ILLC Magazine

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December 1999

New ILLC professor

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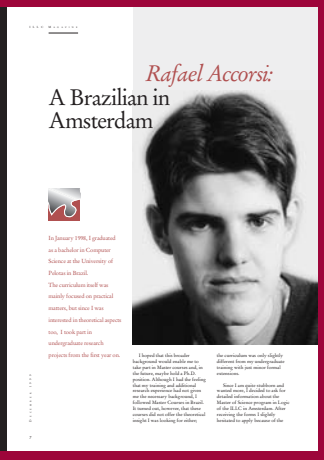
Sy ogic reading lab



Rafael Accorsi: A Brazilian in Amsterdam

In January 1998, I graduated as a bachelor in Computer Science at the University of Pelotas in Brazil. The curriculum itself was mainly focused on practical matters, but since I was interested in theoretical aspects too, I took part in undergraduate research projects from the first year on.

I hoped that this broader background would enable me to take part in Master courses and, in the future, maybe hold a Ph.D. position. Luckily, I found out during that my training and additional research experience had not given me the necessary background. I followed Master Courses in Brazil. It turned out, however, that these courses did not offer the theoretical insight I was looking for within the curriculum was only slightly different from my undergraduate training, with just minor formal extensions.

Since I am quite stubborn and wanted more, I decided to ask for detailed information about the Master of Science program in Logic of the ILLC in Amsterdam. After receiving the form I slightly hesitated to apply because of the

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While the secretaryship of the ILLC is with the Faculty of Mathematics, Computer Science, Physics, and Astronomy of the Universiteit van Amsterdam, the institute's philosophistic and computational linguists come under the Faculty of Humanities and its dean, Prof. Karel van der Toorn.

Van der Toorn was originally a theologian, though he also studied philosophy and Semitic. 'But philosophy 'But that was a bit more speculative than what the ILLC does'. In the everyday practice of faculty administration he has little to do with the institute's activities. 'I consult with the director of the ILLC, Johan Veldhuis, and read the annual reports. And there are lists of dissertations. The time I chaired the reading committee it was for an ILLC dissertation, that of Maarten Marx. The subject was seventeenth century attempts to develop an artificial language without the pitfalls of natural languages. A language which would leave no room for misunderstandings. For me, that was quite interesting, also in relation to computer languages. I noticed on that occasion that the ILLC doesn't recognize the category 'with distinction' for dissertations. That means a lot less discussion in reading committees. For the ILLC dissertations 'with distinction' can be completely scrapped, on the principle: all our doctoral students are good.

Van der Toorn would like to see more contact between himself, his faculty and ILLC researchers. When he unfolded his plans last year for restructuring research in his faculty, they seemed to have important consequences for the ILLC. In an attempt to improve a situation in which researchers in the faculty's fragmented research and to put an end to the many little islands of research, the plan provided for a Language and Logic research institute. This was to be formed out only by the linguistic philosophers of the ILLC, but also by linguists

In this issue amongst others:

Institute for Logic, Language and Computation

ILLC Magazine

Dear reader,

We are proud to present the first issue of ILLC Magazine, a new half-yearly publication of the Institute for Logic, Language and Computation. You have received this magazine because of your relationship with the institute: you are a staff member, student, interested party or alumnus. Primarily this magazine is meant for the last category, the growing group of graduates and doctors. After taking their Ph.D. or graduating they have swarmed out over the entire world. They have taken jobs in trade and industry or have built up an academic career. Though we have maintained close contacts with a substantial section of this group, often because they have stayed on at the ILLC as researchers/teachers, there is little or no contact with others. We would like to strengthen our relationship with them. Hence this magazine and other alumni activities, such as the alumni day on Friday 17 December, on which more in the magazine. Other subjects: what prompted the Brazilian Rafael Accorsi to study logic in Amsterdam? What is alumnus and computational linguist Mehdi Dastani doing at the Free University? How does Professor van der Toorn, dean of Humanities, view an interfaculty institute like the ILLC within his faculty? What drives new ILLC Professor Pieter Adriaans to sail across the Atlantic Ocean single-handed? Personal opinions are offered in the article by our present director Martin Stokhof, and in the column by former director Johan van Benthem. Finally, we have included a number of articles about recent and coming scientific events.

We hope that this first issue will give you a good impression of what is going on inside and outside the ILLC. We would be very pleased to hear what you think about it.

On behalf of the editors,

Ingrid van Loon

Contents

Colophon

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Past, present, future

Present

One of the exciting features of working in an interdisciplinary environment is that one is confronted with new convergencies of hitherto rather unrelated research themes. ILLC has witnessed such developments in the past. The 'dynamic wave' in logic and semantics is a good example, and presently we are seeing another common theme on the rise, that of game theory. From a higher-level perspective, the study of information is ILLC's 'core business': extraction, representation and transmission of information from various sources and through various media is a central concern. The search for a general theory of the nature of information that allows us to link information from different sources and study general patterns underlying its representation and transmission, is a driving force behind a number of projects. Game theory appears to be a promising candidate, and hence is now eagerly studied both by ILLC's semanticists and its logicians. Other developments in ILLC-research exemplify a growing interest in applications. One example is the 'LoLaLi'-project, which aims to develop a sophisticated model for on-line, dynamically updated repositories of information. Another example is provided by the application of research on complexity theory in cryptography. More in general, there is a growing awareness that ILLC's theoretical research stands in need of vindication by applications in 'real life': a challenge that also promises to provide much needed feedback for theoretical research.

Past

But when it comes to answering the question what a research institute is and does, it is obviously not sufficient to come up with a list of people presently employed and activities currently undertaken. Like a scientific discipline, a research institute has a history, and (at least, that's the working assumption) a future. ILLC's identity is also defined by the people who got their training there as graduate students and those who worked in other capacities at the institute. And the results of their work have contributed in important ways to shaping its present agenda.

Future

ILLC wants to keep in touch with its past not (only) for nostalgic reasons, but also with an eye to the future. Its alumni may serve as 'role models' for the present generation of graduate students: they can inform them about the wide range of possibilities that lie ahead, and they can tell them about the difficulties they may encounter. And ILLC's alumni may also provide a much needed link to the world outside, to developments in other fields and in other places, both inside and outside Academia. In this way past and present can work together in defining the future.

It is for reasons such as these that ILLC wants to strengthen its ties with its alumni. By keeping them informed about its present activities, for example by means of this magazine and by organizing regular meetings in which past and present can meet 'face to face'. We are happy to have found out that ILLC's alumni continue to be very much interested in the institute. So, to paraphrase Davidson & Harman's celebrated phrase: 'A common identity already exists, our aim is to make it a cooperative one.'

Martin Stokhof
Scientific director ILLC

New ILLC professor

Interview with entrepreneurial scientist Pieter Adriaans

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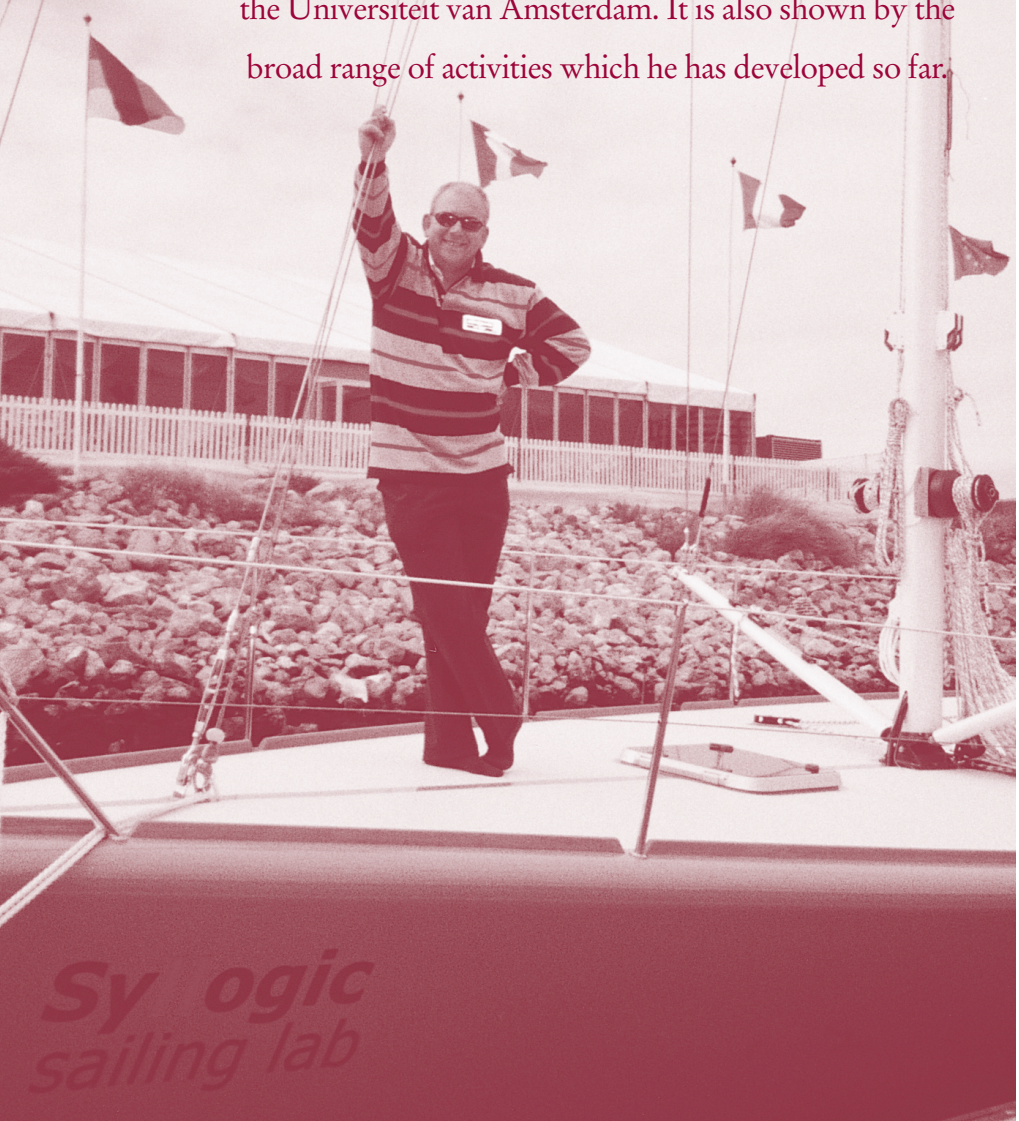


After graduating in philosophy, he refused the opportunity to carry out doctoral research into the philosophical work of the poet Der Mouw. It wasn't exciting enough and there were no jobs at the universities. 'Philosophy meant living on the breadline. During my studies I got really interested in analytical philosophy, the more formal side of the discipline.' He decided to try his luck in business, taught himself how to programme, and promptly found himself in the middle of the microcomputer revolution and the expert system revolution

One thing led to another. After being employed for some years, he started for himself, eventually setting up Syllogic together with his friend Dolf Zantinge, programming in the proverbial attic. In due course this company was sold, with a heavy heart but for a lot of money, to the American businessman and former presidential candidate Ross Perot. On selling Adriaans stipulated that, besides managing the company, he would also be allowed to occupy an academic position. He has it now at the Universiteit van Amsterdam, where in his spare time he took his doctoral degree in 1992, writing Language from a categorical point of view. 'I thought, if computer science is my future anyway, I want to take my doctoral degree as well. And since my studies I had always been interested in information

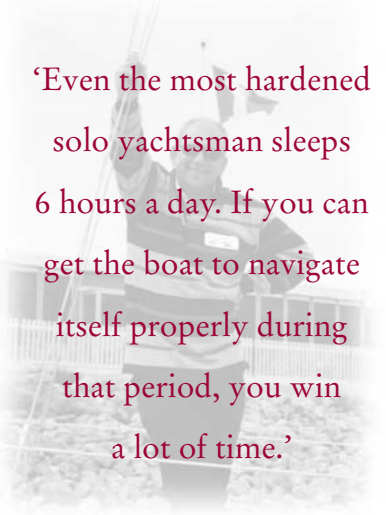
exchange and learning processes.'

The company grew explosively. 'We didn't start Syllogic - the name comes from syllogism - to get rich. We loved our discipline and wanted to practise it on the highest level. We also wanted to build good systems and do our best to convey our ideas about building and visualizing systems. We wanted to do and organize everything the right way. In the end you find that your work is very useful to others.'

Prof. P.A. Adriaans (44) prefers to see himself as an entrepreneurial scientist. He believes scientists should not be afraid to capitalize their results, just as the insights of Syllogic are now being used in the development of the Joint Strike Fighter, the plane which is to succeed the F16. 'I've always been an academic animal. I feel at home in the university, though I couldn't be there five days a week. Usually that isn't good at all and certainly not in a discipline like philosophy. A scientist who needs a week to think about a certain problem won't necessarily produce a better solution than somebody who has been doing all kinds of other things meanwhile. The variation teaches you to look in different ways, it forces you to be creative. Some people are making a good fist of this and I have high expectations for the next ten, twenty years. Besides that I have ideas I want to spread, insights which I believe can help science.

Adriaans enjoys his new academic life. Because of his many activities, he has been described as an historian-mathematician-programmer-artist-musician-yachtsman-entrepreneur. 'Though at the moment I'm a bit too busy.' One reason for this is that a scientific sports project is assuming colossal dimensions, in the professor's words 'that sailing business'. Next year he wants to win the Europe One Star solo yacht race across the Atlantic Ocean. The boat has to be finished this summer, a boat which is the best ever built in the Netherlands from a technical point of view, but is also a sailing self-learning system, so that the boat is capable of translating wind, currents, and other factors into the ideal course. 'Even the most hardened solo yachtsman sleeps 6 hours a day. If you can get the boat to navigate itself properly during that period, you win a lot of time.

'Numerous sensors collect as many data as possible, which are used by the board computer to measure the effects of its navigation and, if necessary, adjust it. 'Making a boat like that is the synergy which I like. To discover something you have to be prepared to get your hands dirty, to develop something and see whether it works. Learning systems are my subject and this a great way to apply it. And a sailing boat is one of the most interesting scientific objects. In fact we don't



'Even the most hardened solo yachtsman sleeps 6 hours a day. If you can get the boat to navigate itself properly during that period, you win a lot of time.'

really know what happens to a boat while it's sailing. We're not even perfectly able to measure the wind on board. The challenge is to teach this machine something we don't even have a theory for. A good sailor knows that when he's sailing close to the wind, he has to keep a laminar flow along the sails. But nobody can see it, you can only feel when the sail is giving full power. The construction consists of a hierarchy of systems. The rudder module checks the force on the rudder ten times a second. In addition the wind is checked once a second, the current once every twenty minutes. This makes for a complex set of interacting agents.' The high degree of interference involved in carrying out measurements on board makes the Robosail project even more interesting for him. 'The reality of an institute like the ILLC is digital, whereas the reality at sea is analogue. In the end making the interface is more difficult than the mathematical problems.'

In his ordinary research Adriaans also prefers working with reality rather than with a model which has become detached from it. He wants to build a system that is able to master the grammar of a language on the basis of sentences from the language. As he put it in his inaugural lecture: 'My short-term aim is to design efficient incremental algorithms which learn shallow grammars on the basis of solely positive examples under simple distributions.' The professor explains: 'Linguists generally feel that children who learn a language are not corrected by their parents but pick up the correct grammar from the examples they hear. I don't know whether this is true, but it's less difficult to assume than to convince linguists of the opposite. It greatly affects efficiency though. A system of just positive examples is much less efficient than one that also uses algorithms with negative examples.'

Adriaans' system must be able to work efficiently. 'If it turns out that you need a hundred million sentences to learn a language, we're on the wrong track, as nobody ever sees that many sentences.' He believes all the important information should be extractable from a minimum number of simple sentences. 'Since there are now some two billion internet pages, all conceivable sentences should theoretically be somewhere on the internet.' So the database of internet pages he has commissioned from the Center for Mathematics and Computer Science (CWI) probably contains enough material for his system to induce a grammar.

To his own satisfaction, this research places Adriaans outside the mainstream. 'When I go to linguistic conferences, I feel I've landed on Mars. This doesn't apply to corpus linguists, but otherwise you hear donkey sentences all the time. People talk for hours about sentences like 'John's sister own a donkey. She beats it' which they analyze so subtly that the connection with linguistic competence is lost. Yet there are so many new possibilities to do research with large databases.

We now have the opportunity in the next four, five years to construct an entire new empirical approach in linguistics.'

This parochialism is prejudicial to scientific study, the entrepreneurial scientist believes. 'Everybody sticks to their own little field. Various groups are working on machine learning, but the work doesn't overlap anywhere. Everybody is so busy keeping up with the literature in their own field that there's no time to range into other areas. In fact, if you do, it's not appreciated. You see the subjects flourishing which are easy to write about in a relatively short time. The focus is not on scientific interest but on low hanging fruit in terms of publishability. If you're not careful, you spend the first half of your life discovering things and the second half convincing other people that it's useful.'

Science is in crisis, Adriaans believes. More involvement from trade and industry can help here. 'Businesses pose different scientific questions, and this can make for a fascinating interaction. Take all the present excitement about building bug-free systems. People set out to develop incredibly extensive verification methods. Mathematically it's all very sound, but what's the use of the guarantee that something is completely bug-free if all the verifications mean that a programmer can only produce 600 lines of code a year? From an economic point of view it's uninteresting, apart from some very specific applications. What we need are robust systems. Look at the human body. It is litterally not bug free. Yet it is a very reliable and stable system. It's good for science to look at things from that angle too. You don't get the best out of people if all they do is purely think. The interesting thing is the world.'

Arjen Fortuin

A report on the Third International Tbilisi Symposium on Language, Logic and Computation

In September this year, infected by the enthusiasm of those who travelled to Georgia in 1997, an ILLC delegation consisting of 8 men and women left for Batumi, a coastal town on the Black Sea where the third successive International Tbilisi Symposium on Language, Logic and Computation was held. My efforts as chair of the Organizing Committee were rewarded: for the second time I had the pleasure of visiting this special country and my Georgian colleagues, who I had taken to my heart in 1997. But it also meant visiting a country bordering on Chechnya and Dagestan (where violent troubles had just erupted), an area where people had recently died of highly aggressive wasp stings, and a place which was very hard to reach (the travelling time from Amsterdam varied from 14 to 22 hours). Once there, however, everybody soon forgot the long and bumpy journey over very poor roads, in buses which would have been immediately hauled off the road in the Netherlands, and anxious relatives and friends could be reassured by mobile telephone. Though the following enticements were not vital to the symposium's success, they were the ingredients which made it such a special event: the impressive banquets, the delicious Georgian wine, the tamadas (for insiders...), the singing and dancing, the Black Sea, and above all the incredible hospitality of the Georgian people.

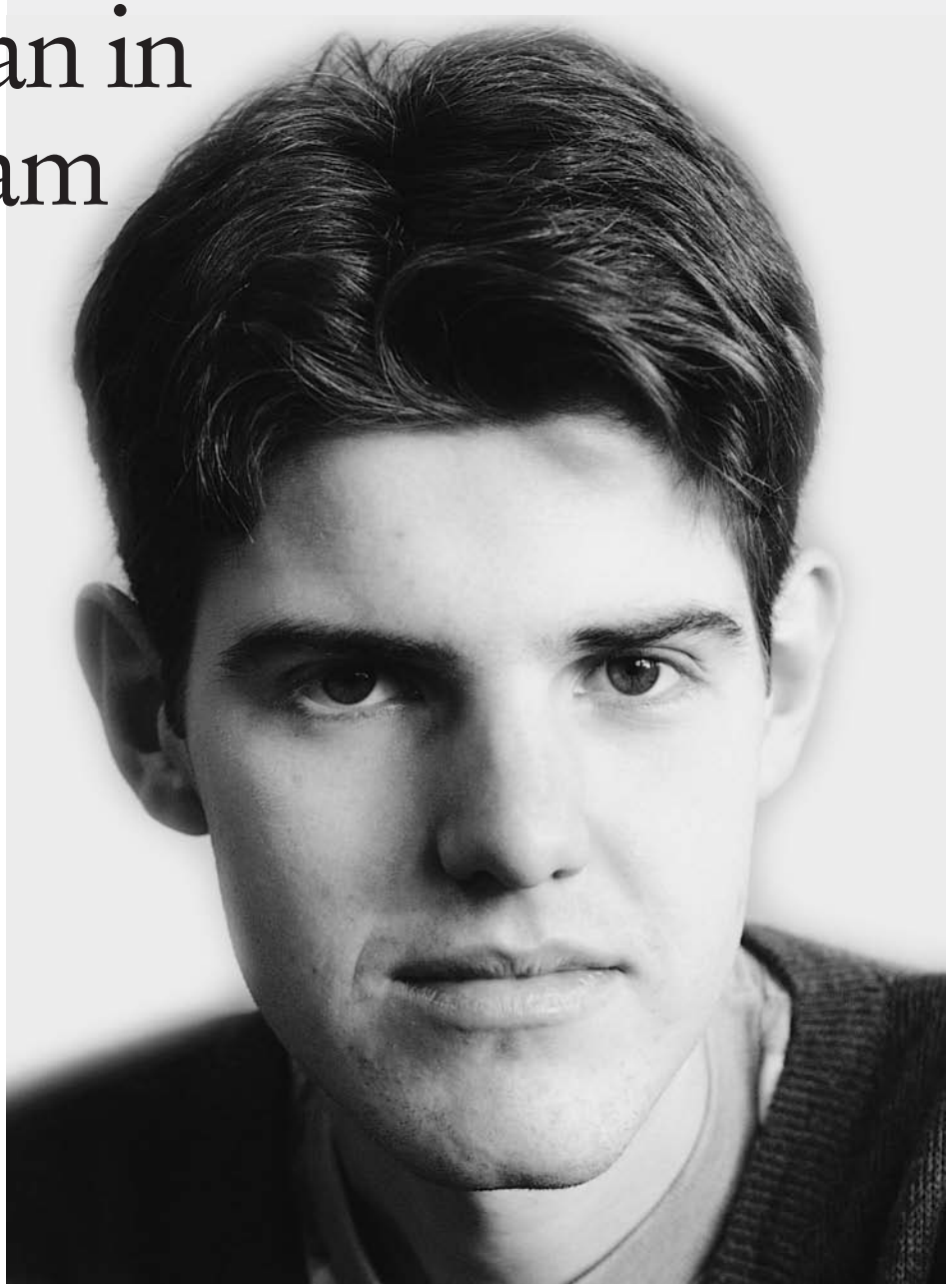
However, the main focus was obviously on science. In this regard, too, the five-day symposium was a success. The programme was full. In the morning three tutorials took place for students: a logic tutorial by Ian Hodkinson (Imperial College, London), a linguistic tutorial by Lauri Karttunen (Rank Xerox, Grenoble), and a general tutorial by Dag Westerstahl (Gothenburg University). In the afternoon the invited lecturers spoke and two parallel sessions with submitted papers took place, again with a logical and a linguistic variant. It would be going too far to discuss the programme in detail, and it would be unfair to others to select one lecture. The fact is that the programme committee succeeded in offering a very broad and varied programme (with subjects from 'Tableau Systems for Modalized Heyting calculus' to 'A Morphological Parser for Georgian'), and that the tutorials in particular managed to attract the younger generation: 26 students of Tbilisi State University and the Georgian Academy of Sciences were present.

Winning the hearts and minds of qualified young researchers is vital in a country where the average researcher earns 40 dollars a month, and where the universities suffer shortages of everything (but especially equipment, computers, good telephone lines and literature). A brain drain of talented young researchers to other countries or trade and industry is therefore a major problem. The way our Georgian colleagues deal with these drawbacks, the quality of their scientific work, but mainly their unflagging optimism is something which touches me deeply.

Count me in for 2001!

Ingrid van Loon

Rafael Accorsi: A Brazilian in Amsterdam



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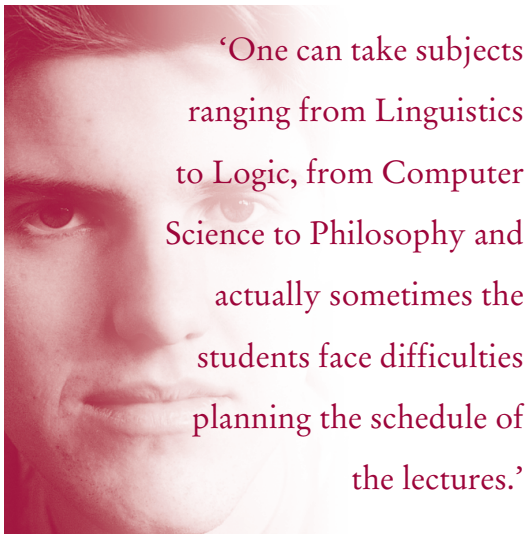
The curriculum itself was mainly focused on practical matters, but since I was interested in theoretical aspects too, I took part in undergraduate research projects from the first year on.

I hoped that this broader background would enable me to take part in Master courses and, in the future, maybe hold a Ph.D. position. Although I had the feeling that my training and additional research experience had not given me the necessary background, I followed Master Courses in Brazil. It turned out, however, that these courses did not offer the theoretical insight I was looking for either; the curriculum was only slightly different from my undergraduate training with just minor formal extensions.

Since I am quite stubborn and wanted more, I decided to ask for detailed information about the Master of Science program in Logic of the ILLC in Amsterdam. After receiving the forms I slightly hesitated to apply because of the

huge reputation and tradition of the logic and computer science in Amsterdam. But since I went this far, I decided to stick to my choice and go for it. I got accepted for the MSc program, and was also selected for a Nuffic fellowship.

The major appeal of the program, is the interdisciplinary environment that it provides. One can take subjects ranging from Linguistics to Logic, from Computer Science to Philosophy and actually sometimes the students face difficulties planning the schedule of the lectures.



‘One can take subjects ranging from Linguistics to Logic, from Computer Science to Philosophy and actually sometimes the students face difficulties planning the schedule of the lectures.’

There are several seminars, meetings and workshops running in parallel with the classes and the tight ‘trimestral approach’ makes it impossible to participate in every event. The advantage of the trimester system is that many subjects can be addressed in a relative short time; it also forces the students to keep the pace since any slip may result in more work at the end. This is not a drawback in any sense. The city of Amsterdam provides many temptations, and the university offers may outings and social activities. The tight trimester scheme is important to keep the students up to date and aware of their objectives.

The support offered by the ILLC is a necessary prerequisite for success; all MSc students have access to computer facilities and the group has its own office. The most important support, however, is offered by the study advisors, who are assigned to each student at the very beginning of the course. They motivate us to pursuit the objectives we had on mind in coming to Amsterdam.

The program is very flexible; every student can choose the project that fits best in his or her perspective and that makes us comfortable and confident about the thesis that has to be eventually written.

In my studies, I mostly took subjects from the Mathematical Logic stream. Indeed, my background being mostly practical made me battle against the intricate subjects presented. However this was my own choice, and it is the only way to obtain the knowledge I was looking for. The lectures cover all basic areas in the field and therefore provide a solid ground for further academic studies. Although I consider this very positive, it must be emphasised that the number of possible courses exceeds the time available by far, and that the student has to be selective in order to avoid and excessive workload.

The MSc course is a good preparation for a future Ph.D. position. There are many possibilities nowadays, but for me, the MSc program in Logic was decisive to choose for the completion of my long term project with a Ph.D.

Rafael Accorsi

Rafael Accorsi graduated on September 24, and is now working as a PhD student at the University of Freiburg, Germany.

The Master of Science program is a one-year curriculum with specializations in the areas of mathematical logic, logic and computer science, and logic, philosophy and linguistics, themes one can find in the research program of ILLC. It is a full year program, consisting of course work and a Master’s thesis. The required background is at least a Bachelor’s or equivalent degree in computer science, mathematics, philosophy or linguistics. All applicants must have a strong academic record. The amount of time needed to complete the program varies, and will depend on previous academic training. Earning a MSc degree will take a student a minimum of twelve months. Sometimes more time is required to complete a Master’s. Because the program is interdisciplinary, there is a lot of freedom in a student’s choice of courses. The student gets a highly individualized program which is developed in interaction with a personal supervisor. This supervisor is usually member of the ILLC staff. For information see the web site at: *www.illc.uva.nl/gpil*

The Logic and Language Links project

On September 1, a new research project started at the ILLC: the Logic and Language Links (LoLaLi) project. This research project about electronic publication of handbooks is carried out by the ILLC in cooperation with Elsevier Science.

The goal of the project is to study information flow in electronic documents and, on the basis of this study, to construct a prototype electronic version of the Handbook of Logic and Language, edited by Van Benthem and Ter Meulen, and published by Elsevier Science in 1997. For this project, I was hired as a Ph.D. student.

At first sight, electronic handbooks might not seem a very interesting subject of research. 'Just put the text in HTML format and deposit it on the Web,' might be an approach to constructing such handbooks.

However, having the text of a (hand)book electronically, one can add interesting features to it. For example, a reader could inform the electronic handbook that he or she is an expert in the field. Then the handbook might create a pathway through the book that is different from a pathway the novice would get, e.g. elementary parts will be skipped. For this purpose, the handbook text should be annotated in some smart way to allow selection on the basis of difficulty levels.

Another topic of research is the division of a book into chapters, sections, etc. This division is suitable for paper books, but is it also suitable for electronic books? Research has already shown that in the area of experimental physics articles (Communications of Physics project at the WINS Faculty), the traditional division common for paper publications cannot be maintained. More modularity and self-containedness are required. This project also showed that a more prominent role must be given to abstraction of electronic articles: it can serve to guide users through the electronic information modules.

Other interesting features for readers can be added, like information searches with various information retrieval techniques, printing a textbook on a certain subject, etc. Those features make extra demands on the structure of the handbook.

From the perspective of the author, an advantage is the increased publication speed of electronic publishing. Paper handbooks usually have a life-cycle of a decade, which is too long for an evolving research field. However, it might be difficult to write an electronic version of a handbook chapter, as it makes other demands on the structure of the chapter. How can we facilitate authors to do this?

Resulting research issues are, amongst others:

- What are suitable data structures for a handbook, and how can their computational properties be tested?
- How can handbook chapters be structured into self-contained information modules?
- What is the difference between the linear and sequential flow of discourse in a paper chapter and an electronic, modularised chapter?

In my doctoral research, I hope to answer these and other questions concerning electronic publishing under the supervision of Maarten de Rijke and Jan van Eijck.

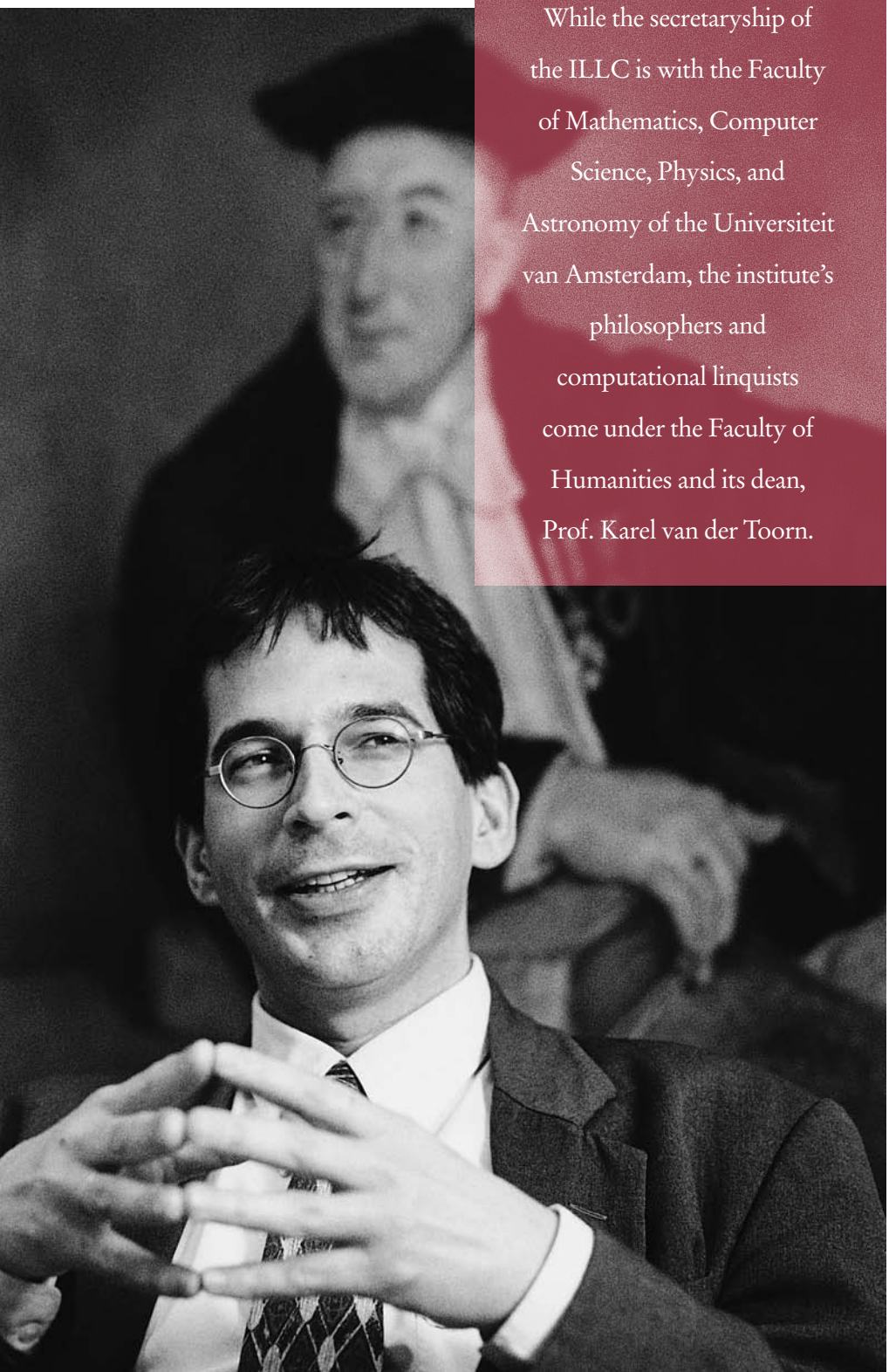
Finally, a few personal details. I studied Artificial Intelligence at the Universiteit van Amsterdam, starting in 1994 and graduating in 1998. The specialization I chose was Knowledge Analysis and Knowledge Modeling, at the Department of Computational Linguistics. For my Master's thesis I stayed in Grenoble, France, for half a year to work at Xerox Research Centre Europe. Together with Boris Chidlovskii, I did research on semi-automatic parser generation for information extraction from the World Wide Web. After my graduation, I studied at the Universiteit van Amsterdam for another year, now following courses mainly on computational linguistics. Since September I am a Ph.D. student here at the ILLC.

Jon Ragetli

See http://www.wins.uva.nl/~ragetli/LoLaLi/ for more information on the Logic and Language Links project.

Interview with Karel van der Toorn; Dean Humanities

‘ILLC should look in other directions as well’



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Van der Toorn was originally a theologian, though he also studied Semitic languages and, for a year, philosophy. ‘But that was a lot more speculative than what the ILLC does.’ In the everyday practice of faculty administration he has little to do with the institute’s activities. ‘I consult regularly with the head, Martin Stokhof, and read the annual reports. And there are lots of dissertations. The time I chaired the reading committee it was for an ILLC dissertation, written by Jaap Maat. The subject was seventeenth-century attempts to develop an artificial language without the pitfalls of natural languages. A language which would leave no room for misunderstandings. For me that’s an exciting idea, certainly in relation to computer languages. I noticed on that occasion that the ILLC doesn’t recognize the category ‘with distinction’ for dissertations. That means a lot less discussion in reading committees. As far as I’m concerned, ‘with distinction’ can be completely scrapped, on the principle: all our doctoral students are good.’

Van der Toorn would like to have strengthened the ties between his faculty and ILLC researchers. When he unfolded his plans last year for restructuring research in his faculty, they seemed to have important consequences for the ILLC. In an attempt to impose a clear and efficient structure on the faculty’s fragmented research and to put an end to the many little islands of research, the plan provided for a Language and Logic research institute. This was to be formed not only by the linguistic philosophers of the ILLC, but also by linguists

working elsewhere in the faculty.

The idea fell through. 'It seemed to me a cooperation which could greatly benefit both parties,' says Van der Toorn. 'There's little scientific interaction between the ILLC and the research institutes IFOTT and HIL, in which the linguists of the faculty work. I think it's good for related fields in the faculty to work together as much as possible. But the ILLC wanted to keep its independence at all costs.'

Where others had to follow the board's tack, the logicians were given an exceptional position. 'It's the only exception we made. We allowed it because of the special quality of ILLC research, which measures up well internationally. Another factor was that the staff members would clearly feel deeply unhappy to be placed in a different institute. The strength of resistance also plays a part in this kind of matter. Not that our linguistic institutes, IFOTT and HIL, are at all bad. It was significant that they had a great chance of being recognized as a top-class institute by NWO.'

Cooperation with the ILLC could have given a fresh impulse to the linguists in his faculty, Van der Toorn believes. 'For instance for phonetics. It's now part of linguistics, but has a very technical side which could benefit enormously from more cooperation with the ILLC. The strong side of an institute like the ILLC is that it crosses the borders between faculties, but I'm sad to say they seem fairly aloof from other institutes in the Humanities. They're right to present themselves as interdisciplinary and base their freedom on this, but they refuse the temptation to look in other directions as well.'

The dean can understand a certain aloofness. 'Many interfaculty institutes feel vulnerable, and rightly so if you look how the university divides its money. The situation is relatively uncertain. I can imagine that the dynamics of such an institute leads to aloofness. But there should always be lines of communication. There's no point in bringing people together in a new institute if everybody goes on to make their own programmes.'

According to the dean, the linguists were interested in more intensive cooperation with the ILLC. 'They regret ILLC not taking part, though obviously it's hard to judge how earnest their wish was. It's the done thing to say you want to work together, certainly with an institute that's doing well. The ILLC is thriving and gaining an international reputation. Our linguistic institute is more in a phase of consolidation. The ILLC is doing innovative things, and this could have helped the rest of the faculty.'

'My general impression of the institute is that it's a group of a people who are a great support to each other, a flexible structure buoyed up by the enthusiasm of the staff members and their qualities as researchers.'

For the time being the ILLC contingent in Humanities appears to be an outsider with an orientation to the exact sciences. 'In any case they're liable to be seen that way. This may be a result of the call for independence. In terms of what they do I'm not sure that the differences are really that big. In general, research in the humanities is much more interpretative. But the logical component means that the ILLC is also firmly anchored in philosophy. But I doubt whether the gap between the art historian and the logician is ultimately much bigger than that between, say, a theologian and a historical linguist.'

'Interfaculty institutes find themselves in something of a no man's land,' thinks Van der Toorn. 'Faculties strongly tend to want research on a faculty basis. But the faculties involved don't make a point of sitting down to discuss how the ILLC is doing. You stay informed about the quality of the research, but ultimately your influence is marginal. I have no idea how far my authority theoretically goes. The Faculty of WINS (Mathematics, Computer Science, Physics and Astronomy) has the secretaryship of the institute, but I don't think any of the parties knows exactly what this secretaryship means. In a few years' time the university wants to switch to 'institute funding'. This means that money is no longer divided via the faculties but is directly allotted to the training and research institutes, on the basis of programmes and past performance. The board will probably negotiate this with WINS, but I'd like to be involved too.'

Van der Toorn would like to give more structure to the ILLC administration. 'The university's international school, for instance, has a director and also a supervisory board, made up of the deans of the faculties involved and a representative of the board of governors. I think that would be a good construction, but maybe the ILLC feels very comfortable with the present situation.'

But the dean feels it may also have drawbacks. 'For example, it's not clear to me what the structure of auxiliary personnel is. Now they use WINS facilities, and it works. But if it doesn't work, things could become less clear in practice.' Not that he expects this. 'My general impression of the institute is that it's a group of a people who are a great support to each other, a flexible structure buoyed up by the enthusiasm of the staff members and their qualities as researchers.' Therefore it is not a place where the dean of the Humanities Faculty, which is retrenching, will look to find cut-backs. 'It's just about the last place to take money away from. That would be a great waste, since it has some of our best researchers. Only, it would be good if the rest of the faculty could profit more from the spin-off from their work.'

Arjen Fortuin

‘Logic after the Golden Age’

Column by Johan van Benthem

TIME magazine recently published a list with ‘the 20 most important intellectuals of this century’. Three of the twenty were from the interface of logic, computer science, and linguistic philosophy: Kurt Gödel, Alan Turing, and Ludwig Wittgenstein. Whatever one thinks about such lists, the above fact is impressive evidence of cultural influence, especially considering that the list of 20 contains no mathematicians, linguists, or computer scientists. (It does include the inventor of internet, but he was a CERN physicist.) So is ILLC research secure and prosperous, in the Promised Land to which these great pioneers guided us? The second fifty years of logic in this century has in fact been described as the development of ‘fine structure’ within the contours discovered in the golden thirties by the above thinkers, and others of the same ilk and calibre, such as Luitzen Brouwer and Alfred Tarski. This makes historical sense as well: ideas often demonstrate their greatness only after a century of development and consolidation. Newton’s classical mechanics only proved its true breadth and depth during a century with remarkable successors: the Bernouillis, Lagrange, Laplace.

Unfortunately, however, much research gradually becomes consolidated in details: with growing technical ingenuity for experts, but without the original revolutionary fire, and without a clear connection with any larger issues. Every discipline, ours included, has its fleet of sailing ships, fully rigged with quality, but on their way to nowhere. I believe that the rationale of publicly subsidized science is not high-flying ingenuity for the cognoscenti, but great issues of clear importance. This importance need not be directly practical, but may relate to cultural values too. In my view, we should regularly reflect on these kinds of issues. I am often struck by the conservatism of specialist agendas, high-lighted by the stock themes and sometimes even the lay-out of standard journal articles. The ‘tricks’ which everybody learns are remarkably uniform.

What are the great research questions which drive the ILLC? More personally: what are the burning intellectual questions which exercise me, other than: ‘how do I add an epsilon to my specialism, or how can I be a delta cleverer than my close colleagues’? And are the great questions now the same as those which motivated Gödel, Turing, and Wittgenstein?

Personally I don’t think so. At the close of the century, we are increasingly faced with new intellectual phenomena and problems which simply did not occur on the agenda of the classical logicians. The initial emphasis on the foundations of mathematics and philosophy has fallen away, and logic finds itself in a scientific environment where the main themes are the nature of information and cognition. The Grand Challenges here are different from what they used to be. Just consider this empirical miracle: why is it that people are so successful in carrying out their higher cognitive tasks - of which reasoning (no matter how broadly interpreted) is just one - and what does logic have to say about asserting, asking, learning, reading, and related activities, of individuals and groups? Or to mention a more theoretical theme: how is our favourite logico-semantical concept of information connected with that of physical or algorithmic information theory, and can we achieve a grand unification here, comparable with what physicists pursue? Finally, in realistic applications, ‘logic meets bulk’. Logical systems pursue maximum simplicity in axioms and rules, but they function in a world of information and cognition full of complexity. What can logic say about the reality of the Great Mass of information carriers in language, writing, or internet, which seems to require entirely new concepts of architecture on an intermediate level?

In this context the focus of classical logic changes in various ways. First, the perspective changes: from purely methodical themes to real phenomena. Not only: what is a ‘proof’ in some Platonic heaven, or as an idealized mental construction, but also: how does high-level and low-level argumentation proceed? Obviously we approach this in an exact manner, and so usually with mathematical models, but these are not an end in themselves but a means to a better understanding, and perhaps better practice, of the phenomena. In doing so we run up against Gottlob Frege’s ban on ‘psychologism’, the realistic interpretation of logical entities. In my view, the resulting excommunication merely gives up a scientific position that had become infertile and narrow-minded. Next, I see another change of habit, from reflection to action. Logical methods not only help us to understand the world but also change it, for instance in computer science and AI. In this way the quality of research can be measured, not only by understanding existing phenomena, but also by the creation of new ones, which did not exist in the past.

Given this shift from internal to external focus, who are our closest scientific neighbours? The ILLC believes it is extremely broad-minded, having not only intensive contacts with the old mathematical and philosophical fraternities but also, since two decades, with linguists and computer scientists (and some of us believe that even this stretches too far). But of course information and cognition are equally the domain of statisticians, psychologists, physicists, neurologists, and biologists. The logical community is still rather confined, and could open up considerably in terms of inspiration and outward appeal. Would we still have much of importance to offer in such a broad scientific environment? I believe so, providing we recognize the broad outlines in logical research, and keep the smaller issues in proportion. But that is not the subject of this column.

Interview with alumnus Mehdi Dastani

About pictures, agents, and universities

At the end of last year Mehdi Dastani, after taking his doctoral degree at the ILLC, gained a postdoc place financed by The Netherlands National Research Council at the Vrije Universiteit Amsterdam. This academic move turned out to be only a small step. Almost fifteen years ago he came to the Netherlands from his native country Iran. After learning the language Dastani (now 35) took a special entrance examination to study at the university. At the Universiteit van Amsterdam he enrolled as a student of computer science, later adding philosophy as a graduate subject.

'From my earliest years I liked debating, especially about scientific subjects. If I was dissatisfied with something, I wanted a quick solution or at least a good explanation. The scientific way of working suits me best. I couldn't imagine doing any other job.' So in fact he did not join the thousands of real or semi-trained computer scientists that companies are fighting over, despite the generous salaries they pay. 'I find it very interesting to solve a certain problem, that's great. But the precise execution of the solution isn't so exciting. Also it's important that you're pursuing your own obsessions. And if you have a place, you've got a lot of freedom to determine the shape of your research.'

In his philosophical studies Dastani was mainly occupied with the relationship between language, knowledge, and logic. 'When you're talking about knowledge, you're talking about many different modes. I was concerned with pictures, visual representations. They have the property of being able to give very rapid access to knowledge through a certain feature. For instance, by being yellow, or more yellow. This makes for a certain order, it expresses a relationship. My final project was about visual reasoning. You've got a picture in your head, manipulations are applied to it, and in this way you can draw a conclusion. It was basically reasoning with pictures.'

Via an ILLC staff member Dastani heard about a three-year research place in the computational linguistics. However, the ESPRIT project 'Graphical communication in human-computer interaction', of which he formed part, collapsed. After a year his appointment was converted into a two-year contract as research assistant. In this period, with the redundancy payment to which Dastani was entitled and an

appointment to another project, he wrote his thesis Languages of perception.

Dastani's interdisciplinary background becomes evident when he talks about his research. He likes to connect the technical issues with everyday circumstances and philosophical questions: 'I wanted to know why we see a certain picture the way we see it,' he says about his doctoral research. 'Why do we see chairs with a table in a certain picture, why do we pick that out as an entity, though you could interpret it in lots of different ways. This brings you close to psychological theory. People have a certain congruence, a certain perception. The *Minimum description length*, you perceive the easiest structure. You perceive things on the basis of a concept you recognize and you always start from the simplest concept you can recognize.'

'Why do we see chairs with a table in a certain picture, why do we pick that out as an entity, though you could interpret it in lots of different ways.'

'You look for the rules of the human visual system, for the grammar.' This was formalized by Dastani, so that the structures in the pictures can also be expressed in formulas and subjected to logical analysis. 'Such a grammar can also be used for visualizing information, so that the intended information can be perceived. That's what the last part of my thesis is about.'

'During my doctoral research I benefited a lot from the ILLC, says Dastani. 'Because I studied computer science and philosophy, I feel at home in an interdisciplinary institute. This was especially helpful when I was looking for my second supervisor. In computational linguistics I was supervised by Remko Scha. He was joined by Peter van Emde Boas. Normally it's difficult to find somebody in a different faculty or at a different university. Via the ILLC it's easier to meet different people.'

Without his contacts at the institute Dastani may have taken longer to get his Ph.D. 'It's an advantage to have expertise in many different fields close at hand, you never have to look far. Of course, in computational linguistics I was somewhat on the fringe of ILLC research. The focus is more on logic, I was doing something different and so was a bit more isolated than some others. You have to do just a little more to persuade people of the value of your ideas and you mainly depend on the people in your own section, though I gained a lot from the colloquia. If I'd been cooped up in my room by myself all the time, things wouldn't have gone so fast.'

Hence the move to the Vrije Universiteit (VU) was a small step but also a considerable change. 'It's very different working there. At the FU everything is smaller and a lot less goes on. I miss the various activities that are organized at the ILLC. There aren't nearly as many colloquia at the VU, at the ILLC they're simply an integral part. Often guest speakers come from abroad and I learnt a great deal from those lectures.' But there are advantages to working at the small VU as well. 'Many things are better organized. If you want to hold an exam, you give the questions to a secretary. After a while you're given the sheaf of finished exams. You don't really have to do anything. That's very well organized. And if you ask for anything, it's in your room the next day.'

For Mehdi postdoc work is a logical continuation of his Ph.D. 'I was particularly looking for a place where I could do further research. The main advantage of taking your Ph.D. is that you can apply for jobs which you wouldn't get otherwise, but obviously it didn't make me a different person.'

Though he belongs to the generation of academics who can rarely count on more than temporary appointments, Dastani is not worried about the future. 'I want to continue doing research, and this implies short-term contracts. I didn't like being put on a reduced pay scheme after my period as a research assistant, but now I have two and half years of my contract left and the research is going very well.'

'After all, in everyday life you don't build an airplane if you want to go somewhere, you let other people do it.'

He is currently occupied with the rising subject of agent technology. 'The production of software is following less straightforward lines and tries to assign control to many small units, the agents. These may for instance form a travel agency on the Internet. After all, in everyday life you don't build an airplane if you want to go somewhere, you let other people do it. The agents have to work in the same way. They're in touch with each other and react to each other, like people in society. For me this is the most interesting aspect of the research. The agents have to be able to learn from each other and if they make a promise, they must keep it. They become more and more complex and surrounding conditions force them to start showing socially intelligent behaviour. Just as people take a different attitude to rubbish when there are rubbish bins in the streets.'

Dastani does not yet know what he will do after his period in Amsterdam-Buitenveldert. Maybe he will try his luck abroad. 'Though I'd prefer to stay in Amsterdam.'

Arjen Fortuin

Announcements

The Twelfth Amsterdam Colloquium Paul Dekker

A Household Name

At the end of this year, from Saturday 18 to Tuesday 21 December 1999, the so-called Amsterdam Colloquium will be held for the twelfth time. For colleagues in the discipline this conference series is such a household name as to require no explanation. Everybody knows that we are talking about the 'Amsterdam Colloquium on Formal Semantics and Related Topics' or the like. The Amsterdam Colloquium is a conference which addresses the formal and empirical aspects of the interpretation, computation, and logic of (natural and artificial) languages.

A Brief History

The series started under the name 'Amsterdam Colloquium on Montague Gramar and Related Topics'. The first meeting in 1976 was prompted by the aim to promote communication between and combine the forces of relatively isolated researchers in the new field of formal (Montague) grammar of natural language. Since then the Amsterdam Colloquium has developed into the main regular and international conference series in its field.

In the course of years the Amsterdam Colloquium has not only (critically) followed many trends, but has also been at the forefront of many developments. In the early years the Colloquium formed a platform for the presentation of developments in Montague grammar. Later it became a showcase for work in various specializations, such as question theory, generalized quantor theory, discourse representation theory, categorical grammars, dynamic semantics, etc. Work that was less linguistically orientated also found its way to the Colloquium, such as work in the semantics of programming languages, information representation, modal and non-monotonic logic, computational semantics, game theory, etc.

Number Twelve

For the coming colloquium six speakers have been invited to give a lecture on themes which overlap with semantics in an interesting way:
Irene Heim (MIT, Massachusetts); Bill Ladusaw (UCSC, Santa Cruz); Jeff Pelletier (University of Alberta); Mark Steedman (University of Edinburgh); Richard Thomason (University of Michigan); Ede Zimmermann (Universität Frankfurt)

The programme consists besides of a selection from 40 submitted entries, a number of which is concentrated in two thematic sessions: 'Non-Monotonicity and Natural Language' and 'Discourse and Communication. Structured Information Exchange.'

Besides being a meeting-place for the 'establishment', the Amsterdam Colloquium provides an excellent opportunity for prospective researchers to familiarize themselves with new developments in their own and related disciplines, and to present their results to the research community.

Prize Competition

Below are eleven titles of lectures presented at the eleven previous Amsterdam Colloquia. Everyone able to indicate which authors gave these lectures will receive a small gift. Send your solution before 15 December to: ac99@wins.uva.nl.

(1) An Extended Treatment of Terms in Montague's PTQ
(2) Compositionality and the Form of Rules in Montague Grammar
(3) Compositional Semantics and Relative Clause Formation in Montague Grammar
(4) Individual Concepts
(5) Individuals and Individual Concepts
(6) Compositionality and Machine Translation
(7) Models for Discourse Markers
(8) Invariants of the Zielonka-Lambek Calculus
(9) Synchronous TAG-grammars and Montague grammar
(10) Compositionality
(11) A Compositional Semantics for the Game-Theoretical Interpretation of Logic

Information on the Colloquium can be found on the homepage http://www.illc.uva.nl/AC99/

Alumni-day 1999

On Friday December 17th, there will be an event for ILLC's alumni. It will be an opportunity to meet the current staff and Ph.D. students and of course each other. The event will take place in centre of Amsterdam, from approximately 16.00 till 22.00 hours. A full program, which will at least include a talk by a very special guest, has been sent to you seperately. Please reserve this date in your calendar! We hope to see you all on December 17th.

The organizing committee: Martin Stokhof; Ingrid van Loon; Peter Blok.

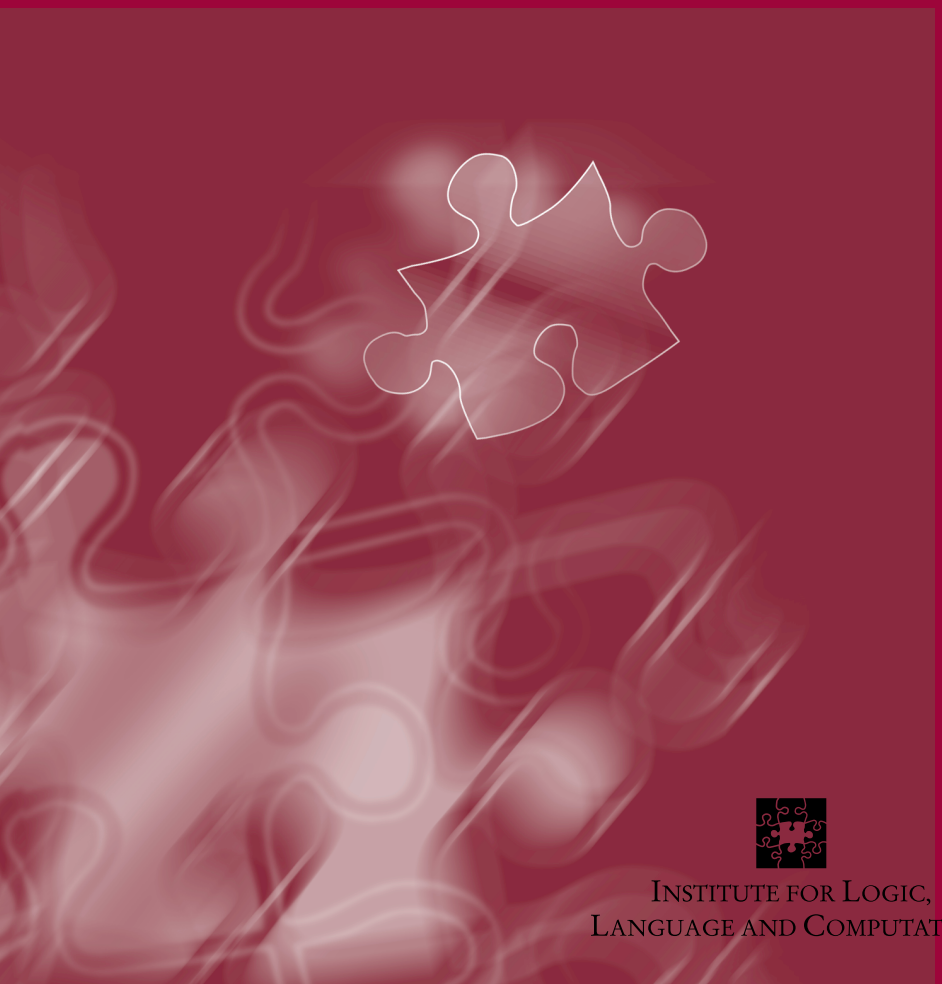
Change of personnel in the past six months

Left:

- Hans Rott (professor) to University of Regensburg, Germany on April 1;
- Hans de Nivelle (postdoc to Saarbrücken University, Germany on May 1;
- Anastasia Giannikidou (postdoc) to University of Groningen on July 1;
- L. Polos (assistant professor) to Erasmus University, Rotterdam on September 1;
- Jelle Gerbrandy (postdoc) to Semantica, Leiderdorp on October 1;
- Maarten Marx (postdoc) to Vrije Universiteit Amsterdam on June 1 (will return to ILLC at January 1.

New:

- Harry Stein (postdoc) on April 1;
- Jon Ragetli (PhD student) on September 1;
- Juan Heguiabehere (PhD student) on October 1.



Institute for Logic,
Language and Computation