

ILLC Magazine

October 2007

A patent achievement for the ILLC

Last year's Science Park Amsterdam New Moon Prize was awarded to the project "Digital postscripting" (digital business meeting), an idea originating with our very own Leon Timmerink. The announcement was surprisingly vague about the specifics of the proposal: "A new, cheap security method, allowing the identity and position of an individual within a building to be monitored with an accuracy of a few centimetres. How was it done? It seemed that nobody was telling."

Frans Schellekens, who implemented the system and presented it at the Science Park New Moon Prize, had already been awarded the award for his work on the project. The award was given to him by the members of the audience, with which the members of the audience were able to interact in real time.

Why did he receive the prize was awarded to him, the award was given to him by the audience, with which the members of the audience were able to interact in real time.



A patent achievement for the ILLC

In this issue amongst others:

Inspiring research: Henk Zeevat and Jouko Väänänen

We interview Frank Tip and Barbara Terhal at IBM research

Irresistible amnesia



"A painter who paints can by that very act seduce his inner conflict."

Henk Zeevat is a painter and a philosopher. He is a member of the ILLC and has published several books on the philosophy of art and the philosophy of language. In his latest book, 'Irresistible Amnesia', he explores the relationship between art and memory. He argues that art is a form of memory that is irresistible and that it can lead to a state of amnesia. He also discusses the role of the artist in society and the importance of art in education.

Jouko Väänänen is a linguist and a philosopher. He is a member of the ILLC and has published several books on the philosophy of language and the philosophy of mind. In his latest book, 'The Semantics of Plurals', he explores the relationship between plurals and the philosophy of language. He argues that plurals are a form of memory that is irresistible and that it can lead to a state of amnesia. He also discusses the role of the linguist in society and the importance of language in education.

Alumni

Although Barbara Terhal and Frank Tip have never met, they have a lot in common. They both studied in Amsterdam and published their dissertations in the ILLC series (Frank in 1995, *Generation of Programs Analysis Tools*, and Barbara in 1999, *Quantum Algorithms and Quantum Entanglement*). They've both taken their research from the university into industry. And they've both ended up working for IBM Research in New York. We asked Barbara and Frank about the move from academia to industry and the research climate at IBM.

Barbara Terhal

The funny thing is that the work I did at IBM was very different from the work I did at the university. At the university, I was working on quantum algorithms and quantum entanglement. At IBM, I was working on quantum algorithms and quantum entanglement. I was working on quantum algorithms and quantum entanglement. I was working on quantum algorithms and quantum entanglement.

The funny thing is that the work I did at IBM was very different from the work I did at the university. At the university, I was working on quantum algorithms and quantum entanglement. At IBM, I was working on quantum algorithms and quantum entanglement. I was working on quantum algorithms and quantum entanglement. I was working on quantum algorithms and quantum entanglement.

The funny thing is that the work I did at IBM was very different from the work I did at the university. At the university, I was working on quantum algorithms and quantum entanglement. At IBM, I was working on quantum algorithms and quantum entanglement. I was working on quantum algorithms and quantum entanglement. I was working on quantum algorithms and quantum entanglement.



The funny thing is that the work I did at IBM was very different from the work I did at the university. At the university, I was working on quantum algorithms and quantum entanglement. At IBM, I was working on quantum algorithms and quantum entanglement. I was working on quantum algorithms and quantum entanglement. I was working on quantum algorithms and quantum entanglement.

The funny thing is that the work I did at IBM was very different from the work I did at the university. At the university, I was working on quantum algorithms and quantum entanglement. At IBM, I was working on quantum algorithms and quantum entanglement. I was working on quantum algorithms and quantum entanglement. I was working on quantum algorithms and quantum entanglement.

The funny thing is that the work I did at IBM was very different from the work I did at the university. At the university, I was working on quantum algorithms and quantum entanglement. At IBM, I was working on quantum algorithms and quantum entanglement. I was working on quantum algorithms and quantum entanglement. I was working on quantum algorithms and quantum entanglement.



TABLE OF CONTENTS

<i>Foreword</i>	2
<i>Announcements</i>	2
<i>Inspiring research</i>	4
<i>A patent achievement for the ILLC</i>	6
<i>Irresistible amnesia</i>	8
<i>Alumni: Interview with Barbara Terhal and Frank Tip</i>	10
<i>New PhD students</i>	13

COLOPHON

ILLC Magazine is published by:
Institute for Logic, Language
and Computation
Universiteit van Amsterdam
Plantage Muidergracht 24
1018 TV Amsterdam
The Netherlands

Tel: +31 (20) 525 6051
Fax: +31 (20) 525 5206
E-mail: illc@science.uva.nl
Internet: www.illc.uva.nl

EDITORIAL TEAM:
Tikitu de Jager, Jonathan Zvesper

PHOTOGRAPHS:
Yanjing Wang

DESIGN:
Crasborn Grafisch Ontwerpers bno,
Valkenburg a.d. Geul | 07527

PRINTING:
Drukkerij Hub. Tonnaer, Kelpen

MANY THANKS TO:
Ingrid van Loon and Frank Veltman

Foreword

Dear friend of the ILLC,

The ILLC is growing. In 2006 the Master of Logic programme had its first evaluation for accreditation; it was described as "unique and excellent" and "something very special". Some ex-MoL students have continued to PhD positions, along with a large number of appointments from outside the ILLC. (Those who started before July introduce themselves on page 13.)

This huge influx has led to expansion across the canal from the Euclides building (into the oddly disjunctive J/K building) and rotating desk schedules in the philosophy building, as well as a new internal seminar series and a great deal of lively discussion.

The year also marks the first patent earned by the ILLC, discussed on page 6. Following this theme, on page 10 we interview two employees of IBM Research who made the transition to industry from academia in Amsterdam.

Another theme of this issue (albeit present only implicitly) is procrastination. We have beaten all previous records for lateness of the magazine, for which we (the editors) most humbly apologise. In keeping with this theme we asked the new PhD students how they planned to procrastinate; while not all of them have gotten around to replying, some of the answers might surprise you.

In closing, we should express our thanks to all those who have written articles for this issue or let us interview them, to the photographers whose work we have included (particularly Yanjing Wang), and to the ILLC management for their support and patience. It's been fun, we hope you enjoy the result.

The editors,
Tikitu de Jager, Jonathan Zvesper

Announcements

Projects awarded in the period July 2006 - August 2007

VICI award to Rens Bod

- The VICI research proposal "Integrating Cognition" of Rens Bod has been selected by NWO Geesteswetenschappen. Rens is awarded the sum of € 1.25 million which creates jobs for 2 PhD students (3 years) and 2 postdocs (3 years).

VIDI grants 2006 to Khalil Sima'an and Jaap Kamps

- Both Khalil Sima'an and Jaap Kamps have been awarded VIDI subsidies for their respective projects, 'Priors for the Estimation of Probabilistic Grammars from Incomplete Natural Language Data' and 'Retrieving encoded archival descriptions more effectively' ('README').

The 'Priors' project has a total budget of 767 k€ of which 406 k€ is contributed by NWO, and 65 k€ by the CvB-UvA. Besides Khalil himself, a postdoc (3 years) and a PhD student (4 years) will be attracted to work on the project.

The README project has a budget of 600 k€ of which 405 k€ comes from NWO, and creates jobs for two PhD students, one postdoc and one parttime scientific programmer.

This means 2 out of 8 approved VIDI project proposals within NWO Exact Sciences went to the ILLC (and to the LaCo programme)!

VIDI grants 2007 to Ulle Endriss and Maria Aloni

- Within the Division of Humanities: Maria Aloni for her project 'Indefinites and beyond: evolutionary pragmatics and typological semantics', and within the Division of Exact Sciences: Ulle Endriss for his project 'Collective Decision Making in Combinatorial Domains'. Both will receive the sum of 600 k€ (2/3 NWO; 1/3 UvA matching) with which they can start their own research group (one postdoc and one PhD student each).

VENI grants 2007 to Jelle Zuidema and Catarina Dutilh-Novaes

- Jelle Zuidema (now a postdoc at the ILLC), for his project

proposal "Discovering grammar: statistical models of sequence learning in humans, animals and machines" and Catarina Dutilh-Novaes (Master of Logic alumna), for her project: "Philosophical Foundations of Formal Languages in Logic: Formal Languages as Language Games".

Both receive funds for a three year appointment as postdoctoral researcher at the ILLC.

Rubicon award 2007 to Emar Maier

- An NWO Rubicon grant is awarded to Emar Maier from Nijmegen University (<http://www.ru.nl/ncs/~emar/>). The grant allows him to work for one year as a researcher at ILLC, together with Jeroen Groenendijk. The planned starting date is January 2008.

NWO Mosaic grant 2007 awarded to Yurii Khomskii

- Master of Logic alumnus Yurii Khomskii has been awarded a NWO Mosaic grant. The Mosaic programme is developed to boost the participation of ethnic

minorities in academic research and provides funds for a 4 year period of doctoral research.

Yurii starts his PhD research at September 1st, 2007 under the supervision of Benedikt Löwe, on the project called "Making Guesswork Precise: Developing a mathematical theory of rules-of-thumb in Set Theory of the Real Line"

Scientific Network PhiMSAMP

• The DFG (Deutsche Forschungsgemeinschaft, the German Research Foundation) decided to fund the 'Scientific Network' PhiMSAMP (Philosophy of Mathematics: Sociological Aspects and Mathematical Practice) coordinated by Thomas Müller (Bonn) and Benedikt Löwe. The Network consists of six nodes, Amsterdam, Bonn, Brussels, Darmstadt, Dortmund, and Fort Wayne IN, and will fund workshops and meetings on applying sociological and empirical methods to questions of philosophy of mathematics.

For more information, see <http://www.lib.uni-bonn.de/PhiMSAMP/>

Prizes and Awards

3 out of 6 ESSLLI'06 prizes to ILLC students!

• ILLC PhD and MOL students were very successful in the 2006 ESSLLI Summer School. In the oral session Reut Tsarfaty won the first prize for her talk "The Interplay of Syntax and Morphology in Building Parsing Models for Modern Hebrew". Michael Franke and Scott Grimm both received third places; Michael in the oral session for his talk "Theological Necessity and Only" and Scott in the poster session for his poster "Subject Marking in Hindi/Urdu: A Study in Case and Agency" (based on his Master of Logic thesis).

The winner from both the poster and the oral session may choose € 500 worth of Springer books.

ILLC team wins "Nieuwe Ideeën Prijs" 2006

• A team consisting of Leen Torenvliet, Sybren Stüvel (student) and Peter Blok (Head of FNWI Buildings) has won the prestigious Science Park Nieuwe Ideeën Prijs 2006 for their Digital Location System.

From the announcement on the ILLC mailing list: *This location system can serve many purposes. For one thing, it can and will be used as a security system in buildings like Euclides. It is based on an idea of Leen which as the jury said is "as simple as it is brilliant", but about which we cannot say too much until the patent application is completed. Suffice it to say that there is a lot of interest from outside to develop this system further and to bring it on the market.*

The patent application has now been completed, and an interview with Leen appears on page 6.

Also see <http://www.scienceparkamsterdam.org/> for more information.

Ackermann Award 2006 to Balder ten Cate

• The Jury of the Ackermann Award 2006 has decided to award to Balder ten Cate one of the two Ackermann Awards 2006 for his ILLC dissertation "Model theory for extended modal languages".

This EACSL Outstanding Dissertation Award for Logic in Computer Science will be presented to the recipients at the annual conference of the EACSL (CSL'06).

The award consists of (i) a diploma, (ii) an invitation to present the thesis at the CSL conference, (iii) the publication of the abstract of the thesis and the laudatio in the CSL proceedings, (iv) travel support to attend the conference.

For more information about the award, see <http://www.dimi.uniud.it/~eacsl/award.html>

Martin Stokhof elected as KNAW member

• Martin Stokhof, professor in Philosophy of Language at ILLC, is elected as member of the KNAW (Royal Netherlands Academy of Arts and Sciences). He is the fourth ILLC professor to become a KNAW member, after Renate Bartsch, Anne Troelstra and Johan van Benthem.

For more information, see <http://www.knaw.nl/>.

Prof. Krzysztof Apt: member of Academia Europaea

• ILLC and CWI professor Krzysztof Apt has been chosen as "member of Academia Europaea" in Informatics Section.

In total there are 66 members of which 7 are from the Netherlands.

For more information, see <http://www.acadeuro.org/>

Teaching Prize 2007 of FGW to the course "Logica en de Linguistic Turn"

• The Teaching Prize 2007 of the Faculty of Humanities has been granted to the course "Logica en de Linguistic Turn", which is part of the Bachelor of Philosophy.

Almost every ILLC member working in the Philosophy Department has taught this course - some more than fifteen times. We congratulate them all. It was the first time this prize was granted to a course (instead of a teacher).

ESSLLI'07 best student paper award to Thomas Icard III

• Master of Logic student Thomas Icard III won the award of the Best Student Paper in the Oral Session at the ESSLLI summer school of 2007 with his paper "Towards An Alternative Proof of Solovay's Arithmetical Completeness Theorem" based on a project advised by Joost Joosten.

Personnel arrived

• Jouko Väänänen, professor of Mathematical Logic and Foundations of Mathematics.
• Alessandra Palmigiano, postdoc.
• Sujata Ghosh, postdoc (since departed).
• Karin Gigengack, administrator.

Personnel left

• As of September 1, 2006: Wolfram Hinzen; now at University of Durham, UK.
• As of October 1, 2006: Detlef Prescher; now at University of Heidelberg.
• As of September 1, 2007: Eric Pacuit, now at Stanford University.

PhD defenses

• 7 September 2006, Robert Spalek: *Quantum Algorithms, Lower Bounds, and Time-Space Tradeoffs*.
• 14 September 2006, Master of Logic defense, Martin Müller
• 4 October 2006, Merlijn Sevenster: *Branches of imperfect information: logic, games, and computation*.
• 12 October 2006, Marie Nilsenova: *Rises and Falls. Studies in the semantics and pragmatics of intonation*.
• 20 October 2006, Aline Honingh: *The Origin and Well-Formedness of Tonal Pitch Structures*.
• 7 February 2007, Neta Spiro: *Musical Structure: Expectation generation, disruption and resolution*.
• 23 February 2007, Rudi Cilibrasi: *Statistical Inference through Data Compression*.
• 28 February 2007, Darrin Hindsill: *It's a Process and an Event*.

Inspiring research

Henk Zeevat and Jouko Väänänen span between them the entire official history of the ILLC. In 1991, when we became a university Research Institute, Henk Zeevat was working in computational linguistics. Last year Jouko Väänänen was welcomed as the new professor of Mathematical Logic and Foundations of Mathematics (the position previously held by Dick de Jongh). We asked them both about research that has inspired them, and the influence this has had on their own work.



You must just think for yourself
Henk Zeevat

I do not think there are papers of other people I would have liked to have written. Fortunately, my field has not developed to the point where the author has completely disappeared behind his subject as seems to be the case in branches of psychology or engineering. To write somebody else's paper would therefore mean that one would have to become that somebody else.

But there are a great number of people who have influenced me very considerably, as teachers or as colleagues. Here I will only mention the papers that have really changed the way my life was going.

Long ago I was a student in Bologna and making my first acquaintance with logic. At one point, I asked my professor Marco Santambrogio if logic had been applied to the analysis of natural language meaning, a subject that had been treated in the vaguest possible terms in the linguistics courses I had been following. He pointed me to the work of Montague, which was very new then, though Montague had already died. I cannot have understood that

much at that time, but I was quite taken with it. This was not just an application of logic to natural language semantics, but it offered a method for developing an account of meaning and a quite clear and precise answer to the question what such a theory would be like, in addition to many ideas about particular phenomena. It made me decide to study logic, to work on natural language semantics and to go back to Amsterdam.

It was probably the most decisive moment in my life. It has determined who I got to know, the jobs I have had, the work I did and even my love life. I still admire Montague's radical vision and his optimism about the tools with

“All processes in language use can be seen as a competition between candidate solutions for the input situation.”

which he set out the task and the methods, even though the rest of my life seems to have been spent in getting away from the picture that Montague developed. But I admire radical attacks on a broad front and Montague seems to have been the sort of personality that could have drawn everything together in the way he did, without being too much disturbed by doubts.

Herbert Clark was the first to shake my optimism about Montague's programme. In the footsteps of Russell, Montague analysed referring expressions as generalised quantifiers. This makes a psychological prediction: it should be enough to recognise the words they are made up of and to access their meanings for a full understanding of their role in the sentence. Clark showed that this was not the case. After the use of a referring expression, speakers normally check whether their audience has got the referent and if there are signs that this is not so, they produce new attempts to get the hearer to figure out who they were talking about. My interest in discourse representation theory and computational models of dialogue

developed later, but would not have been possible without Clark shaking me up from my dogmatic slumbers.

Ulrike Haas-Spohn's analysis of subjective meanings has been another shake-up of this kind. It showed that far more was possible within possible worlds analyses than I had assumed. Here I am to blame myself: I had been content at an earlier point in my life to show to my own satisfaction that analyses of epistemic contexts could not be carried out with possible worlds, because of the inevitability of certain problems, coming from logical omniscience, rigid designators and the like. To a certain extent, the barriers between representationalism or structured meanings and possible world accounts disappear and the same solutions to the problems can be reconstructed, without ending up in the philosophical difficulties

of representationalist or structured meaning analyses of meanings. While I use these insights all the time now, I have not taken up the deeper issues again. And Ulrike does not seem to do so either, the last I heard from her was that she was working as a Referendarin at Konstanz university.

Paul Smolensky is the last person whose work I want to mention here. To some it may seem that he is just responsible for another sect in linguistics. That may be so, but it is a very nice sect and has got me back into thinking about syntax, pragmatics and computational linguistics in ways I would not have believed possible before getting to know this work. The idea is very simple and radical: all processes in language use can be seen as a competition between candidate solutions for the input situation, an idea Smolensky derives from neural net models of

the brain. This concept bridges neural processing and symbolic reasoning: the solutions can be described as the ones best meeting a system of ranked soft symbolic constraints. While there are many points at which one may doubt the particular approach, it seems inconceivable to me that models of syntax, pragmatics or linguistic processing will become dominant again that leave the gap between neural processing and symbolic description as wide open as it was before OT.

As a young student, I had dared to address David Lewis with a question about his talk at the Amsterdam Colloquium. This was after several drinks and Lewis was not very inclined to give direct answers anymore. "You must just think for yourself", he grumbled. I guess that was the best thing anybody ever said to me.



Lindström's Theorem Jouko Väänänen

In the early 1970s my friend Seppo K. Miettinen spent a term as a student in Oslo and had the opportunity to follow lectures of John Barwise on abstract model theory, or soft model theory as it was then called. When he came back to Helsinki, where I was starting my studies as an undergraduate student of mathematical logic as a member of a small group, he told us about the lectures of Barwise. We actually went through the lecture notes in a seminar. This is how I learnt about the so-called Lindström's Theorem, a characterization of first order logic by model theoretic means. This result appealed to me very much and its proof has influenced my thinking a great deal.

What is remarkable about Lindström's Theorem is that it isolates two model-theoretic properties of first order logic,

namely the Downward Löwenheim-Skolem Theorem and the Compactness Theorem, and shows that any extension of first order logic that has these properties is actually equivalent to first order logic. A dramatic way of paraphrasing this result is the following: First order logic is the strongest possible logic in which every sentence with an infinite model has models of all infinite cardinalities. Still another

"First order logic is the strongest logic which is totally blind to the cardinality of the universe, as long as it is infinite."

formulation: First order logic is the strongest logic which is totally blind to the cardinality of the universe, as long as it is infinite. Note that these formulations make no reference to compactness.

The proof of Lindström's Theorem is sufficiently simple to be appreciated by every student of elementary model theory. The basic element of the proof is the ability of first order logic to talk about its own Ehrenfeucht-Fraïssé game. There were hopes in the 1970s of proving similar characterizations for other logics, but this has not happened. I am currently writing a paper with Saharon Shelah on a new kind of infinitary logic for which we can indeed prove a Lindström's Theorem in the original sense.

A patent achievement for the ILLC

Last year's Science Park Amsterdam New Ideas Prize was awarded to the project 'Digitale positiebepaling' (digital location-sensing), an idea originating with our very own **Leen Torenvliet**. The announcement was surprisingly vague about the specifics of the proposal: "a new, cheap security method, allowing the identity and position of an individual within a building to be monitored with an accuracy of a few meters". How was it done? It seemed that nobody was telling.

Except Sybren Stüvel, who implemented the system, and presented it as his Bachelor thesis. His audience got the details, but they couldn't talk about them: the presentation was protected by a nondisclosure agreement, under which the members of the audience agree not to share any details of the work presented.

Why all the secrecy? The prize was awarded in June, the same month that Sybren graduated, but the application for a patent on their technique wasn't completed until September. Until the stamp is on that file, the idea isn't protected. Leen compares the process to writing a paper: "Before you've published a paper,



Sybren's Bachelor thesis presents an implementation of the the prize-winning invention, called "Sadako"



The winners of
the New Idea Prize 2006



when it's in report form, it's frowned upon of course if someone takes the idea, but before it's refereed the result is really still up for grabs." And there's more here at stake, at least potentially, than academic reputations. "Because it's actually such a simple idea. It's immediately implementable, and it costs only about three euro per square metre to secure a building. It's based on off-the-shelf components, so anyone can build it easily. Surprisingly, though compartmentalising is a hot issue in alarm techniques, there seems to be nothing similar on the market."

But Leen isn't following the idea into production. "If this happened twenty years ago maybe I would have, but now I'm willing to sell the idea." The patent is owned by the UvA, representing the ILLC, so it's their decision to sell it outright or license it to a production company.

"But you know how this goes, you have a hundred ideas and ninety-nine of them are nice but just one is turned into reality - if you're lucky, that is."

Now that the paperwork is done and the cat out of the bag, Leen explains the system and it quickly becomes clear why the idea is so appealing. It's very simple: fill a building with wireless stations, and a Wi-Fi-equipped PDA can calculate its position by measuring the attenuation of signal strength with distance. "Of course there's a lot of related work with RFID chips, but this is sort of the other way around. With RFID chips the chip sends a signal and then the system determines where it is; here the PDA reads the signal and computes where it is, and sends its position to the alarm system."

With a system like this the alarm can be turned off locally, in the rooms being used, while remaining on throughout the rest of the building. Better still, it's much more difficult to accidentally leave the alarm turned off when leaving: if you leave without your PDA you're likely to set off the alarm in some other part of the building on your way out. He shows us an animated demo of the system, in which a pacman-like figure slides down a corridor and into a room, with the alarm activity shown in violent colours. "The demo is reconstructed from measurements we took in this building actually, you can recognise it." In fact, the system is still running, in Leen's office. "When you open a laptop here you see ten wireless stations that actually do nothing, they're just to support the alarm system."

The patent is the first for the ILLC, but Leen sees the new Bachelor-Masters structure (which requires students to complete a project at the Bachelor level, after only three years study) as generating a lot of new ideas. "I didn't want to program this myself so I made a Bachelor project out of it and my student (Sybren Stüvel) did the experiments and programmed the entire system. The Bachelor projects generate much more ideas. But you know how this goes, you have a hundred ideas and ninety-nine of them are nice but just one is turned into reality - if you're lucky, that is."

This time that "just one" led to a patent and a prize, but the core of the idea is surprisingly simple: "We are in a department of computer science, we should be able to do this better." And given that he's not following the development further himself, Leen's attitude is similarly direct: "No, I will definitely not get filthy rich off this. But it was fun to do."

Tikitu de Jager

JAAP VAN HEERDEN

Irresistible amnesia

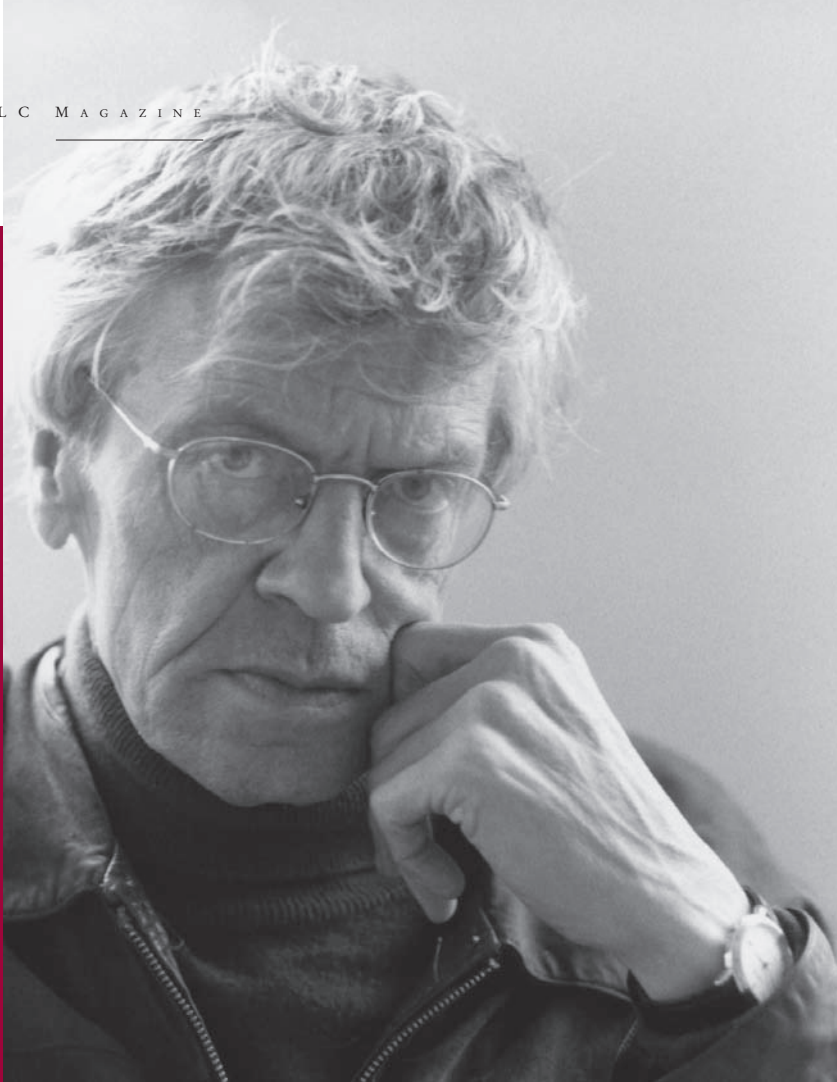
Jaap van Heerden is a philosopher of psychology whose work is not only read by his fellow philosophers of psychology, but by a much larger audience. His essays are collected in books with titles as varied as “Wees blij dat het leven geen zin heeft” (Be Glad Life Has No Meaning), “Als $2+2 = 5$, dan $4+4 = 10$ ” (If $2+2 = 5$, then $4+4 = 10$), and “Proza waarmee je meisjes vangt” (Prose to catch girls). They are insightful, funny, and beautifully written. All Dutch intellectuals who care about their writing wish they could write like him.

Frank Veltman

In 2000 I was invited to give the annual Duijker-Lecture at the University of Amsterdam. I had to discuss the legacy of Freud. Was his theory of the human mind - more or less neglected by cognitive science - still a source of inspiration or rather a hindrance to the advancement of knowledge? When my exposition, containing some balanced criticism, was over, a well known professor in economics sitting in front hissed to me, “How dare you”. I wasn’t surprised. Many educated people think that psychologists in their blind imitation of the natural sciences simply lack the guts to recognize the greatness of Freud and try in their childish and impotent wish for patricide to get rid of him by tampering with the enemy. That reproach is unfair. Psychologists are eclectic. They only preserve what they can use. They share a lot of problems with psychoanalysts, even though they reject most of their solutions. Consider the following.

Psychology and psychoanalysis both presuppose the existence of mechanisms of defense. These mostly concern unconscious strategies people employ to acquire or to maintain a tenable position in threatening circumstances. Not invoking these strategies their situation would be worse but using them their situation is far from optimal because an appeal to these mechanisms seems to involve a considerable amount of self-deception and an unrealistic interpretation of their otherwise vulnerable position. According to Anna Freud the ego has in principle ten different methods or mechanisms of defense at its disposal, namely *regression*, *repression*, *reaction formation*, *isolation*, *undoing*, *projection*, *introjection*, *turning against the self*, *reversal* and *sublimation*. Psychoanalysis pretends to have discovered how each of these mechanisms becomes effective, although we can never really witness them in operation.

The claim of the existence of mechanisms of defense and specifically the mechanism of repression (aptly phrased by Peter Gay as irresistible amnesia) is not restricted to the domain of psychoanalysis. Many cognitive psychologists, neuroscientists and even philosophers of mind easily and without any hesitation speak of repression as a mechanism that yields certain effects: Jean Piaget, Marvin Minsky, Gerald Edelman, Steven Pinker, John Searle, to name just a few. What to think of that? Let us take a closer look at the alleged mental machinery. Anna Freud deals with the case of a young woman “suffering throughout her childhood from passionate penis envy relating to her elder and younger brother, and from jealousy, which was repeatedly excited by her mother’s successive pregnancies”. As the inevitable victim of strongly rivaling emotions of love and hate she tries to attenuate her situation by invoking successively the defense mechanisms of *displacement*, *turning against the self* and *projection*. These mechanisms are explicitly described by Anna Freud as processes, taking energy and causally shaping subsequent behavior. The little girl resorts to them, uses them or enters on them. It goes without saying that the patient finally found relief only when she came to be analyzed. Taken at face value the subject of this case study always seems to be involved in two more or less simultaneous acts: invoking a mechanism of defense and showing behavior that reveals its effectiveness. The little girl resorted, for instance, to the mechanism of *turning against the self* and tortured herself with accusations by saying at frequent intervals something like, “I am not good at all”, as one can imagine.



“A painter who paints can by that very act sublimate his inner conflict.”

And if it is not correct to say that the subject is involved in two mental activities, it certainly is correct to say that at least two things occur: the mechanism works and the subject behaves in a certain way.

Literally taken the invocation of a mechanism of defense is not unproblematic. Nothing forbids us to ask all sorts of questions one normally asks in investigating a mechanism. Has it a beginning and an end, can it be interrupted, how much energy does it take, can it be decelerated or speeded up, under what conditions does it work smoothly. Are two or more mechanisms combinable and will such combinations shorten or intensify the process. If we have to believe Anna the subject can at least select a mechanism, decide unconsciously that circumstances require its invocation and in the course of time evaluate it as to its effectiveness and then, as

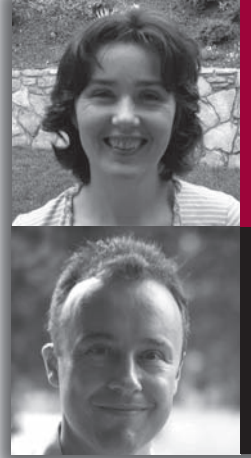
occasionally happens, replace one mechanism with another. I remember a psychologist saying to me, it is difficult to pin down the internal ways in which the mechanisms work - difficult but not impossible. At the time I had my doubts. You can save yourself the trouble of getting into much time- and energy-consuming research, I told him, if you consider the possibility that mechanisms of defense are not mechanisms at all. I had in mind a distinction originally formulated by Gilbert Ryle between achievement and task words. This very distinction could in my view be applied to the verbs by which we describe the alleged mechanisms of defense, such as to repress and to sublimate. There is definitely a clear difference between the logical force of a task verb and an achievement verb. Take Ryle's own example. “When a person is described as having fought and won, or as having journeyed and

arrived, he is not being said to have done two things, but to have done one thing with a certain upshot. Similarly a person who has aimed and missed has not followed up one occupation by another: he has done one thing which was a failure.” One could maintain that the same holds for mechanisms of defense. The verbal expressions corresponding to the divergent mechanisms are all achievement verbs. A painter who paints can by that very act sublimate his inner conflict. Sublimation is the achievement indicating that the painting as a task had certain results. The artist was not involved in two activities, painting and sublimating. He did, indeed, one thing with a certain upshot. And if you think it politically correct to subsidize him, you don't have to subsidize him twice. Returning to Anna Freud's case history we have to say that her patient is not again and again engaged in the simultaneous performance of two activities: saying with so many words that she has the impression that her mother hates her and projecting, or making unkind remarks on her own personality and turning against herself. The second of each pair is an achievement got by the performance of a subservient task activity.

I was at the time quite happy with my suggestion. This is really a profitable contribution of analytical philosophy to psychology. Later I learned that my analysis is not unproblematic. The main difficulty is contained in the observation that at least some task verbs can be rewritten as achievement verbs presupposing subservient activity of a different order. One could maintain that exerting some force on a specific piece of metal counts as turning the key, just as turning the key counts as unlocking the door. A regression to the most fundamental processes of what really takes place in the world is looming. But that was not the reason why psychologists rejected my suggestion. They could not accept it because they immediately recognized the necessity to deprive their own favorite processes, like discriminating, deciding and coping, of any ontological status.

INTERVIEW WITH BARBARA TERHAL AND FRANK TIP

Alumni



Although **Barbara Terhal** and **Frank Tip** have never met, they have a lot in common. They both studied in Amsterdam and published their dissertations in the ILLC series (Frank in 1995, *Generation of Program Analysis Tools*, and Barbara in 1999, *Quantum Algorithms and Quantum Entanglement*). They've both taken their research from the university into industry. And they've both ended up working for IBM Research in New York. We asked Barbara and Frank about the move from academia to industry and the research climate at IBM.

Barbara Terhal

Could you tell us a little bit about your academic background?

After my masters in physics I was thinking about what to do for a PhD and Paul Vitanyi said he had a topic in quantum computation, and he gave me some papers. I said to myself it looks kind of peculiar but it could be interesting, and I got more interested in it, and got a PhD position.

That was in 1995, which was pretty early in the field of quantum computation. Basically nobody had heard about it, though I had seen the paper by Peter Shor, who found an efficient algorithm to factor large numbers into prime factors, which is from 1994.

The funny thing is that the stuff that I worked on first as a PhD student, namely quantum spin glasses, is actually something I've come back to recently. This is a lot of fun because at the time I didn't publish anything on this topic. The first year of my PhD was sometimes frustrating since I was trying to find my own niche in the new field of research and did not publish anything. And then after eighteen months I went to IBM.

When I arrived I already had some work in progress, which I continued with someone at IBM. This resulted in a paper, so the collaboration was right away very successful. The visit got extended from a few weeks to three months, then later on I went back to IBM for a whole year. So I basically ended up spending a lot of my time at IBM, as a PhD student.

Do you consider yourself still to be in academia?

At IBM Research there are projects that are of short term interest, related to customers and IBM products. Then there are also more exploratory long term projects. We're at the tail end of that, because quantum computation is not something that's going to be viable in the near future. But it's of sufficient interest to IBM to have a group in this area because it's interesting theoretically. You never know what comes out of research.

How does working at IBM Research compare with life as a researcher in an academic environment?

My position is very similar to the way one works in academia. I am free to pursue the research that

I think is important and I am judged by the quality and quantity of my output. There is a big difference of course that I don't have teaching duties and thus there is no direct way to supervise and work with young students in the field. This may be one of the drawbacks. On the other hand our current group have three postdocs, a student from MIT who's visiting for a year, we always have very good summer students, we often have visitors.... So we try to lead a life similar to academia by having students who come here sometimes, or just by having external cooperations with people at university.

And one thing which is nice here in the United States is that it's very international. So we have a Russian guy, a guy from Greece, a Canadian, a Brazilian, we have a few Americans. People come here and they're very motivated, they're very smart, they come from everywhere and there's a lot of fusion, a lot of stimulation and creative effort.

How did you make your way from Amsterdam to IBM Research, and did you consider staying in academia?

After my PhD, I was first a postdoc at IBM, then I was a postdoc at CalTech for a year and then there was the question, because I met my husband here at IBM, whether we were going to go to academia or back to IBM. Because he worked at IBM already and I had got an offer. We considered going to a variety of places in academia and we finally decided to stay at IBM. We like living here near New York, we like the research environment, it is a top place. Also we have a family now and with children the IBM environment seems better for us.

In academia I would have to write grant proposals, to do teaching, to sit in committees.... There are a lot of extra things that have nothing to do with research per se that I would have to be doing. And here I can be quite focused on my research.

Do IBM benefit directly from what you do?

Yes and no. No, because I am not directly responsible for bringing in revenue for IBM. Yes, because there may be future commercial value in building a quantum computer, in understanding what problems a quantum computer can solve etc. As a researcher at IBM you are part of an effort that strives to create new computer technology, and exploratory projects are necessary to accomplish this goal.

The US government is particularly interested in building a factoring machine, because it would break the RSA public-key cryptography system [widely used for sending encrypted information, for example on the internet]. So some of the research is partially funded by the US government.

Frank Tip

Could you tell us about your time doing your PhD in Amsterdam?

I did my PhD research with Paul Klint's group at CWI from 1991 to 1995. The original plan was for me to focus on debugging support in the context of generated programming environments, but as time went on, my interests shifted towards program analysis techniques, and in particular program slicing. At the time, Paul had several other PhD students working on various different features of programming environments. I really enjoyed the project, and the fact that there were so many colleagues to interact with. Everyone had his or her own topic, but there was this common platform we all shared. It was a great team to be a part of.

Have you maintained contact with people here?

Yes, I still visit CWI regularly, usually every one or two years. Most of my family is back in the Netherlands, so I usually try to arrange to visit there whenever



I attend a conference or meeting in Europe. In fact, I visited CWI last month, and it was good to catch up with Paul and his group. It is very strange to realize that, after twelve years, several “generations” of PhD students have passed through since I left. I have also stayed in touch with several of my colleagues of my CWI years, and visited them at their universities.

How did you make your way from Amsterdam to IBM Research?

This was a direct result of a Dagstuhl workshop on programming environments that I attended in 1992. At this workshop, I met John Field of IBM Research, with whom I started collaborating on a new method for program slicing. This eventually led to John visiting me at CWI, and then me doing an internship at IBM. This internship was such a positive experience that I applied for a postdoc position at IBM after finishing my PhD. Then, after being a postdoc for a year, I received an offer for a permanent position, and I have been with IBM Research ever since. Currently, I’m the manager of the Program Analysis and Transformation group, which is a lot of fun.

Did you consider staying in academia?

I have been considering academia at various points during my career, but so far the balance of exploratory research and interactions with people who develop products at IBM has been the right mix for me. That said, I do enjoy teaching (I’ve taught a course at New York University) and working with students so who knows what might happen in the future if the right opportunity comes along.

How does working at IBM Research compare with life as a researcher in an academic environment?

Some aspects of working at IBM Research are very similar to academia, in the sense that we write papers, attend conferences, and do



many of the things that academics do. However, there are also many people and groups who are involved in active collaborations with product teams where there is a lot of emphasis on development and technology transfer. For me, this is a very good mix because I enjoy working on practical things and this has often led to the identification of research problems that are both interesting and relevant.

What is it like to work in such a large group as IBM Research?

Just to give you some numbers: IBM Research consists of approximately 3000 people worldwide. Of those 3000, about 1500 are located at the IBM T.J. Watson Research Center (near New York) where I am. One of the great things about IBM T.J. Watson is the fact that there are so many world-class people around to interact with. For example, in my area (programming languages and software engineering), one could expect to have perhaps three to five colleagues at the average university that one could have deep technical discussions with. At my lab, there are probably about thirty to fifty such colleagues to exchange ideas with. IBM Research is also an extremely diverse environment with people from all over the world, which makes the place very interesting.

If IBM benefit from the research you do, do they do anything to

protect their interests? For example, are you involved with patents?

Generally speaking, IBM employees have to obtain publication clearance for anything they invent, and at that point a discussion takes place whether the invention should be patented or published. In practice, I have seen very few cases where a publication is delayed because of a patent application. Personally, I’m an inventor on 10 US patents, with several applications still pending.

And is there the same spirit of openness in your research as there would be in academia?

I think IBM, unlike some of its competitors, is strongly committed to open-ness and open-source. We have many collaborations with academics, and several programs to support such collaborations, such as the Open Collaborative Research (OCR) program that was started last year. I’m the principal investigator for an OCR project on Software Quality, joint with the University of California at Berkeley and with Rutgers University, which involves active collaborations between researchers in my department, and professors and students at those universities that have resulted in joint papers at top conferences in the field.

*Tikitou de Jager
Jonathan Zvesper*



Name: Jacob Vosmaer
From: Amsterdam and other regions, the Netherlands
Online at: <http://staff.science.uva.nl/~jvosmaer>

What's your background?
 BSc Math, MSc Logic
And your research topic?
 Partially ordered algebras (Yde Venema)
Do you like questionnaires about yourself?
 No.

Name: Anouk Perquin
From: Amsterdam!
What's your background?
 Graduated in Computational Linguistics 8 years ago. Subject: Gapping and Optimality Theory.
And your research topic?
 Machine Translation (Remko Scha)
Are you a 'logician'?
 Well, I guess I'm a linguist... although they usually get fired when working on machine translation...

How many places have you lived in Amsterdam?
 Actually, being born and raised in Amsterdam, I moved out when I was 18, and have since then lived in only three different places. Yes, I've been lucky...
What are your thoughts on...
- pigeons: Rats with wings.
- riding on the back of someone else's bike: Can be very interesting. It's more fun to have someone on the back of your bike, though...
- the Axiom of Choice: Do you mind?
What's the best advice you ever got?
 Stop doing this!
Did you follow it?
 No

How do you procrastinate?
 In Dutch we call this SOGgen (Studie-ontwijkend gedrag vertonen), in which the S can be replaced by anything. I do it by filling out questionnaires...
Do you like questionnaires about yourself?
 Once I stop procrastinating, it's not so bad after all...



Name: Jonathan Zvesper
From: England
What's your background?
 I studied Philosophy and French in England

for three years (with an interlude of a year of Computer Science in the France),

then Logic: first for a year in France and for another year here in the Netherlands.

And your research topic?
 Epistemic things, mainly in games and game theory.
What are your thoughts on...
- pigeons: Crap.
- riding on the back of someone else's bike: Uncomfortable.

- the Axiom of Choice: Oddly enough, it's not my favourite.
What's the best advice you ever got?
 It should have been to listen more to people's advice.
How do you procrastinate?
 Constantly, and pretty well.
Do you like questionnaires about yourself?
 Not ones that are going to be published.

Name: Rianne Kaptein
From: Heerhugowaard, Noord-Holland
What's your background?
 I studied Knowledge Engineering in Maastricht, and my specialization was Artificial Intelligence.

And your research topic?
 My research topic is Information Retrieval, my supervisor is Jaap Kamp, the research project is EffoRT (Effective Focused Retrieval Techniques).
How many places have you lived in Amsterdam?
 I've been living in Amsterdam for one and a half year now, and I lived in four places already and I am moving again this month. The best place so far was an apartment in the Anjeliersstraat, in the middle of the Jordaan.

What are your thoughts on...
- pigeons: Stupid animals.
- riding on the back of someone else's bike: Good, but a little bit uncomfortable for long distances.
- the Axiom of Choice? None.
Do you like questionnaires about yourself?
 I'm not sure.



Name: Dora Achourioti
From: Athens, Greece
What's your background?
 Bachelor's in Philosophy & History of Science (University of

Athens), Masters in Argumentation and Logic (University of Amsterdam).
And your research topic?
 "The Origins of Truth" (W. Hinzen, M. van Lambalgen as promotor)
Are you a 'logician'?
 Some days I feel like a logiphosopher, others days I feel more like a philoogician.

How many places have you lived in Amsterdam?

I've lived in the north, the east and now in the west. West is best.
What's the best advice you ever got?
 "Whenever a past event has present relevance, use the present perfect."
Did you follow it?
 I have always striven to do so.
How do you procrastinate?
 By not doing, I think.
Do you like questionnaires about yourself?
 No.



Name: Amelie Gheerbrant
From: Paris, France, but I spent 9 months in Warsaw a couple of years ago, and sometimes I like to

speak Polish in the shower.

What's your background?
 Bachelor in Philosophy and Bachelor in Logic; Master Degree in Cognitive Sciences (Game Theoretical Semantics as a Framework for Natural Language Semantics); Master Degree in Philosophy (Rigid designators: the Hintikka vs. Kripke debate); Master Degree in Artificial Intelligence (A formalisation of Medical Guidelines using Reiter's Default Logic)

And your research topic?
 I currently work on some axiomatizations of finite trees with Balder ten Cate (the main tool is Ehrenfeucht-Fraïssé games).
Are you a 'logician'?
 I am a "möchte gern" logician.... I do like logic a great deal, but I often feel like I should have been more serious in high school and began math earlier.

Where do you draw inspiration from?
 Women in Science.
What's the best advice you ever got?
 "This is normal that you don't understand. You are a student, you should to learn." Marcin Mostowski (sentence to be said with the Polish accent, otherwise it loses a part of its efficiency).

How do you procrastinate?
 Wikipedia says that procrastination "results in stress, a sense of guilt, the loss of productivity, the creation of crisis, and the chagrin of others for not fulfilling one's responsibilities or commitments". Yes, I do recognize myself completely in that description.

What is your favourite... - formula?
 Actually I rather have a favorite semantical clause, the box clause of the Carnap's first order modal logic.

- game?

"Le jeu de l'amour et du hazard". No, that's not completely true. I have stronger feelings for Ehrenfeucht-Fraïssé games, but still Marivaux shouldn't be considered as a minor author.

- holiday destination?

Poland.

Do you like questionnaires about yourself?

Yes, that's a good excuse if one doesn't feel like working right now (procrastination...).



Name: Nina Gierasimczuk
From: Zielona Góra, Poland
Online at: <http://www.logika.uw.edu.pl/gierasimczuk.html>

What's your background?

Interdepartmental Studies in Humanities at Warsaw University, Master of Philosophy at the end.

And your research topic?

Learning the semantics of natural language constructions (Marcin Mostowski); Empirical research concerning the meaning and difficulty of some natural language constructions, learning and branching time (Dick de Jongh).

Are you a 'logician'? What are you when you're on holiday?

Yes, I think I am a 'logician'. On holiday I am a 'lazy logician'.

Where do you draw inspiration from?

Successful people that I know.

What exciting places have you lived before?

In childhood: at Lenin Square and Felix Dzerzhinsky Street in succession, pretty exciting isn't it?

What are your thoughts on...

- pigeons:

Not particularly nice: every day I come very close to running one of them over on my way to the office.... What do they have their wings for? On the other hand, I heard that they are able to discriminate between cubist and impressionist paintings and that they pass the mirror test. So they *must* be really intelligent. And all that math-ornithology: pigeonhole principle, dovetail computations.... Apparently I think about them a lot.

- riding on the back of someone else's bike:

Sometimes hurts.

- the Axiom of Choice:

Ditto.

What's the best advice you ever got?

Did you follow it?

Preparing a sponge cake always stir dough in only one direction. And yes, I always do.

How do you procrastinate?

Filling in questionnaires about myself.



Name: Jarmo Kontinen
From: Helsinki, Finland
What's your background? Master of science, major in mathematics, other subjects:

computer science, theoretical philosophy and theoretical physics.

And your research topic?

Finite model theory (Prof. Jouko Väänänen).

In short:

I have lived in Amsterdam now for three months. I live near Westerpark in a small single. I enjoy biking, but not so much riding on the back of someone else's bike. I love playing all kinds of board and card games, especially Texas Hold'em.



Name: Marc Staudacher
From: Zurich, Switzerland
What's your background? M.A. in philosophy

(major: philosophy, minors: linguistics and computer science).

And your research topic?

To put it in broad and vague terms: pragmatics and game theory.

Are you a 'logician'?

I would only describe me as a logician if the audience consisted of French philosophers (of the 'Derrida' kind). Otherwise I am either a philosopher interested in linguistics or a linguist interested in philosophy.

Where do you draw inspiration from?

Some intellectual heroes: Rudolf Carnap and David Lewis

What exciting places have you lived before you came to Amsterdam?

Bielefeld, which counts as being a 'large town'. Though numerous people in Germany not only doubt whether it is an exciting place but also whether it exists at all. Having the lowest crime rates among German large towns and a highest elevation of 60 meters should indicate to you its thrillingness.

Do you like questionnaires about yourself?

Yeah, they always make me feel important.

Name: Gaelle Fontaine

From: Habay, a very little town in Belgium.

Online at:

<http://staff.science.uva.nl/~gfontain>

What's your background?

I did a master in mathematics in Belgium and a master in logic here.

And your research topic?

The modal mu-calculus (Yde Venema).

Are you a 'logician'?

"Não sou nada. Nunca serei nada. Não posso querer ser nada. À parte isso, tenho em mim todos os sonhos do mundo." (I am nothing. I will always be nothing. I cannot wish to be anything. Apart from that, I hold inside myself all the dreams of the world.) - Fernando Pessoa. Ok, this is an easy answer but that's the really first thing which comes to my mind.

Where do you draw inspiration from?

Martin Eden, Romain Gary, Antigone, Emma Bovary, Giovanni Drogo, Uluru, Remedios, Cyrano, Schiele. They are not really my heroes but there is something about them.



Name: Martin Mose Bentzen
From: Copenhagen, Denmark.
Online at: <http://akira.ruc.dk/~mamobe/>

What's your background?

BA and MA in The History of Ideas from University of Aarhus.

And your research topic?

Deontic Logic, with Frank Veltman (ILLC) and Stig Andur Pedersen (Roskilde University)

Where do you draw inspiration from?

In my work I like the interface between philosophy and computer science. In my private life, sad to say, my interests have not developed much since I was very young: I like music, comics and movies.

What exciting places have you lived before you came to Amsterdam?

Right now I am living in Sorø, Denmark. I have lived in Oregon, Amsterdam, Tübingen and various places in Denmark.

How do you procrastinate?

I play the guitar and write stories.

Name: Fernando Raymundo Velázquez-Quesada

From: I was born in México City ("Distrito Federal", as we know it), in México.

What's your background?

I have Bachelor degree and a Master degree, both in computer science.

And your research topic?

The research topic is not very precise yet, but it involves logic and the dynamics of information. My supervisors are Johan van Benthem and Eric Pacuit.

Are you a 'logician'?

Some titles (like 'logician', or 'computer scientist' in my case) seem to be too definite and sometimes too constrained. I prefer to say that I'm a student or, even better, that I'm just me, which in one hand is not very informative, but on the other hand is very precise.

What is your favourite...

- formula?

$e = mc^2$ (seems a^2 and b^2 didn't work)

- game?

I prefer sports: I like football.

- holiday destination?

A year ago, Puerto Escondido (a beach in the Mexican pacific). Now, Puerto Escondido, Mexico city and Puebla.

Do you like questionnaires about yourself?

Sometimes, mostly when you find interesting questions.



Name: Lauri Keskinen

From: Finland

What's your background?

Before I moved to Amsterdam, I did my Master of Science

degree in mathematics at the University of Helsinki.

And your research topic?

The topic of my research is second order logic. I am interested in mathematical logic, especially set theory and model theory. My supervisor is Jouko Väänänen.

In short:

As hobbies I play some games. I am quite a good chess player. I am also trying to learn Go and bridge, but I am not (yet) good in these games.



Name: Cédric

Dégremont

From: Somewhere near Paris and then Lille, France

What's your background?

Master of Logic - Department of Philosophy, Lille

And your research topic?

Dynamic belief revision in foundations of games.

Where do you draw inspiration from?

Real everyday life and movies.

What exciting places have you lived before you came to Amsterdam?

Paris, Reims, Lille

What are your thoughts on pigeons?

Attractors of evolution.

What is your favourite...

- formula?

Barcan's.

- game?

Prisoners' dilemma.



Photographs: Yanjing Wang

Karin Gigengack, who joined the ILLC as an administrator this year, describes her background and position:

In Amsterdam, where I am from, I have studied at the Academy of Arts, the Gerrit Rietveld Academie. Nowadays I work together with my husband, we have our studio in the top of an old cold-store at the harbour of IJmuiden.



Since February this year I work 20 hours a week at the ILLC office, where I am in the very good company of Marjan and Tanja and also Ingrid just around the corner. When Ulle Endriss during the application conversation described "the behaviour of an ILLC scientist" (ask Ulle for more details if you're interested in the subject) I was delighted: well, they just looked like artists then! To me the academic environment I now work in (and searched for also) has many things in common with the environment of the arts: curiosity, open-mindedness, creativity, dialogue. And the ILLC itself in particular: friendliness, carefulness, a waiting courtesy.



We stand for the ILLC

Photographer: Yanjing Wang