funded personnel to directly funded personnel, unless subsequent projects are awarded. In 2009 the number of projects awarded and therefore the growth in indirect funding, was somewhat less than is usual for the ILLC. The reason for this can be found in the fact that almost everyone had one or more projects running, and therefore no new applications were made. Nonetheless, Khalil Sima’an got a project funded in the open competition Exact Sciences, and Jeroen Groenendijk got a project funded in the open competition Humanities. Both NWO. These projects will start in 2010.

The number of publications, somewhat lagging in 2008 for reasons yet to be found, returned to the usual high level in 2009. The Faculty of Science has expressed in its so-called 100+ plan the desire to publish 100 publications in so-called top journals. Because of the very diverse nature of the ILLC publications appear in very diverse media. Of course, the ILLC also publishes in top journals. These however not always coincide with the top journals selected by the Science Faculty. For the ILLC’s publications to be put in the right perspective concerning top publication media, the list of top

journals and other media would have to be expanded rather a lot. With the consent of the dean of the Science Faculty, the ILLC was declared exempt from this part of the competition.

The 100+ plan also foresees in 100 or more PhD defences each year. Being one of the 10 research institutes, the ILLC provided its share with 10 PhD defences in 2009. Being one of the smaller institutes however, one could say that the ILLC provided more than its share. Of course, not all of these defences were in the Faculty of Science. Some were also in the Faculty of Humanities, which does not have a comparable ambition expressed in its covenant. Nonetheless, it also strives to maximize the number of PhD theses produced.

In 2009, the ILLC organized many events, among which the Amsterdam Colloquium, a yearly conference of international stature and the conference on Topology, Algebra and Categories, which in the ambition of the ILLC will become a regular European Network. The year 2009 also so the first instantiation of the TCSA events, an initiative to strengthen cooperation between UvA, VU and CWI in the field of theoretical computer science.

The cooperation contract with the ILC in Tsinghua is nearing its end. Both parties however express the interest in renewing this contract. The cooperation with ILC has been very profitable in the past in that many members of the ILLC have visited Tsinghua for an extended period. In return several (PhD) students were sent from Tsinghua to Amsterdam and successfully completed their studies here. A renewed contract is being prepared.

Personnel wise the ILLC stands at the start of a period of rejuvenization. Gradually the founding members of the ILLC will retire in the years to come, and a new generation will take over leadership of the ILLC. In 2009, both Peter van Emde Boas and Paul Vitanyi retired, which is quite a set-back in the effort in Theoretical Computer Science. For budgetary reasons, the chair in Mathematical Computer Science will temporarily not be filled. An appropriate candidate for the (part time) advanced systems chair is being selected, in close cooperation with the CWI, as this chair is intended to substantiate the cooperation between CWI and ILLC. More set-backs are to be expected. Most notably there will be the retirement of Remko Scha in 2010, and the subsequent expiration of the chair in computational linguistics. While this document is written, efforts are being undertaken to soften the blow this will undoubtedly give to the LaCo programme. As Humanities also faces financial troubles, this will not be easy.

Chapter 4 Management

4.1 People, research input

The next tables show the total fte of the ILLC staff per research programme (table 1a) and the total research fte per faculty and funding category (table 1c). Table 1b is added to understand the standard figures for research fte at both the FNWI and FGW. Compared to 2008 the total fte grew with 2.5 fte. This growth can almost fully be traced back to a rise in the number of assistant professors (one in the LoLa and one in the LoCo programme). More or less the same holds for table 1c where one can see the research fte per faculty. An interesting detail is that only 17.9 % of the research fte is funded by the UvA. For NWO, EU and other (guest PhD students) the percentages are resp. 55,8%, 8,7% and 17,6%.

Table 1a. FTE per research programme

	LaCo	LoCo	LoLa	Total
Full professor	1.0	3.0	3.5	7.5
Associate professor	3.0	2.0	0.3	5.3
Assistant professor	3.0	4.0	3.1	10.1
Postdoc	4.6	4.5	6.2	15.3
PhD student	8.5	14.5	8.0	31.0
Guest PhD student	-	8.4	3.3	11.7
Total	20.2	36.4	24.4	80.9

Table 1b. Standard figures for Research FTE per faculty

	FNWI	FGW
Full professor	0,5	0,4
Associate professor	0,5	0,4
Assistant professor	0,5	0,4
Postdocs	0,9	1
PhD students		
-4 years	0,75	1
-3 years	1	1
-Guest PhD students	1	1

Table 1c. Research FTE per faculty and per funding category

	FGW			FGW Total	FNWI				FNWI Total	Grand Total
Position	UvA	NWO	None		UvA	NWO	EU	None		
Full professor	1.4			1.4	1.9				1.9	3.3
Associate professor	1.0	0.4		1.4	0.5	1.0			1.5	2.9
Assistant professor	0.6	0.8		1.4	1.8	2.9			4.7	6.1
Postdoc		5.9		5.9	0.5	8.2			8.7	14.6
PhD student	1.5	10.7		12.2	2.3	7.8	5.7		15.7	27.9
Guest PhD student			3.3	3.3				8.4	8.4	11.7
Grand Total	4.5	17.8	3.3	25.6	6.9	19.8	5.7	8.4	40.9	66.5

4.2 Publications, research output

Table 2: Research output

		2009
1. Academic publications		
	a. refereed journals	53
	b. other journals	2
	c. book chapters/papers in proceedings	119
Total		**174**
2. Monographs		4
3. PhD theses		10
4. Professional publications and products		1
5. Edited Volumes		11

Where the output tables in 2008 showed a sudden drop in the category book chapters/proceedings (from 122 in 2007 to 89 in 2008) the number in 2009 is more or less back on the level of 2007.

4.3 Communication

ILLC communicates by means of the following media:

- our website http://www.illc.uva.nl
- ILLC News, our weekly news letter announcing upcoming local events, job openings, funding opportunities, new publications etc., sent to almost 400 internal and external subscribers.
- ILLC Conference Mailing, a monthly news letter announcing national and international conferences, calls for proposals etc., sent to the same subscribers as ILLC News.
- ILLC Current Affairs, a bi-monthly news letter, following the programme leaders meetings, sent to staff and PhD students. Current affairs informs the ILLC Community about current administrative matters.
- ILLC Magazine; a yearly glossy magazine, edited by two or three PhD students. The magazine is set up for our MSc and PhD alumni but sent to the ILLC community and interested parties as well.

4.4 Events

Again, the ILLC has maintained its high average of organizing events. The several research groups of the ILLC organize a total of 9 regular seminars or colloquia. Most of them are held bi-weekly. In addition, the ILLC organized 8 international conferences and workshops, of which one in China en one in Georgia.

4.5 Finances

Table 3 shows the funding figures for the FNWI part of the ILLC only. 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 within the departments.)

Please note that the amount for Direct funding includes matching to cover overhead costs in NWO and EU projects. The reason for this is that the UvA works with the full cost model, and that organizations like NWO only reimburse salary costs. The correction of 526 k€ is incidental and has to do with a change in the UvA system of matching NWO and EU projects.

Table 3. Funding at FNWI (ink€)

	Direct funding (UvA)	Research grants (NWO)	Contract research (EU)	Total
Direct income univ.	677	907	227	1,811
Grants	43	763	202	1,008
Correction previous years*	-526	373	153	0
Personnel costs	-570	-1,198	-293	-2,061
Other costs	-71	22	-199	-248
Overhead	189	-896	-225	-932
Result	**-258**	**-29**	**-135**	**-422**

*NWO and EU projects were overvalued in 2008 and the years before. For that a correction had to be made in 2009.

4.6 Administration

- Scientific director: Dr. L. Torenvliet
- Director Master of Logic programme: Dr. B. Löwe
- Manager (Bedrijfsvoerder): Mrs Drs. I.M. van Loon
- Administrator Master of Logic program: Ms Drs. T. Kassenaar
- Secretary (ILLC Office): Drs. P. van Ormondt
- Secretary (ILLC Office): Ms K. Gigengack
- System administrator and web master: Dr. M. Vervoort