ILLC Magazine

14

December 2014

Branden Fitelson

The Joys (and Virtues) of Puzzle Solving

I have a confession to make. I love puzzles. Always have. My passion for puzzles is one of the reasons I became a philosopher. Intellectual puzzles – especially the really hard ones, which are often called 'paradoxes' – have always piqued my interest.

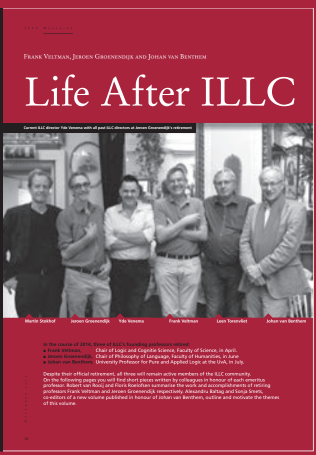
This issue includes:

The Joys (and Virtues) of Puzzle Solving, a Guest Column by Branden Fitelson

Life After ILLC:

Frank Veltman, Jeroen Groenendijk and Johan van Benthem retire

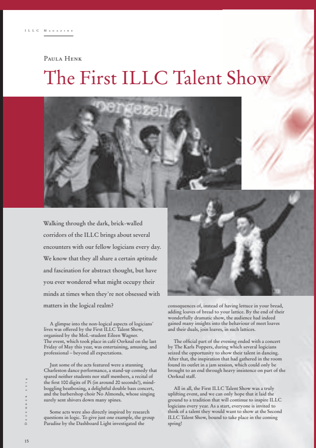
First ILLC Talent Show



Frank Veltman, Jeroen Groenendijk and Johan van Benthem

Life After ILLC

Martin Stokhof, Jeroen Groenendijk, Yde Venema, Frank Veltman, Leen Torenvliet, Johan van Benthem



Paula Henk

The First ILLC Talent Show

Walking through the dark, brick-walled corridors of the ILLC brings about several encounters with our fellow logicians every day. We know that they all share a certain aptitude and fascination for abstract thought, but have you ever wondered what might occupy their minds at times when they're not obsessed with matters in the logical realm?

Institute for Logic, Language and Computation

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Foreword

Dear friends of the ILLC,

We are pleased to present the latest issue of the ILLC Magazine. Much of the issue follows the same format as those of the past: to provide information to others about the contributions the ILLC has made, along with a guest column from a friend of the institute. Our articles span the interests of all of the institute's research programmes.

Firstly this year's guest column is given by Branden Fitelson, who presents an intriguing case for viewing the investigation of paradoxes as quintessential philosophical activity. Benno van den Berg provides a welcome account of his role in the early development of homotopy type theory. Ivan Titov motivates his work on learning models of semantic inference in computational linguistics. Paula Roncaglia-Denissen introduces part of the Music Cognition Group's work on identifying unique and shared features of language and music. Along with the interviews of many of the past year's new PhDs and postdocs, there are as usual two more lengthy interviews with past students of the ILLC: in particular Yanjing Wang who now teaches at Peking University, and Christian Geist who now is pursuing his PhD at TUM in Munich.

Along with the usual research-oriented columns and interviews, there is a wider range of material this year.For instance, Jordy Jouby has an illuminating treatment of how someone in the early stages of their academic career may deal with stress through meditation. Andreas van Cranenburgh tells us about a curious finding of how problems of self-reference that normally are considered in the domain of logic may also be a problem in the domain of legal rhetoric. There is also a write-up of the first ever Master of Logic Talent Show, from co-organiser Paula Henk.

Lastly, we have a few short pieces in honour of some of the founders of the ILLC who (only officially) retired this past year. Floris Roelofsen and Robert van Rooij summarise the work and accomplishments of retiring professors Jeroen Groenendijk and Frank Veltman respectively. While Alexandru Baltag and Sonja Smets, co-editors of a new volume in honor of Johan van Benthem, outline and motivate the themes of this volume.

We wish to thank all the contributors for making this issue happen.

Sincerely,
The Editors

Announcements

Projects awarded, autumn 2013 – November 2014

CLARIN-NL @PhilosTEI (2013)
Arianna Betti received a grant of 80 K euro from CLARIN-NL for her project TICCLing Philosophy: a TEI corpus-building workflow towards a new computational methodology for philosophy (acronym @PhilosTEI).

ERC Proof of Concept grant for Arianna Betti (2013)
Arianna Betti received a grant of 150 K from the EU for her PoC project GlamMap. A postdoc and a programmer were funded for one year by this project, which ran until September 2014.

ERC Consolidator Grant: Quantum Computing (2013)
Ronald de Wolf received an ERC Consolidator Grant of approximately 1.5 million euros for a research project on algorithmic and communication issues in quantum computing. The project will be housed at the CWI, with the PhD students employed by it graduating at the UvA.

KNAW Visiting Professors Programme (2014)
Martin Stokhof applied for and received a KNAW Visiting Professor Grant for Professor Anna Szabolsci, who is currently visiting the ILLC from September – December 2014.

EU Horizon 2020 project for Khalil Sima'an (2014)
Khalil Sima'an is one of the partners in the EU Horizon 2020 grant which was awarded to an international consortium for their project 'Cracking the Language Barrier'. For the ILLC, this project will finance a postdoc for three years.

CLARIAH Roadmap project, Rens Bod (2014)
Following the seed money received for preparing a full-fledged proposal for the CLARIAH Roadmap, project, Rens Bod and co-applicants from KNAW, UU, RUG, RU, VU, UL, heard this year that the CLARIAH Roadmap project has been approved and granted by NWO. This project has been granted 12,6 M€ and will create a digital and computational infrastructure for the humanities.

NWO/OCW Gravitation Programme on Networks (2014)
Harry Buhrman is a member of the consortium of 11 researchers who successfully applied for a multi-million euro 10-year research programme into the mathematical and algorithmic aspects of large-scale networks, ranging from social and communication networks to transportation and energy networks.

Spanish Ministry of Economics and Competitivity funds project.
Robert van Rooi, together with Pablo Cobreros, is co-applicant of a project funded by the Spanish government, Logicas no-transitivas. Una nueva aproximacion a las paradojas. The projects provides funding for travel costs and for organising workships within the context of this collaboration.

ICSU grant for IUHPS-DLMPS / Benedikt Löwe (2014)
The International Council for Science has awarded the IUHPS/DLMPS, of which Benedikt Löwe is secretary, a grant of 29 K euro for the project *Cultures of Mathematical Research Training*. This project aims to mobilise the energies of a currently very active research area (the study of Practice and Cultures of Mathematics) to provide the theoretical and empirical resources for designing improvements to the training of the next generations of mathematical researchers and the improvement of research education in developing countries.

NWO Digging into Data grant for Rens Bod (2014)
Rens Bod was awarded a grant in the NWO Digging into Data round for the project project Legal Structures, a joint project together with dr A. Badawa at the Washington University School of Law. The project will use data-oriented parsing techniques to analyse legal codes from Hammurabi (1800 BCE) till the present day. The project will finance a postdoc at ILLC for 18 months.

KNAW China Exchange Programme: Logical Dynamics of Information Exchange
Alexandru Baltag, together with Fenrong Liu at Tsinghua University, obtained a grant from the KNAW China Exchange Programme for a project on the logical dynamics of information exchange in social networks. The project will facilitate a series of mutual research visits between Tsinghua and the ILLC for a period of three years.

ABC Talent Grant for Ashley Burgoyne (2014)
Ashley Burgoyne was awarded an Amsterdam Brain & Cognition grant for his project 'Hooked! and item-response models'. This grant will cover a year's appointment as postdoc, including travel and research expenses. The project seeks to create a version of the successful Hooked! experiment on musical memory that adapts in real time to each player. Such an experiment has potential to develop into a therapeutic tool for people with dementia or other memory disorders, for whom the right selection of music can sometimes reactive memory function.

Joint project Konstanz-Amsterdam 'Kulturen der mathematischen Forschung' (2014)
As part of the Cluster of Excellence *Kulturelle Grundlagen von Integration*, Thomas Müller (Universität Konstanz) and Benedikt Löwe received a grant for a project *Kulturen der mathematischen Forschung: Identitätspraktiken im Hinblick auf nationale Mathematikkulturen und Beweisstile* which will fund a PhD student in philosophy who will be affiliated to the ILLC as a guest PhD student (the main affiliation will be Konstanz).

Prizes and awards

Prof. Johan van Benthem was named Knight in the Order of the Netherlands Lion upon his retirement as University Professor of Pure and Applied Logic at the University of Amsterdam (UvA) on Friday, 26 September.
Van Benthem received the royal honour in recognition of his myriad research accomplishments and the leading and inspirational role he has played in the academic community.

MSc Logic graduate Ciyang Qing received the Unilever Research Prize 2014.
This award, which comes with an associated sum of 2,500 euros, recognises significant research carried out by students in the natural and social sciences at Dutch universities.
Ciyang, who is now a PhD student at Stanford University, worked on a number of research projects during his time as an MSc Logic student at the ILLC, leading to several publications in a diverse range of fields, including cognitive science, formal semantics, computational linguistics and multiagent systems.

The ILLC will be the editorial home of a new journal: 'History of Humanities' which will be published by The University of Chicago Press.
This journal takes as its subject the evolution of a wide variety of disciplines including archaeology, art history, historiography, linguistics, literary studies, logic, musicology, philology, and media studies, tracing these fields from their earliest developments, through their formalization into university disciplines, and to the modern day. By exploring these subjects across time and civilizations – from Europe to China – and along with their epistemic implications, the journal takes a critical look at the concept of humanities itself.
Editors and associate editors from the ILLC include Rens Bod, Fenrong Liu and Jaap Maat.
For more information, see www.press.uchicago.edu/pressReleases/2014/October/1410HOH.html

Appointed as professor

- Franz Berto, professor, FGw, *LoLa*, 1 January 2014, Metaphysics and History of Philosophy
- Khalil Sima'an, FNWI, *LaCo*, 16 June 2014, Chair: Computational Linguistics
- Fenrong Liu, FNWI, *LoCo*, 1 September 2014, Amsterdam-China Logic Chair, by special appointment, Amsterdam Universiteits Fund (AUF)

Other appointments

- Daniel Wiechmann, UD/assistant professor, FGw, *LoLa*, 1 August 2013, ILLC-member 2014
- Jinhua Du, postdoc, FNWI, *LaCo*, 1 January 2014
- Amir Kamran, postdoc, FNWI, *LaCo*, 1 January 2014
- Nick Bezhanishvili, UD/assistant professor, FNWI, LoCo, 1 January 2014
- Luca Incurvati, UD/assistant professor, FGw, *LoLa*, 1 February 2014
- Makiko Sadakata, UD/assistant professor, FGw *LaCo*, 1 februari 2014
- Jiyin He, postdoc, FGw, *LaCo* 1 February 2014
- Axel Olieman, programmer, FGw, *LaCo*, 1 February 2014
- Dieuwke Hupkes, research assistant, FGw, *LaCo*, 1 February 2014
- Harald Bastiaanse, postdoc, FNWI, *LaCo*, 1 maart 2014
- Pam Rossel, research assistant, FGw, *LoLa*, 1 April 2014
- Bart Karstens, postdoc, FGw, *LaCo*, 1 June 2014
- Soroush Rafiee Rad, postdoc, FNWI, *LoLa*, 1 June 2014
- Gina Beekelaar, secretary, FNWI, 15 June 2014
- Sumit Sourabh, PhD (final year), FNWI, *LoCo*, 1 July 2014
- Anna Szabolski, Visiting professor KNAW, FGW, *LoLa*, 1 September 2014
- Carola Werner, research assistant, FGw, *LaCo*, 1 October 2014
- Hartnut Fitz, postdoc, FGw, *LaCo*, 1 October 2014
- Christos Louizos, programmer, FNWI, *LaCo*, 15 November 2014

New PhD candidates

- Ehsan Khoddammohammadi LaCo (Sima'an), 1 January 2014
- Hugo Nobrega, LoCo (Löwe), 15 January 2014
- Julia Ilin, LoCo (Bezhanishvili), 1 February 2014
- Jelle Bruineberg, LoLa (Stokhof), 1 February 2014
- Elbert Booij, LoLa (van Rooij), 1 March 2014
- Julian Schlöder, LoLa (van Rooij), 1 April 2014
- Thomas Brochhagen, LoLa (van Rooij), 1 April 2014
- Mostafa Dehghani, LaCo (Kamps), 1 August 2014
- Aaron Li-Feng Han, LaCo (Sima'an), 1 September 2014
- Malvin Gattinger, LoCo (van Eijck), 1 September 2014
- Chenwei Shi, LoLa (Smets), 1 September 2014
- Dai Yibin, LoLa (Stokhof), 1 September 2014, guest for one year
- Chanjuan Liu, LoCo (van Benthem), 1 September 2014, guest for one year

Personnel departed

- Virginie Fiutek, 15 december 2013
- Machiel Keestra, FGw, 1 January 2014
- Bruno Loff, CWI, 1 January 2014
- Jinhua Du, FNWI, 1 March 2014
- Pieter Pauwels, FGw, 15 March 2014
- Frank Veltman, FNWI, 1 April 2014
- Ellen Gaus, FWNI, 1 April 2014
- Maria Panteli, FGw, 22 April 2014
- Alesia Zuccala, FGw, 1 June 2014
- Johan van Benthem, FNWI, 12 June 2014
- Hadil Karawani, FGw, 17 June 2014
- Ben Rodenhäuser, FNWI, 19 June 2014
- Jeroen Groenendijk, FGw, 1 July 2014
- Michael Franke, FGw, 1 July 2014
- Jiyin He, FGw, 1 July 2014
- Erika Kuijpers, FGw, 1 September 2014
- Olivier Cailloux, FNWI, 1 September 2014
- Merwin Olthoff, FGw, 1 September 2014
- Chris Dekker, FGw, 1 September 2014
- Dirk Gerrits, FGw, 1 September 2014
- Henrique Meretti Camargo, 1 November 2014
- Bart Mellebeek, FNWI, 1 November 2014
- Krzysztof Apt, FNWI & CWI, 1 December 2014

Excellent Accreditation Result for the Master of Logic

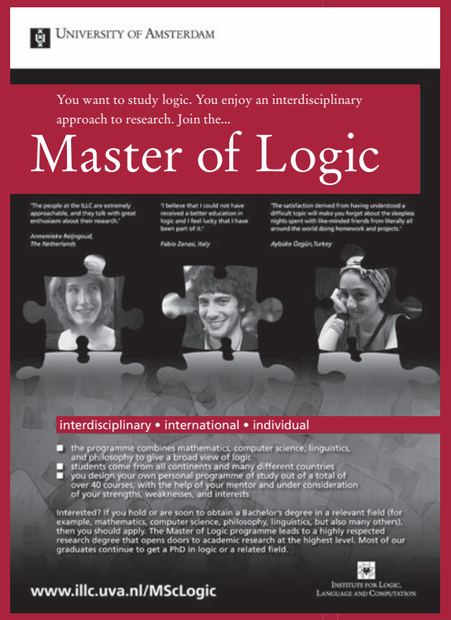
Ulle Endriss

This summer the Master of Logic (MoL) was formally accredited as an excellent programme for the period of 2014-2020 by the Accreditation Organisation of the Netherlands and Flanders (NVAO). It is the first Master's programme at the University of Amsterdam to receive this rare distinction.

Accreditation is up for renewal every six years. During the first round of accreditation exercises of Master's programmes in the Netherlands a little over six years ago, the MoL already achieved one of the best results of all programmes in all disciplines across the country, but the possibility to be officially labelled as excellent only exists since 2011.

The process of accreditation takes well over 18 months. The first step was to produce a report, a so-called *Critical Reflection*, documenting the programme in detail. In June 2013 we then were visited by an international assessment committee consisting of Prof. Henriëtte de Swart (Utrecht), Prof. Jeff Horty (Maryland), and Prof. Colin Stirling (Edinburgh), Ayla Kangur (a Master's student at Groningen), and an accreditation professional. The committee interviewed teachers, students, alumni, and managers for a full day and summarised their findings in a report. On the basis of that report the University of Amsterdam was then able to formally request re-accreditation from the NVAO, which was eventually granted this summer.

To quote from their report, the committee found the MoL to be "one of the best, if not the best programme on logic in the world". They specifically emphasised the strong research orientation of the MoL, including the excellent research done by students, the large number of student publications, and the fact that the majority of graduates obtain PhD positions. The committee was also very complimentary about other aspects of the programme, such as the personalised admission procedure and the mentor system.



Going through the evaluation process takes up hundreds of hours of work. Input is needed not only from the programme management and the evaluation committee, but also from everyone teaching on the programme, from current students and alumni, and from administrative staff at all levels of the university organisation.

Was it worth it? Probably yes, also beyond the specific distinction achieved. It was useful to take stock of what we have and to write it all down, for ourselves, for interested students, for managers who take financial decisions affecting the programme, and for others who run or want to set up similar programmes elsewhere in the world. It got us talking about how we are doing things and why we do them that way a little more than usual, which can only be a good thing. It also had some very concrete outcomes. For example, it pushed us to make our criteria for the assessment of Master's theses more transparent for students, it incentivised us to commission an alumni survey, and it prompted us to provide more information on career options on the MoL website.

The alumni survey mentioned and the *Critical Reflection* documenting the programme are available from the MoL website at www.illc.uva.nl/MScLogic/.

Inspiring Research: Benno van den Berg

Pioneers and Heroes

When you are a student, research areas simply exist and are obviously respectable. For otherwise there would be no courses which bear that area's name, widely esteemed people who have decided to work in it, and eminent journals devoted to it. You may realize when reading about the history of the subject that there must have been a stage when this area was just an off-beat idea, but clearly it is not in anyone's interest to think too much about the moment when the area's respectability was still in doubt; the pioneers were heroes, period.

So it is quite an experience to see all the stages in the birth of a new area: how it moves from the moment that, over their beers, researchers realize to their surprise that they have independently been thinking about similar ideas to the point where they receive 7.5 million dollar grants. At which point you realize that you too have been writing papers in an area which did not yet exist and did not yet have a name. That was basically my experience with homotopy type theory.

Type theory goes back to Bertrand Russell, but in the hands of Per Martin-Löf it becomes a formal expression of his constructive philosophy of mathematics. At the same time it can be seen as a functional programming language, which also lies at the basis of proof assistants, software for rigorously checking mathematical proofs, like Agda and Coq. However, Per Martin-Löf's treatment of identity was peculiar: understandable from a computational and philosophical standpoint, but hard to get one's head around. It is the virtue of homotopy type theory that, using ideas from other branches of mathematics like homotopy theory and higher-dimensional category theory, it can tell a compelling story that make Martin-Löf's strange rules almost look natural. In fact, by making this connection homotopy type theory suggests all kinds of new ideas for type theory, which are now actively pursued by many researchers. The most ambitious ideas are due to Vladimir Voevodsky, who has suggested that they should lead to a new 'univalent' foundation of mathematics.

So how did I manage to contribute to this area in the days when it was still nameless? In 2005, when I was a third year PhD student in Utrecht supervised by Ieke Moerdijk, I was making a three-month visit to Sweden. The idea was that I should learn some type theory and that Sweden was the best place to do this; I visited Thierry Coquand in Gothenburg and met Erik Palmgren in Uppsala and Per Martin-Löf in Stockholm. During the time I spent in Uppsala, I started thinking about Per Martin-Löf's strange rules for the identity types. It was clear that somewhere in these rules was lurking some higher-dimensional categorical structure; in fact, this much had been conjectured by Hofmann and Streicher already. I set myself the task to make this precise. I guess for me it was a natural question to think about, because when I was doing my PhD in Utrecht, I was surrounded by people doing higher-dimensional category theory. The difficulty was that there was more than one definition of a higher-dimensional category; in fact, there were probably over twenty such and new definitions were proposed almost every month. This was clearly an unsatisfactory state of affairs, but it was good news for me: it meant I could choose that definition which made proving the theorem easiest. And I was lucky: the definition which I needed was explained at great length, very patiently and most pedagogically in a book by Tom Leinster, called *Higher Categories, Higher Operands*. For a number of weeks I lived with that book until I finally managed to prove the theorem I wanted: yes, the identity types give every type the structure of a higher-dimensional category in the sense of Leinster. I composed some notes in the neat hand-writing I had those days, put them in my suitcase and returned to Utrecht.

I still remember the first meeting I had with Ieke after my return to the Netherlands. I suppose the main purpose of that meeting was to check whether I was a responsible young scientist who had made sensible use of his first extended visit abroad. Naturally, I first showed him my theorem on the higher-dimensional structure of the identity types. If I was expecting some praise for connecting logic and topology like this, I was to be sorely disappointed. He just stared impassively and asked: "Have you also done something else?" Fortunately I had.

Clearly, after this response the result did not make it to the thesis and in the final year of my PhD I concentrated on other things. It was only when I started my postdoc in Darmstadt that I looked at my notes again; in fact, Erik Palmgren had noticed that there was something in the air and had the vision to organize the first workshop on was to be called homotopy type theory in Uppsala in 2006. It was at this meeting that I first talked about my proof. This may also been the occasion where I first heard the rumor of a Russian Fields medallist called Voevodsky who had become interested in type theory: he had been invited, but could not come. However, Richard Garner was there and he encouraged me to turn my notes into a genuine paper. In fact, we started working on it, extended the results and developed a neat categorical framework for our proofs. The result is perhaps my prettiest and, according to Google scholar, easily my most cited paper (it is called '*Types are weak omega-groupoids*').

So if there is any paper I wrote that could possibly be called 'pioneering' it must be this one; whether there will be journals devoted to homotopy type theory and researchers who devote their entire academic career to it, only the future can tell. But of one thing I am certain, as I was there: the pioneers were heroes, period.

"It is the virtue of homotopy type theory that... it can tell a compelling story that makes Martin-Löf's strange rules almost look natural."

Guest Column

Branden Fitelson

The Joys (and Virtues) of Puzzle Solving

I have a confession to make. I love puzzles. Always have. My passion for puzzles is one of the reasons I became a philosopher. Intellectual puzzles – especially the really hard ones, which are often called 'paradoxes' – have always piqued my interest.

I can remember quite clearly the paradox that initially drew me into the world of philosophy. It occurs toward the end of Plato's early dialogue 'Hippias Minor.' Socrates asks Hippias (I'm paraphrasing here), 'Who is the better runner: the one who can lose the race voluntarily, or the one who can only lose the race involuntarily?' Hippias gives the intuitive answer: "The one who can lose the race voluntarily." Socrates gives several other similar examples. From these examples, Socrates forces Hippias to infer the natural generalization: "The man who can do evil voluntarily is better than the man who can only do evil involuntarily." And, with this (inevitable) conclusion, my mind was blown. From seemingly plausible and benign premises, we had been led to an abhorrent conclusion. I spent the next several years thinking about this 'paradox of akrasia.' It still makes me somewhat uncomfortable to this day.

As Sainsbury says in the introduction to his entertaining (and highly recommended) book 'Paradoxes,' a paradox involves:

...an apparently unacceptable conclusion derived by apparently acceptable reasoning from apparently acceptable premises. Appearances have to deceive, since the acceptable cannot lead by acceptable steps to the unacceptable. So, generally, we have a choice: either the conclusion is not really unacceptable, or else the starting point, or the reasoning, has some non-obvious flaw.

Determining whether the conclusion of a paradox is (really) unacceptable or whether its starting point and/or its reasoning has some (non-obvious) flaw is what philosophical puzzle solving is all about. My research in philosophy has frequently been marked by this sort of activity. I have grappled with paradoxes of various sorts, ranging from Socrates's paradox of akrasia, to the paradox of confirmation, to the sorites, to the (infamous) liar. Of course, I am not the only one. Philosophers have struggled with these puzzles for eons. (For a nice taste of this frustrating – but endlessly fun – historical drama, I enthusiastically recommend Sorensen's book 'A Brief History of the Paradox.')

Alas, not all philosophers are as keen on puzzle solving as I am. Indeed, some philosophers seem to look down their noses at such activities. I recall many heated arguments with other philosophers about the status of philosophical puzzle solving. I've always wanted to teach an introductory philosophy course using only (or nearly only) paradoxes as motivating examples. This idea is often met with disdain from professional philosophers. They'll say that such a course would be 'shallow' or 'superficial' – that it would somehow 'trivialize' the subject and its history. I think this response misses the point. How many of us were initially gripped (as I was) by some intellectual puzzle that could reasonably called a 'paradox'? I bet many of us were (whether we like to admit it or not). And, I know from my own teaching experience that nothing is more effective – as a pedagogical motivator – than a well-chosen puzzle. I still haven't taught such a course. But, I remain convinced that it would be a blast (for both myself and the students). As such, it remains on my 'bucket list.'

The characterization of philosophical puzzle solving that I quoted above emphasizes the importance of logic. After all, paradoxes are (fundamentally) arguments. They are arguments which seem sound, but which also seem to have false conclusions. As logicians, we know such seemings must be false. But, determining exactly why they are false can be quite challenging and non-trivial. Indeed, getting to the bottom of a paradox often requires deep investigation into the foundations of the concepts it involves. To my mind, this is anything but 'shallow' or 'superficial.' It is quintessential philosophical activity.

Research highlights: Paula Roncaglia-Denissen

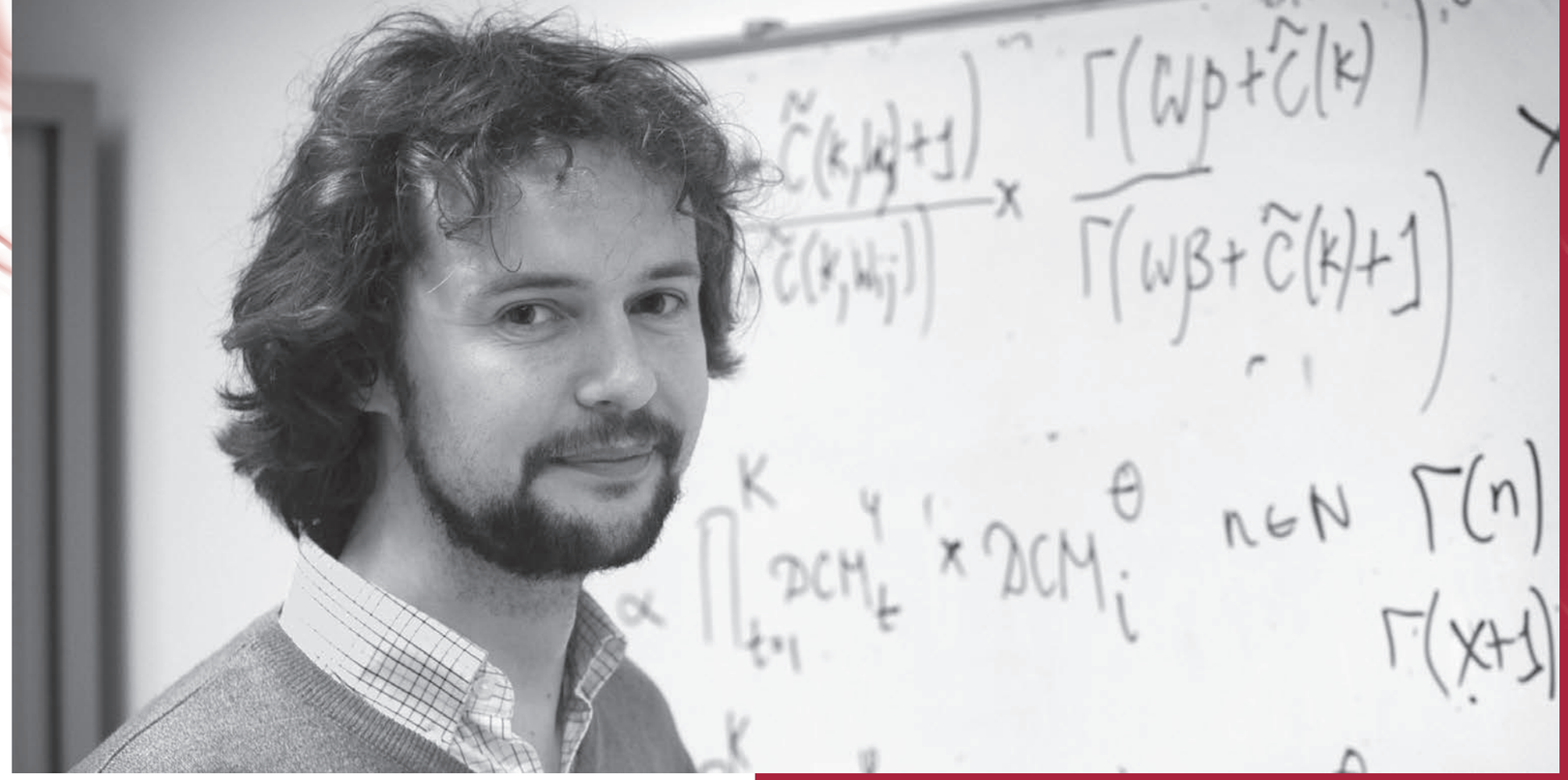
What is Shared and What is Unique in Language and Music

Language and music are believed to share many features, such as a hierarchical organization of their elements, and rhythmic and melodic features. As part of a larger and interdisciplinary NWO project entitled 'Knowledge and Culture' our research investigates what language and music share and what is unique to each one of them.

As a starting point for our research, we focus on what language and music might share. We chose, therefore, to investigate language and music syntax. Much accepted in the field is the theory proposed by Patel that language and music have distinct representations of their elements, such as chords in music and words in language. However the structural integration of these elements would result from the use of a common parser, a shared computational mechanism responsible for syntactic integration.

Despite plenty of supporting evidence reported by previous research, only recently evidence challenging this hypothesis has been provided. According to these researchers, it would be attentional resources, rather than a common parser, responsible for the increase in difficulty during simultaneous language and music syntactic processing. Thus, in our research, we would like to further address this issue, in order to understand if there is a common syntactic parser for language and music processing or if what is shared between these domains is a more general underlying cognitive mechanism, namely shared attentional resources.

Afterwards, we will focus on what is believed to be particular to language and music, for instance, their elements' cognitive representation. Perhaps, when comparable proficiency in these domains is achieved, their elements' cognitive representation might share some overlap.



Research highlights: Ivan Titov

Inducing Semantics from Text

What we are observing now in computational linguistics (CL) is that the term semantics is becoming increasingly popular. It is enough to have a quick glimpse into the titles of accepted papers at our top conferences (titles of 38 papers at ACL-2014 explicitly mention semantics and meaning, and only 8 mentioned syntax), peek into crowded rooms at any semantics session or talk to an overworked chair of the semantics area in any major CL conference.

What is the reason for this popularity of semantics in my increasingly empirical community, members of which, just a few years ago, would often look the other way as soon as semantics or logic was coming up in a conversation? Have we found some radically new approach to predicting semantics of a sentence or learn inference models, so that everyone is trying to be involved and pick a low-hanging fruit? I do not think so. What is happening is different: we, as a CL community, are starting to realize that, without some form of abstraction, without some form of inference, we cannot make a significant progress in any serious application we are interested in: b it machine translation, question answering or text summarization. We achieved quite a lot in the recent two decades with statistical methods: for example, having been well over a year in the Netherlands, I am still finding the Dutch-English version of Google Translate immensely useful. However, we seem to be stuck in a local optimum. And semantics (or what we call 'semantics') is what, we hope, will help us to escape this local maximum.

In the CL context, perhaps the most popular semantic paradigm is distributional semantics [1]. In distributional semantics, 'semantic relatedness' of terms is decided on the basis of contexts. For example, if we consider synonyms 'car' and 'auto' and collect all the contexts (words or phrases) in which they occur in some large text collection, we will see that the two sets are somewhat similar. This idea can be exploited in various ways and to inform various kinds of models. For example, in our recent work [2], we were looking into inducing models capturing paraphrases of events and relations (*semantic frames*): we can learn that '*X blamed Z on Y*', '*X held Y responsible for Z*', '*X laid the blame for Z on Y*' or '*X blamed Y for Z*' all encode the same situation.

However, no matter what your model is, you are going to face the same problem: these distributions over contexts in texts are only partial imprints of the underlying meaning. For example, antonyms often appear in even more similar contexts than synonyms. Synonyms may also not be substitutable (e.g., the word '*auto*' is unlikely to be used in a formal context in English). Consequently, semantic relatedness induced by any of these approaches is not quite compatible with the commonly accepted notion of semantic equivalence. Moreover, these representations do not support inference, and facilitating inference is what may seem a prerequisite for calling a representation 'semantics'. Roughly speaking, advocating for the purist distributional semantics approach would be somewhat alike to giving a baby a pile of newspapers, leaving her alone and hoping that one day she will learn to understand language and learn to reason, without ever interacting with the world, without even observing the world. This does not seem very likely.

However, if we want to learn to map sentences to semantic representations or learn to perform inferences for even moderately complex domains, there is no real substitute to relying on unannotated textual data. So the question is how can we craft a better alternative to the traditional formulation of distributional semantics? We certainly cannot (yet?) augment linguistic contexts (words and phrases) with, for example, interpretation of the visual scenes (mimicking the vision system of a human). But what kind of grounding in the world we could consider? Some of the recent research [3], suggests that something as simple as linking entity mentions across texts (e.g., 'Merkel' in on text and 'the German Chancellor' in another one), and modeling contexts in terms of these concepts provides an important step forward.

Though challenging, this direction, learning data-driven models of semantic inference, is one of the most exciting and dynamic in CL. What kind of information we can use to induce these models? What kind of representations (e.g., in formal logic or not) should be used to encode meaning? How can we integrate them in applications? This all remains to be seen.

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"We can learn that 'X blamed Z on Y', 'X held Y responsible for Z', 'X laid the blame for Z on Y' or 'X blamed Y for Z' all encode the same situation."

Jordy Jouby

"Speaking to the magnitude of what you are capable of"

As a PhD candidate you are an intellectual 'top athlete'. To obtain the academic 'medal', you have four years to sweat 1% of inspiration into a 99% PhD thesis. You have to fulfill the challenge to persist in the belief of an intuitive idea that is in your mind and develop it into a theoretically sound and well-founded new insight. Instead of only sponging up knowledge as an undergraduate, you, as a newbie academic, have to produce it.

This is beyond tough and demanding. Self-doubt, unforeseen issues and irresolute periods conspire against you, your supervisor, your PhD thesis, and your Life. At that point you have to figure out for yourself how you are going to overcome the seemingly insurmountable in order to develop your talent and "speak to the magnitude of what you are capable of", as the great jazz trumpet player Wynton Marsalis puts it.

My way to make the PhD into a fruitful, deeply rewarding and less strenuous experience, especially as someone who is doing without funding and has another job on the side, is through the practice of Chan (Zen) meditation. The daily 10-60 minutes sessions allow me to cope with emotional, intellectual and physical stress, but also nourish the pleasure of finding things out with the energy, intensity and single mindedness needed.

For me the bench in the little corner next to the MoL meeting room is the ideal spot for doing just that. Sometimes people ask me how I do it, if the noise from people going in and out, slamming the fridge door, or chatting in the hallway doesn't distract me. For meditation purposes that is actually a good thing. Buddhists and Taoists say that lotus flowers grow out of mud. Noise tests your meditation skills; irresolute periods test your seriousness.

However, sitting straight and still in full lotus, kicking off of daily activities, mobile phones etc., can be difficult. Mind and body are warped back to themselves and protest: Questions and judgments crop up; legs and back begin to hurt or numb.

Taoist meditation celebrates life. One has to accept and follow the natural workings of the world, letting the thoughts and pains come and go in a natural way. Mentally speaking the repetitive nature of slowly breathing in and out is the basic mantra that guides the stream of thoughts into stillness and awareness. Physically it makes you sit straight, filling lungs with air so oxygen can reach all limbs through the bloodstream.

The locus classicus of this idea is Chapter 15 of *Lao Zi's Tao Te King.*

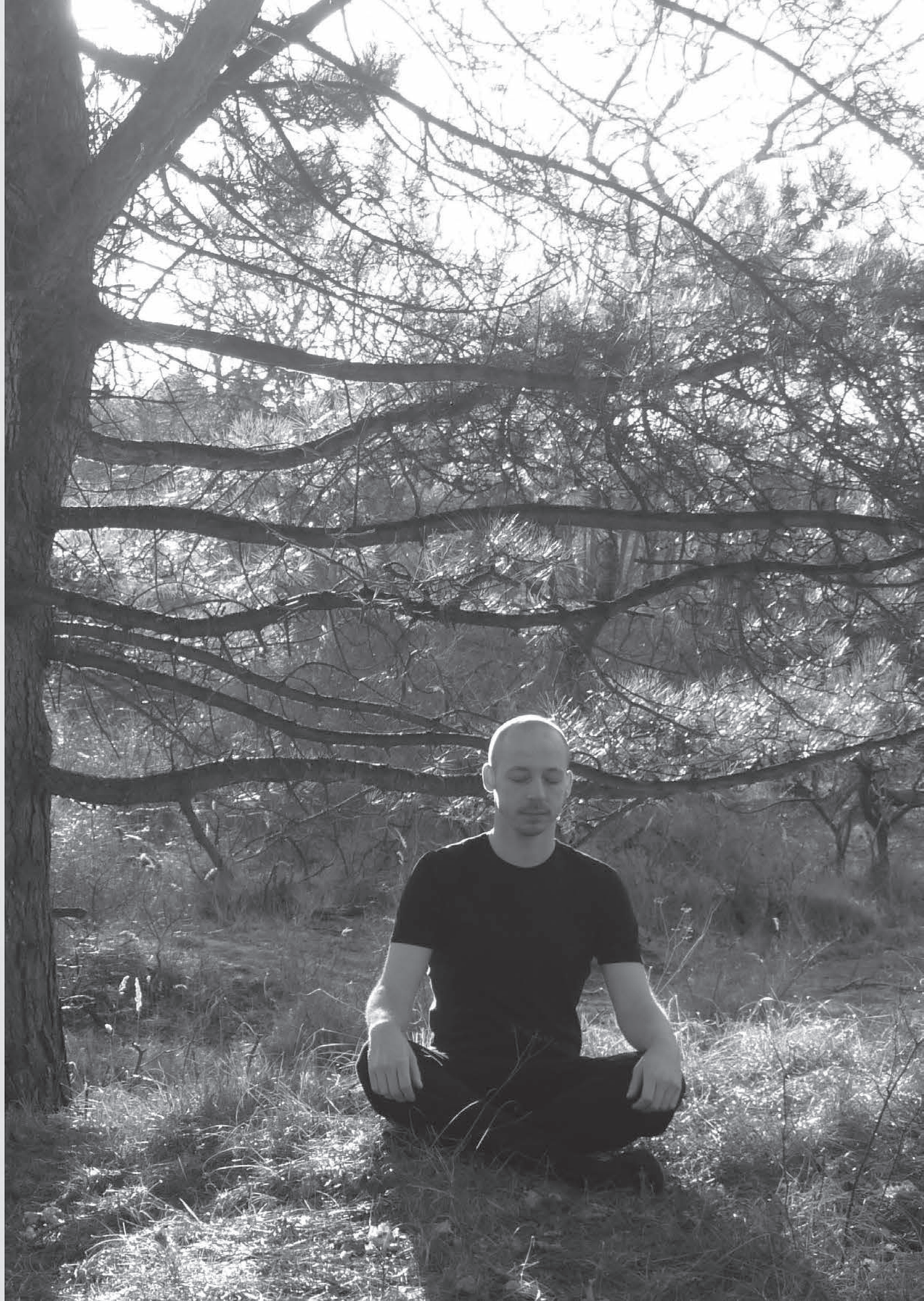
Who can be still
until their mud settles
and the water is cleared by itself?
Can you remain tranquil until right action
occurs by itself?

The Master doesn't seek fulfillment.
For only those who are not full are able to be used,
which brings the feeling of completeness.[1]

An anecdote from Chinese tea ceremony practice presents a lighter form of meditation. Once there was a famous old Chinese Master of the tea ceremony. Everyone wanted to learn from him how to meditate the taste of the finest hand plucked exclusive young tealeaves from the top of the mountains. But in the first lesson the Master would say to his pupils "Ok, go home, and drink tea." After being sent away for several times, one pupil asked "Master, why do you keep sending us home? We are poor. We drink low quality tea. How can we ever learn the Art?" As Chinese teaching often goes, the Master would faintly smile and repeat, "Go home and drink tea."

The moral of the story is of course that it doesn't matter who your Master is or what the quality of your tea is. As long as you drink it with an attentive mind state, you are actually meditating. Take something as simple like breathing in and out or sipping tea. Focus your attention to every little step of that activity. Proceed slowly and carefully. Make sure the silk thread of your attention doesn't break. Paradoxically enough, such a simple task, as you will see, is in fact tougher than obtaining the PhD degree.

1) Translation J.H. McDonald



Andreas van Cranenburgh

Gödel's Loophole in the Constitution

Judge Phillip Forman:
"[Germany] was
under an evil dictatorship ...
but fortunately, that's not
possible in America."
Kurt Gödel: "On the contrary,
I know how that can happen.
And I can prove it!"
(Casti & DePauli 2000, p. 89)

A famous anecdote claims that when Gödel applied for naturalisation in the United States, he declared to have found a logical flaw in the constitution that would allow the government to turn into a dictatorship by legal means. The exact nature of this loophole has never been revealed. This may be due to the dismissive reactions of his two character witnesses in his citizenship hearings, Einstein and Morgenstern, who tried to dissuade him from bringing up the matter at his hearing. Recently, an article by Guerra-Pujol (2013) investigates the anecdote and claims to have found the nature of the loophole.

Article V of the constitution specifies a procedure by which the constitution may be amended, and the logical flaw would be that in true Gödelian self-referential fashion, the rules for amendment itself may be amended, to the point where the checks and balances against an undemocratic dictatorship are neutralized. It should immediately be remarked that this 'flaw' would probably not be considered as such by the framers of the constitution, since the constitution is a living document that is re-interpreted and, if necessary, amended to adapt to changes in society. Moreover, a typical dictatorship does not arise through clever exploitation of flaws in rules, but rather through (the threat of) brute force. The most famous example of this is the way Adolf Hitler attained the power to rule by decree. Although this was voted by parliament, the presence of SA members (Nazi party 'storm troops') during the vote and the exclusion of known opponents played a crucial role.

Perhaps the most basic counterargument is that the constitution is obviously not intended as a system of formal logic. On the other hand, the self-amendment flaw is clearly in the Gödelian spirit of a system of rules breaking down as soon as it is applied to itself. Furthermore, as Guerra-Pujol shows, the problem is indeed insolvable: either a system of rules is unchangeable, or it may be perverted through its own provisions of amendment. There is a notion of entrenchment provisions, which preclude the amendment of specified parts, and in the strongest case prohibit modifications to the entrenchment provisions itself. But it turns out these can be defeated in two steps:
(a) a new amendment that neutralizes the entrenchment provisions (since this is a separate amendment, it is not prohibited by any entrenchment provision that prohibits modifications to itself),
(b) the entrenchment provisions may now be eliminated, removing restrictions on further amendments.

In practice, a three-quarters majority of states is required to ratify a change to the US constitution, which means that amendments to the constitution have been few and far between. This is in stark contrast to provisions in the Terms of Service of common internet services, which warn of unannounced modification at a whim, such as the following by YouTube: YouTube reserves the right to amend these Terms of Service at any time and without notice, and it is your responsibility to review these Terms of Service for any changes. https://www.youtube.com/t/terms

In practice, neither Gödel's constitutional loophole nor such terms of service provisions lead to chaos or capriciousness, but it is instructive to observe that even if we wanted to effectively keep power in check through a system of rules, nothing can prevent our measures from disappearing in a proverbial puff of logic.

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Paula Henk

The First ILLC Talent Show

Walking through the dark, brick-walled corridors of the ILLC brings about several encounters with our fellow logicians every day. We know that they all share a certain aptitude and fascination for abstract thought, but have you ever wondered what might occupy their minds at times when they're not obsessed with matters in the logical realm?

A glimpse into the non-logical aspects of logicians' lives was offered by the First ILLC Talent Show, organised by the MoL-student Eileen Wagner. The event, which took place in café Oerknal on the last Friday of May this year, was entertaining, amusing, and professional – beyond all expectations.

Just some of the acts featured were a stunning Charleston dance performance, a stand-up comedy that spared neither students nor staff members, a recital of the first 100 digits of Pi (in around 20 seconds!), mind-boggling beatboxing, a delightful double bass concert, and the barbershop choir No Almonds, whose singing surely sent shivers down many spines.

Some acts were also directly inspired by research questions in logic. To give just one example, the group Paradise by the Dashboard Light investigated the consequences of, instead of having lettuce in your bread, adding loaves of bread to your lattice. By the end of their wonderfully dramatic show, the audience had indeed gained many insights into the behaviour of meet loaves and their duals, join loaves, in such lattices.

The official part of the evening ended with a concert by The Karls Poppers, during which several logicians seized the opportunity to show their talent in dancing. After that, the inspiration that had gathered in the room found its outlet in a jam session, which could only be brought to an end through heavy insistence on part of the Oerknal staff.

All in all, the First ILLC Talent Show was a truly uplifting event, and we can only hope that it laid the ground to a tradition that will continue to inspire ILLC logicians every year. As a start, everyone is invited to think of a talent they would want to show at the Second ILLC Talent Show, bound to take place in the coming spring!

Frank Veltman, Jeroen Groenendijk and Johan van Benthem

Life After ILLC

Current ILLC director Yde Venema with all past ILLC directors at Jeroen Groenendijk's retirement

Martin Stokhof | Jeroen Groenendijk | Yde Venema | Frank Veltman | Leen Torenvliet | Johan van Benthem

In the course of 2014, three of ILLC's founding professors retired:

- **Frank Veltman,** Chair of Logic and Cognitie Science, Faculty of Science, in April.
- **Jeroen Groenendijk,** Chair of Philosophy of Language, Faculty of Humanities, in June
- **Johan van Benthem,** University Professor for Pure and Applied Logic at the UvA, in July.

Despite their official retirement, all three will remain active members of the ILLC community. On the following pages you will find short pieces written by colleagues in honour of each emeritus professor. Robert van Rooij and Floris Roelofsen summarise the work and accomplishments of retiring professors Frank Veltman and Jeroen Groenendijk respectively. Alexandru Baltag and Sonja Smets, co-editors of a new volume published in honour of Johan van Benthem, outline and motivate the themes of this volume.

In the 1980's a group of researchers in mathematics (e.g. Van Benthem, De Jongh, Troelstra), philosophy (e.g. Bartsch, Groenendijk, Stokhof, Veltman) and computer science (e.g. Van Emde Boas, Janssen, Torenvliet) started cooperating on the shared theme of the logical analysis of natural language. This group created what is since 1991 known as the Institute for Logic, Language and Computation (ILLC). Johan van Benthem was its first scientific director.[1] He was succeeded in this position by Martin Stohkof, Frank Veltman, Jeroen Groenendijk, Leen Torenvliet and ILLC's current director, Yde Venema.

Frank Veltman

Robert van Rooij

In april 2014 Frank Veltman officially retired as the Chair of Logic and Cognitive Science at the ILLC and the Department of Natural Sciences, Mathematics and Infomratics, (FNWI).

Frank Veltman studied Physics at the University of Amsterdam, and Mathematics and Philosophy at the University of Utrecht. He worked at the Erasmus University in Rotterdam before he moved to Amsterdam in the 1980s. He started at the University of Amsterdam as a lecturer at the (then still) Department of Philosophy. Veltman received his PhD in philosophy at the University of Amsterdam in 1985 with his dissertation 'Logics for Conditionals' with Hans Kamp and Johan van Benthem as advisors. In the 1980s he started to cooperate with several colleagues in Philosophy, Mathematics and Computer Science at the University of Amsterdam on the shared theme of the logical analysis of natural language. As such, he was one of the founding fathers of what is since 1991 known as the 'Institute for Logic, Language, and Computation' (ILLC). Frank Veltman became Professor of Logic and Cognitive Science at the ILLC in 2001, and he served as the director of the ILLC from 2004 until 2009. He has been a visiting professor at the University of Tübingen, Edinburgh University, and Stanford University.

Veltman's major research interest is in the logical analysis of natural language, with a particular interest in mood and modality. He invented already in the 1970s the so-called 'Premise Semantics' for the analysis of counterfactuals, which is up to this day one of the most influential analyses of conditionals. In his dissertation Frank Veltman developed Data semantics. According to this theory, semantic meaning is based on (perhaps partial) evidence, rather than truth conditions. This allows one to make a distinction between *direct* and *indirect* evidence for the truth of a sentence, which Veltman shows to be crucial for the analysis of indicative conditionals and epistemic modalities like 'must' and 'might'.

Frank Veltman is perhaps best known for his Update Semantics, and the analysis of defaults in terms of it. The article 'Defaults in Update Semantics' from *The Journal of Philosophical Logic* was chosen as one of the ten best papers in philosophy to appear in print in 1996.

It was reprinted as such in volume XIX of The Philosopher's Annual. Veltman developed Update Semantics around the same time as Groenendijk and Stokhof developed their Dynamic Predicate Logic, also at the ILLC. The two theories initiated the *dynamic turn* in semantics. This dynamic move turned out to be very fruitful, not only for the analysis of natural language, but also for logic as a whole.

Apart from conditionals and modals, Veltman made significant contributions to the semantic analyses of imperatives and vagueness as well. Every now and then Frank Veltman made an excursion outside his main field of research. For example, the analysis he gave of the notion of relative interpretability belongs to to the Foundations of Mathematics, and his analysis of default reasoning was a contribution to Artificial Intelligence.

Almost immediately after Frank joined the Faculty of Philosophy at the University of Amsterdam, he took up administrative duties during difficult times: at the moment when the department of Philosophy had to reorganize. Around the turn of the century, Frank Veltman served for a number of years as the director of the Education Program of Artificial Intelligence at the UvA. As such he introduced the lecturers-team (with Frank as its director) and introduced the Bachelor/Master structure for the education of Artificial Intelligence at the University of Amsterdam. Other noteworthy academic services that should be mentioned are being the chairman of the board of the Beth Foundation, editor of the Journal of Philosophical Logic, and member of the NWO board of Humanities from 2009 to 2012 and as such being part of several NWO (Veni/Vidi/Vici)-committees .

Frank Veltman's official retirement only marks the end to his obligatory involvement with the ILLC. As Professor Emeritus, he still acts as a supervisor of quite a number of PhD students, and he continues to work on defaults, imperatives, and dynamic semantics.

1) From the leaflet 'On the occasion of Johan van Benthem's retirement from the University of Amsterdam'

Jeroen Groenendijk

Floris Roelofsen

On 1st July 2014, Jeroen Groenendijk retired from his position as professor of Philosophy of Language at the Universiteit van Amsterdam.

Since 1976, Groenendijk has held several positions at the Philosophy and the Linguistics Department of the Universiteit van Amsterdam, and short-term visiting positions at other institutions, among which Tilburg University, Phillips Research Laboratories, and the Hebrew University in Jerusalem.

His main research areas are formal semantics and pragmatics, and philosophy of language. In the early 1980s, he developed, together with Martin Stokhof, the so-called partition theory of questions. This theory is most comprehensively presented in Groenendijk and Stokhof's joint dissertation, which has become a classic in formal semantics, and has had considerable impact beyond the field as well. The developed approach makes a purely semantic analysis of questions possible, one that satisfies the same strict requirements as other branches of logical semantics.

In the 1990s, Groenendijk initiated and explored the so-called dynamic approach to meaning in natural language, again with Martin Stokhof, and later also with Frank Veltman and others. This dynamic approach abandons the common reference and truth-based analysis of natural language meaning that semantics inherited from classical logic, and treats meaning as context change potential. This approach allows for a conceptual integration of semantics and pragmatics, and extends naturally to the analysis of larger discourses and linguistic interaction.

Around the turn of the century Groenendijk returned to the study of the semantics and pragmatics of questions, but now in the setting of dynamic semantics, and with a special interest for questions which are difficult to handle in a partition semantics. This led to a widening of the dynamic notion of meaning in terms of information *change*, to an inquisitive semantic notion of meaning directly related to information *exchange*.

This new formal notion of meaning forms the cornerstone of the framework of inquisitive semantics, which Groenendijk developed in recent years with Ivano Ciardelli and Floris Roelofsen. This framework offers a new perspective on a wide range of linguistic phenomena, and gives a new twist to the logical modeling of information exchange scenarios.

Groenendijk has taught logic and formal semantics for many years, to students in philosophy, computational linguistics, and the Master of Logic at the ILLC. As director of the Teaching Institute of Philosophy, Groenendijk co-organized the introduction of the Bachelor/Master structure at the Faculty of Humanities of the Universiteit van Amsterdam. Together with Johan van Benthem, Dick de Jongh, Martin Stokhof and Henk Verkuyl he wrote the two Gamut textbooks on logic and logical grammar, which were published in Dutch, English, Spanish, and Chinese. In 2008 he was among the six nominees for the title 'lecturer of the year' of the Universiteit van Amsterdam, and was awarded the special price for Academic Feedback.

A big celebratory event was organized during the Amsterdam Colloquium in December 2013 to honor the vital contributions of Groenendijk, Stokhof, and Veltman to their scientific field and to the ILLC, with speeches from many colleagues from around the world and a Festschrift with over 35 articles.

Johan van Benthem

on Logic and Information Dynamics

Alexandru Baltag and Sonja Smets

Johan van Benthem, one of the most renowned logicians of our times and one of the founders of ILLC, has reached retirement age this year. To celebrate his extraordinary career, the two of us, together with no less than 61 researchers in Logic, Philosophy, Mathematics, Linguistics, Computer Science and Economics, have contributed our bits of knowledge to put together a volume honoring Johan's lifetime achievements. The book has now appeared in the Springer series 'Outstanding Contributions to Logic'. The volume follows the trajectory of Johan van Benthem's epic logical adventure, using as our guide the contributions of so many world-renowned scholars and friends of Johan.

Reducing Johan's vast interdisciplinary work, published over 40 years, to one single research theme, however broad, seems to us both impossible and counterproductive. However, this is exactly what us as Editors were asked to do! Indeed, 'Outstanding Contributions' is a series of book profiles of major themes pursued by leading logicians today. To solve this quasi-impossible task, we got together with Johan himself and decided on a theme that has been at the core of his research agenda over at least the last 23 years: *Logical-Informational Dynamics*. While reiterating our feeling that we cannot reduce all the many facets of van Benthem's lifetime work to one unique catchphrase, we nevertheless think that this body of work can best be interpreted *as a whole* only when seen from the vantage point of Logical Dynamics.

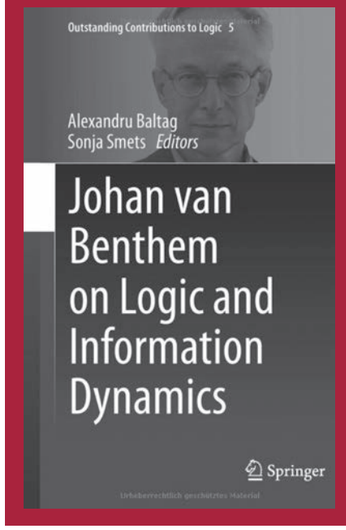
This book is meant to map the landscape of a field in the making, locating the core issues and the most desirable spots on the map, filling the gaps where the dragons dwell, defining the borders and outlining the main shapes of the New World of Logical-Informational Dynamics. We understand the theme very broadly as the *logical study of information flow, cognitive and computational processes, strategic interaction and rational agency*, study lying at the intersection of many different disciplines, and extending from more mathematical to more philosophical dimensions. After careful reflection, we were able to decompose the main theme into *six dimensions* or aspects, ranging from the most abstract, structural-mathematical aspects of logical dynamics, to the most concrete features of 'real-life' informational processes (learning, games, agency and language), and back again to the abstract side (placing logical dynamics among other 'styles of reasoning'). So, the way we see it, the history of the logical dynamics and of Johan's work on it is *a continuous back-and-forth move between abstract and concrete;* between, on the hand, the search for generality and simplicity: for the appropriate mathematical structures and abstract inference patterns; and on the other hand, the drive towards 'concreteness': towards understanding the actual information flow via 'real' channels between embodied, full-fledged agents.

The volume is divided in three main divisions. First, the *Front Matter* consists of a Preface by Johan, followed by an Introductory Survey (by us) of Johan's work and of the invited contributions to the volume. Then we have the main part of the volume, containing the *Invited Contributions*, divided into 36 chapters, grouped into *six parts* (that match the above-mentioned six dimensions of the main theme): (1) Mathematical and Computational Perspectives; (2) Knowledge and Belief over Time; (3) Games and Strategic Interaction; (4) Agency; (5) Natural Language and Cognition; (6) Styles of Reasoning. Finally, the *Back Matter* consists of Reflections on the Contributions and a Scientific Autobiography (both by Johan) and a comprehensive Bibliography of all Johan's publications to date.

Together, the invited contributions, our Survey and Johan's Preface, Reflections and Autobiography can be seen to trace van Benthem's logical itinerary across the six dimensions. We see this itinerary as an *anabasis*, in the Greek tradition: an upward journey from the safety of the (by now) well-known, well-mapped coast of classical and non-classical logics into the uncharted interior highlands of a New Continent. As already mentioned above, this is in fact a journey towards the concreteness and richness of 'real life'. It is a move towards full-edged agency (and not just 'logical agents'), towards meeting others, towards stepping out of the unending circles of reason and daring to actually look at the world and interact with it.

Logic in Johan's view is not only about reasoning and inference (in no matter how many styles). It is also about acting intelligently; about asking questions to Nature and to each other; about experimentation and communication; about changing your mind and imagining different perspectives; about learning from your own mistakes and from the testimony of others; about beneficial social encounters and sometimes tragic social conflicts; about choices, and goals, and norms, and desires; and about how to live with all these, despite their mutual inconsistency; about duty, and privacy, and freedom, and their limits.

But the opposite move also continues to happen, in parallel with the first one: a *katabasis*, a perpetual return back down to the coast, by which all those rich, concrete, 'real-life' informational processes feed back into the abstraction of inferential logic, as so many rivers owing into the sea. Whatever logicians touch becomes Logic, and so a subject of inference: as post-modern Midas kings, they convert all reality into formal proof systems.



Life, evolution and learning, intelligence, interaction and agency: according to Johan van Benthem, these all are legitimate topics of logical investigation. To paraphrase the last line of Darwin's magnum opus[2]: *There is logic in this view of life*. Dynamic logic, more precisely: the logic of living and acting, cooperation and competition, love and strife. Information highways and information wars: both are first-class citizens, with full rights, in Johan's logical society of informational processes.

And (to paraphrase once again), *there is grandeur in this view of logic.*

2) "There is grandeur in this view of life, with its several powers, having been originally breathed into a few forms or into one." (Charles Darwin, *Origins of Species*)

ILLC Magazine

Interviews with Drs Christian Geist and Dr Yanjing Wang

Alumni

Our ILLC alumni interviewees this year are Christian Geist and Dr Yanjing Wang. Christian graduated from the Master of Logic program at the ILLC in 2010. After working for a couple of years as a consultant at McKinsey, he moved back to academia. He is currently working on his PhD at TU Munich. Yanjing graduated from ILLC's MoL program in 2006, and later did a PhD at CWI. He is currently an associate professor at Peking University.

Christian Geist

Tell us about your academic background leading up to your masters at ILLC

I have always been intrigued by interdisciplinary work and collaboration: how much you could gain by bringing together disciplines that each had made lots of progress already, but somehow missed to learn from each other. Thus, it was quite natural for me to start my studies in the international BSc program 'Mathematics and Computer Science' at TU Darmstadt, Germany. It was already during my first semester of that program that Prof Ulrich Kohlenbach, a logician, evoked my interest in formal logic with what I still consider to be the best and most formal Analysis I course that I can imagine.

I decided to go deeper in this direction and spent my year abroad (which was more or less compulsory in the program) at the University of Cape Town, South Africa, concentrating even more on logic. It was there where I discovered a poster advertising the MoL program at our honours students' office and later also met Benedikt Löwe during a conference. Needless to say that I applied...

How was your experience in the MoL programme, both academically and socially?

In short: it was a great, intense and very inspiring time! I had never been in a study program that attracted so many talented fellow students and faculty. Of course, this also meant that the workload was high, but nevertheless highly enjoyable. The atmosphere felt more like I had imagined a PhD program and I had finally found what I had been looking for: true interdisciplinarity. At the ILLC I found that diversity is not just a buzzword and also really enjoyed the social aspect of having roughly 80 fellow students that came from 30plus different countries.

What led you to join a consulting company after ILLC? How was your experience with consulting?

It was a tough decision, but at that time I was looking for a more dynamic environment, with much shorter feedback periods and project timelines. Furthermore, I knew the company I was joining and the type of work I was about to do from a previous internship with that company which I had completed just before the MoL.

Actually though, in some sense, very similar features to what I had enjoyed during the MoL attracted me; for instance, the smart and diverse colleagues as well as a steep learning curve. But there was more. Apart from the more dynamic environment, it gave me the chance to broaden again while working on very relevant topics. And last but not least, I knew that after two years I would have the option to take educational leave. (Obtaining a second higher academic degree is part of the standard career path in that company.)

Overall, I believe that I was able to profit a lot from my time in the industry and, in particular, from working as a consultant. It is a great way to see different companies, industries and leadership styles, and helped me develop many skills which got less attention in academia.

What motivated your decision to return to academia to do a PhD?

Well, I have the 'problem' that I really enjoy both worlds: working in the industry as well as academia. So as I got the chance to easily take some (partially funded) time off to pursue a PhD I could not resist. I knew that I would enjoy being in 'the other world' again for some time and it came practically risk-free. As I still have not decided where the long-term journey will go, I also considered it a good opportunity to experience the academic working environment.

Of course, I was also really excited to continue my work on some of the problems I had looked at during my MSc thesis.

Tell us about the topic of your PhD research.

I am actually following up on the work in computational social choice that I started with Ulle Endriss at the ILLC. Under the supervision of Felix Brandt, I develop methods for computer-aided theorem proving in social choice theory (mostly concerning, but not limited to, voting). This includes finding new results through (partial) formalizations in propositional logic and SAT solving, but recently we also started using other solving paradigms and logics (e.g. answer set programming, satisfiability modulo theories). The goal is to complement human skills with computational solving power to gain additional insights and get to results more quickly.

"The goal is to complement human skills with computational solving power to gain additional insights and get to results more quickly."

What are your long term plans for the future in terms of research goals, career path, etc.?

That is a critical question for me. So far I have (luckily) managed to follow my passions and do whatever I enjoy most at the moment. Of course, I have always had rough ideas for the future, but never a proper (career) plan for anything more than two to three years. Currently I think that after my PhD I will return to consulting for another one to three years as it is still the type of work that motivates me most. On the other hand, this job can be quite intense and requires a significant amount of traveling, hence the decision will also depend on my personal situation then.

For long term, I have a whole range of ideas and hope that I will, as much as possible, be able to keep up the spirit of pursuing whatever I enjoy most at the time.

"I do think it is a good time for both the west and the east to reflect again on the merit of research and academic activities, in particular in humanities."

Yanjing Wang

Tell us about your academic background leading up to your masters at ILLC.

As an undergraduate, I did logic and economics (minor) at the department of philosophy at Peking University (PKU). In my second year, Prof. Beihai Zhou gave me a copy of the book *The Logic of Time* by Johan van Benthem. I was amazed by the elegant balance between logic and philosophy in that book and then found Johan and ILLC on the Internet. At that time Johan was teaching a course on logic and games and it fitted my background and interest very well. I wrote an email to Johan, and a few weeks later I received a big package of printed lecture notes and relevant papers on the topic, which amazed me again. I guess that was my first encounter with the warm hearted ILLC people. Two years later I came to Amsterdam to do my master at ILLC, supported by the Beth foundation (Thank you Johan and Dick!). It is a pity that I haven't done anything serious about games since then, but I am now picking it up again!

How was your experience in the MoL programme, both academically and socially?

At my first Sinterklaas at ILLC, we anonymously made poems and gifts for the fellow MoL students. To make the gifts more 'to the point', each of us had a semi-public wish list and I put 'coins or something sweet' there. In the end I got a big sealed bucket of various European coins soaked in some chocolate jam. That was so sweet even financially, but it seems that the MoL students never took disjunctions in natural language seriously and they like to do interdisciplinary research rather than separating things from each other (it took me hours to clean and dry the coins). There were of course not-so-sweet moments, especially when I was asked to program in Java. I also suffered a bit when I wanted to do some kind of quantum unawareness theory for my thesis, but my supervisors Frank and Maricarmen saved me from going too crazy in the end. One impression I had about the MoL students at that time was that most of them were very motivated and didn't worry about the future to some extent, thus they enjoyed themselves very much. At the end of my master I was seriously thinking about changing my career to be a photographer, but again others held me back and it turned out to be a good choice to keep photography just as a hobby rather than a profession. Nevertheless, these two tracks intersected for good once in a while, e.g., I took the back cover photos for several previous issues of this ILLC magazine.

Tell us about your PhD experience at CWI. What motivated you to work on multi-agent systems?

My PhD project was called Verification and Epistemics of Multi-party Protocol Security (VEMPS). The idea was to use multi-agent dynamic epistemic logic (DEL) to verify security protocols, which sounded pretty promising to many people 8 years ago. The only apparent dark cloud over us was the fact that the PI left the project even before the kick-off meeting (he moved to bioinformatics). Then within a year came the news of the dismissal of the group that I had initially joined at CWI (since it had been too successful in some sense). Thanks to my supervisor Jan (van Eijck) and collaborator Francien, I felt less lonely.

As I went deeper into my project, I started to realize that we were somehow trying to create a nail with a hammer in hand: in security protocol setting, the nested form of multi-agent knowledge is seldom used in practice, although everyone agrees that it is very natural to express properties using knowledge terms. To handle simple knowledge, people can manage without a fully compositional epistemic logic, and this is grounded by good computational reasons. On the other hand, the 'hammer' (DEL) has lots of its own problems to solve in order to handle very simple protocols, and this led to some chapters of my dissertation. Jan gave me a lot of freedom, which I used to develop some of my own 'pet' techniques that are still playing important roles in my current research. Probably a different topic would have resulted in a few better theorems in my PhD, but I am grateful to the suffering and puzzling nights during those years, which finally forced me to broaden my view on logic significantly and to be truly sincere to what I was doing. I also gradually developed a 'research taste' for neat and cute results. One regret I had was that by jumping between different communities, I was a bit far away from the ILLC colleagues during my PhD, although we were just at the opposite sides of the road (I heard that CWI and ILLC are sharing the same canteen now, which is very good).

Tell us about your experiences as a faculty member at Peking university. Do you enjoy teaching as much as research?

Teaching (in a broad sense) is perhaps the most rewarding and enjoyable thing to me as a faculty member in Peking University, and I am more proud of my students than myself. I should confess that I spent more after-work time with my students than with my girlfriend... I got the (possibly false) feeling that I can really change the lives of many students who just need a passionate guy to kick-start their academic careers. In the past 4 years, some of our students went to places like Princeton, Stanford and Cornell to do their PhDs in logic-related fields; four undergrads went to the ILLC for their MoL supported by Dutch scholarships; many more students are visiting top institutes to collaborate with the leading researchers. It is also becoming more and more frequent to have some PKU reunions in top logic conferences and summer schools. This year, two of the finalists of Gödel Research prize are alumni of our logic group. Of course, I will be happier if we can keep our best students to do their PhDs at PKU some day in the future. We also hope that some of our alumni will come back to teach here eventually. Once in a while, you will hear me complaining about some tough meetings with the depressed students (or even their parents) but I now take it as part of my life (not just job), when I am less depressed than them, to transmit some positive energy. Besides teaching, I have to say that I am very lucky to have a job in a very liberal department in a romantic campus where many idealists fought to death for a brighter future of China and humanity.

According to you, what are the similarities and differences between an academic life in the east and the west?

Well, an obvious difference is that the students call professors 'professor' in China, not just 'Johan', 'Jan', etc. Actually it is getting harder to tell the differences of academic life in the west and the east, since nowadays the east is pretty much copying the west without thinking too much. Few years ago, while young researchers in Europe and U.S. were fighting for their tenure, young Chinese researchers were worried more about promotions and practical things in life (e.g., to afford a decent house in Beijing some people should have started working since Qing Dynasty). Sadly, our copycat decision makers have changed the game: poor Chinese APs now also need to fight for tenure and endless grants/projects on top of all the practical troubles. They may take more responsibilities since the teachers are supposed to be the role models traditionally; and they need to run/sing/talk in all those unnecessary sports days/singing competitions/boring meetings organized by the university. It is also hard to stick to your agenda since there are many urgent things that may come up all of a sudden. As in the west, working and networking are both very important for a successful academic career, but the priority may vary significantly in different places. I do think it is a good time for both the west and the east to reflect again on the merit of research and academic activities, in particular in humanities. The big monkey without that 'k' is happily ruling research and academic positions even in the areas where it is not that urgently needed.

What are your long term plans for the future in terms of research goals, career path, etc.?

One of my long-term plans is to understand how people actually process knowledge and belief. There can be some logic (in the narrow sense) behind the processes, but this time I would also be happy to try all kinds of 'hammers' available, and develop new tools if needed. For now, I am promoting a systematic study of modal logics based on new operators of 'knowing whether', 'knowing what', 'knowing how', and 'knowing who'. This topic sits beautifully in-between logic, language, and computation. There is a wealth of knowledge to be discovered both technically and philosophically beyond the standard epistemic logic of 'knowing that'. By the way, one advantage of being in a philosophy department is that you always have excuses for studying whatever you like: there is always a philosophy of X, for all X. So, if I 'disappear' for a while, don't be surprised.

New PhD Candidates and Postdocs

From the time of publication of the last ILLC magazine in December 2013 to November this year, 13 PhD students and 7 postdocs have joined the ILLC. A selection of the newcomers from all programmes at ILLC have responded to our questions.

Bart Karstens
postdoc *LaCo*

What drew you to the ILLC?
I obtained a position in a project called 'Legal Structures' in which I will be working together with Rens Bod and Marijn Koolen.
What is your academic background?
I have two Master's degrees in Cognitive Science and in History of Science. I will defend my Ph.D. thesis at Leiden University, Institute of Philosophy, on approaches to the study of past science.
What is your research topic and what interests you about it?
My current research project is part of Digital Humanities. We study structures of legal systems using regular expressions. In order to interpret the retrieved patterns adequately we cooperate with the Law and Economics department and combine this with historical scholarship.
What role does logic play in your research?
Little.
What do you like the most about working in Science Park 107?
I like the Christo's.
What is your favourite game?
Definitely chess, I am a Fide Master in this game and just love to play it.

Julian Schlöder
PhD candidate
LoLa

Who are your supervisors?
My main supervisor is Raquel Fernandez, and Robert van Rooij is my promotor. In addition, I am co-supervised by Alex Lascarides at the University of Edinburgh.
What is your academic background?
I studied Mathematics in Bonn, and quickly focused on mathematical logic with a linguistic spin. I moved on to do Set Theory and completed a Master's in Mathematics with a thesis on forcing and consistency results. Then I came to Amsterdam and did the fast-track MoL here with a focus on Language. I got quickly interested in dialogue and interactional language use – and this is what my PhD is (rather, will be) about.
What drew you to the ILLC?
Having studied logic as a mathematician, I wanted to see what else there was under the umbrella of 'logic.' The ILLC with its broad and interdisciplinary approach seemed perfect to obtain a wide view on what logic can do.
What is your research topic and what interests you about it?
Reading a transcription of spoken dialogue is fascinating; you can hardly follow the topic, but, still, speakers communicate effortlessly and coherently. Currently, I'm focusing on a mechanism that seems simple, but is remarkably complex: how interlocutors mentally align, i.e., how they manage to mutually agree on something. An important conversational tool for that is what I now call uptake-level clarification requests: simple questions that facilitate understanding and agreement.
What role does logic play in your research?
Natural and particularly spoken language looks wild and unwieldy – but upon closer look, it is strikingly coherent. The lens through which to take that closer look is logic: Abstracting away from the chaotic surface forms can unveil hidden regularities.
How did you find a place to live in Amsterdam?
I never had to! The UvA provides accommodation for first year Master's and PhD students. Since I never was a second year student, I could move from one arranged accomodation to the next.
What do you like the most about working in Science Park 107?
The free coffee ;)

Elbert Booij
PhD candidate
LoLa

Who are your supervisors?
Robert van Rooij and Francesco Berto.
What drew you to the ILLC?
Interest in philosophy.
What is your academic background?
Biology, mathematics, and logic.
What is your research topic and what interests you about it?
Metaphysics. Although my main intellectual inspiration is drawn from the analytic tradition, I do not share its suspicion against whatever goes beyond language. Yet, inevitably, language must be our the main source of knowledge, to which natural language contributes meaning, and formal language, precision.
What role does logic play in your research?
An important one. Being largely deprived of the rich well of wisdom that is empirical evidence, logic is all we have to place contraints on our fantasies.
How did you find a place to live in Amsterdam?
I am a resident of Amsterdam.
Where did you live before coming to Amsterdam?
Close to Amsterdam. The exact spot changed from time to time.
What is your favourite game?
If I am forced to, I play chess, but basically I don't like games.

Thomas Brochhagen
PhD candidate
Lola

Who are your supervisors?
Robert van Rooij and Ewan Klein (UEDIN).
What drew you to the ILLC?
Interesting research, a project well-aligned with my interests and a nice working environment.
What is your academic background?
Linguistics (semantics and pragmatics) with a blend of philosophy and cognitive science on the side.
What is your research topic and what interests you about it?
My project centers around categorization, convention, context and semantic structures. In a nutshell, I find the ability to comprehend, convey and exploit meaning extremely fascinating.
How did you find a place to live in Amsterdam?
Through combined efforts of the ILLC office and UvA's housing office.
Where did you live before coming to Amsterdam?
Düsseldorf, Germany.
What is your favourite game?
Board game: chess; digital game: Earthbound; team game: baseball.

Ehsan Khoddammohammadi
PhD candidate
LaCo

Who are your supervisors?
My PhD advisors are Prof. Rens Bod and Dr. Ivan Titov.
What is your academic background?
I have a Master's in computational linguistics and Bachelor's in computer engineering. For the last three or four years, I have mostly focused on statistical learning and its applications to natural language processing.
What is your research topic and what interests you about it?
My objective is to induce meaningful representation of sentences for computers to enable them to do reasoning. The kind of representation we usually use are vectors, matrices or categorical random variables and the inferences are normally done by either solving an optimization problem or a statistical sampling method. Basically, we are taking steps toward teaching computers to understand human language on a large scale. This specifically interests big tech companies like Google, Microsoft or IBM, which have to deal with large piles of text to provide various services to their users. For them, the demands for a deeper understanding of natural language both in written and spoken forms are increasing and that is why they support researchers to invent novel models for large scale natural language understanding. For example, recently my advisor, Dr. Ivan Titov, won a Google research award for doing research on this topic.
What role does logic play in your research?
The Association of Computational Linguistics (ACL) holds an annual conference named after the association itself which is the most prominent conference in our field. In ACL 2012 there was a keynote speech by Mark Johnson, an influential character in the field, about the future of of computational linguistics in fifty years from now. He predicted that in fifty years the whole field will be reduced into two separate disciplines: 1) formal methods (logic) 2) statistical methods (machine learning). I mostly do machine learning but I am open to incorporate formal methods in to my research at some point.
How did you find a place to live in Amsterdam?
ILLC administration together with UvA housing aid department helped us a lot to find a suitable housing here in Amsterdam. I appreciate the immense help from the ILLC administration and especially Ms. Karine Gigengack on this matter.
Where did you live before coming to Amsterdam?
I was living in Germany for about two years where I did my Master's studies in Saarbrucken followed by an internship period based in Darmstadt and Frankfurt. Before that I was in my home country, Iran. I was born and raised in Tehran and spent 5 years to do my Bachelor's in Shiraz.
What is your favourite game?
Game of Thrones? :D. I don't have much time to play games but if I really have to choose I go for computer games. I used to play all sort of computer games but FIFA, Prince of Persia, GTA, Medal of Honor and Assassin's' Creed were my favorite ones.

Jelle Bruineberg
PhD candidate,
LoLa

Who are your supervisors?
My supervisors are Martin Stokhof and Erik Rietveld.
What is your academic background?
I started out studying Physics and Astronomy at the University of Amsterdam, and after completing my BSc, I switched to Philosophy. I found out that, for me, the most interesting questions lie on the intersection of the natural sciences and the humanities. I therefore did a Master's in Brain and Cognitive Science and another in Philosophy, both at the UvA.
What is your research topic and what interests you about it?
My research topic is the philosophy of skilled action. Most of what we do all day can be understood as skillfully and fluently interacting with the action possibilities (affordances) that the environment offers. I try to use ideas from phenomenology, ecological psychology, cognitive science, neurodynamics and physics in order to understand how brain, body and environment collectively bring forth adequate behavior in such situations.
What role does logic play in your research?
Perhaps I am a bit of an exception at the ILLC in the sense that logic does not play a central role in my research. I use some mathematics: dynamical systems theory, information theory and complex systems science. Of course, the ultimate aim of

a project like this is to find a continuity between the brain viewed as a complex self-organizing system and as producing relatively stable and structured behavior. Perhaps in the later stages of the project logic can play a more important role.

How did you find a place to live in Amsterdam?

After some years of living anti-kraak in Amsterdam, I have found a place through studentenwoningweb (you need to be registered for a number of years in order to find a proper place). Although this is meant for students only, some housing corporations started allowing PhD candidates to live there as well. This could be a good (and perhaps unknown) option for Dutch PhD candidates at the ILLC.

Where did you live before coming to Amsterdam?

Actually, I was born in Wijk aan Zee, a small village at the coast not far from Amsterdam (go there, it is great fun in summer time, also the most famous chess tournament in the world is held there every year in January) and moved to Amsterdam at the start of my studies (about 7 years ago). Relative to the rest of the ILLC, I think I should be considered a local. During my studies, I spend some time in Copenhagen and in Leipzig, both great cities as well.

What do you like the most about working in Science Park 107?

I mostly work at the Philosophy faculty at the Oude Turfmarkt, where there is an ILLC PhD room. Although this is in the middle of the city center, the faculty itself is a bit more isolated than SP 107. What I like about SP 107 is that there is ample opportunity to meet both staff and students. This provides a good atmosphere I think.

Malvin Gattinger
PhD candidate
LoCo

Who are your supervisors?

So far Jan van Eijck is supervising me and I am still looking out for a co-supervisor.

What drew you to the ILLC?

I came here to enjoy the Master of Logic programme to learn more about logic of which I only knew that I liked it. During the two years I got to like the topics and the place, so I wanted to stay here.

What is your academic background?

Before coming to Amsterdam I studied Mathematics and Philosophy and some Educational Science in order to become a high school teacher in Germany.

What is your research topic and what interests you about it?

I am exploring variants of Dynamic Epistemic Logic to formalize the communication and computation happening in Cryptography. My main tools so far are model checkers written in Haskell. What I like most about this project are the connections: logic is often seen as purely theoretical and disconnected from the world, but using it to reason about cryptography connects it to clear real-life goals. And model checking forces you to transform formal definitions into sometimes 'dirty' implementations.

How did you find a place to live in Amsterdam?

First via the University, then Craigslist, then again via the UvA.

Where did you live before coming to Amsterdam?

In Marburg, right in the middle of Germany. It is a very small city dominated by students. Besides friends and family I often miss its hills and the alternative bike workshop I used to be a part of.

What is your favourite game?

I really enjoy a cooperative card game called Hanabi where you see everyone else's cards but not your own and the main move is to give each other hints about what to do next. (Yes, I have thought about formalizing this in DEL but did not get very far yet). And I sometimes spend a lot of time playing tetris.

PhD defences

15 January 2014: Machiel Keestra
Sculpting the Space of Actions. Explaining Human Action by Integrating Intentions and Mechanisms

21 January 2014: Bruno Loff
A Medley for Computational Complexity

25 March 2014: Harald Bastiaanse
Very, Many, Small, Penguins

17 June 2014: Hadil Karawani
The Real, the Fake and the Fake Fake (ACLC and ILLC)

19 June 2014: Ben Rodenhäuser
A Matter of Trust: Dynamic Attitudes in Epistemic Logic