



25 Years (B)NVKI

Enterprise Information
Systems as a Research
Area

Adriaan de Groot (1914-
2006) - An Obituary

25 Years (B)NVKI

Editor-in-Chief

2006 was a good year for AI in Belgium and The Netherlands. As witnessed in the previous issue we were glad to have a very nice BNAIC again, this year in Namur. Also we were happy to celebrate 50 years of Artificial Intelligence. In the Netherlands AI really started 25 years later, in 1981, with the foundation of the NVKI (the Dutch Association for Artificial Intelligence). See Jaap van den Herik's contribution on pp. 127-130 for a more detailed account of the starting time of our association. We already celebrated the 25th anniversary of our (B)NVKI during the BNAIC, and now again in this jubilee issue of your newsletter.

The (B)NVKI has known a total of seven chairmen in these 25 years (see front cover). A lucky number indeed. They managed to transform the association from a small but enthusiastic club to the thriving association of today. Her main achievement is the yearly organisation of a conference (since 1988) and the publication of six issues per year of the newsletter (also since 1988). The most important decision taken undoubtedly is the joining with the Belgian AI society, resulting in the addition of the B to the names NVKI and NAIC (see especially Joost Kok's contribution on pp. 130-131 of this issue).

This issue presents contributions by four out of these seven chairmen. They sketch the events most noteworthy in their personal views. Very nice to read! Also, many photographs in this issue give impressions of the (B)NAIC conferences. Some of us will be surprised when seeing how quick you can grow old.

Moreover, this issue features a survey of research in The Netherlands, in the area of Enterprise Information Systems (EIS), by Hans Weigand and Richard Starman. It is obvious that EIS can become a flourishing research area in the AI domain, provided that enough funds become available.

Let me finish by thanking the seven former chairmen for their efforts of leading and guiding the (B)NVKI. As a token of our appreciation we will include in the newsletter (and on the website) a roster of their leadership. But most of all our thanks go to the whole AI community in Belgium and The Netherlands, without whom our former chairmen would have had nothing to steer in the first place! A very happy and prosperous new year to all of you.

Chairmen of the (B)NVKI	
1981-1987	Bob Wielinga
1987-1990	Laurent Siklóssy
1990-1995	Jaap van den Herik
1995-1996	Joost Breuker
1996-1997	Yao-Hua Tan
1997-2002	Joost Kok
2002-2006	Han la Poutré
2006-	Antal van den Bosch



Yours truly at the NAIC'91 in Amsterdam.

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The photographs in this issue are by courtesy of Henk Visser (p. 141) and all others by courtesy of the BNVKI archive.

Front cover: The seven former chairmen of the (B)NVKI. From left to right and from top to bottom: Bob Wielinga (1981-1987), Laurent Siklóssy (1987-1990), Jaap van den Herik (1990-1995), Joost Breuker (1995-1996), Yao-Hua Tan (1996-1997), Joost Kok (1997-2002), and Han la Poutré (2002-2006).

The deadline for the next issue is: **February 1, 2007.**

BNVKI-Board News

Antal van den Bosch

Although the turning of the leaves came late this year, they fell off in the end anyway, so the moment has come to look back and be pensive. Not only 2006 is coming to an end; we are now standing at this hilltop looking back at 50 years of research in artificial intelligence, and 25 years of BNVKI. Perhaps I am just of the sentimental kind, but I was truly touched to see AI veteran Donald Michie interact with the youngest generation of researchers at our last BNAIC conference. Seeing the persistence and enthusiasm of Michie, I wondered whether we were living up to the expectations of his visionary generation. As a consolation, at least there are more of us now than there were then – perhaps the well-known power of brute-force computing will extend to brute-force human ingenuity.

Creating a meeting ground for the different generations of AI researchers is intentionally one of the main goals of BNVKI and BNAIC. We are blessed to have most of the people who founded and shaped AI research in the Low Countries (and who created the BNVKI) still among us. Let us continue to make the best possible use of their presence. You can start doing that and catch up on our association's heritage by reading this particular volume, stockedpiled with good memories.

In sharp contrast with the above, this article's title "BNVKI Board News" has a rather forward-looking feel; I can report that indeed the partly renewed board is doing that in full swing. In the first volumes of 2007 I will be updating you on our latest plans and goals.

The BNVKI board wishes you a prosperous and happy 2007.



Antal at the NAIC'95 in Rotterdam.

Pleasant Memories

Jaap van den Herik
MICC-IKAT Maastricht

Chairman 1990-1995

With much pleasure I accepted the invitation by the Editor-in-Chief to write some of my memories down about the period 1990-1995, during which I was privileged to lead the NVKI (nowadays called BNVKI). It was a period of continuing the restructuring and rebuilding of the NVKI. To give you sufficient insight into what happened in that time I would like to provide you with some background to picture the scene of the 1980s. Moreover, I will tell you about the pinnacle we have reached (ECAI'94) and the friendships that resulted from close cooperation over such an intensive period.

BACKGROUND

The NVKI was founded in 1981 in Amsterdam. It was a splendid meeting of the talented youngsters of that time. The day was organized by Dennis de Champeaux de Laboulaye. We were with about 23 attendees. Artificial Intelligence was in the air, it should be in the Netherlands. In Amsterdam the preliminaries of KADS were formulated and in Delft programs were developed in the domain of Chess. Bob Wielinga became the first NVKI Chairman. In 1983/1984 AI started its wintersleep worldwide and in the Netherlands. It revived in 1987 under the active play by Erik Esmeijer. He was a second of Laurent Siklóssy, the AI Professor at the Vrije Universiteit Amsterdam.

It was a real happening, Eric and Laurent awoke us out of our wintersleep with a plethora of plans and ideas. A new board was installed with Laurent Siklóssy (President), Erik Esmeijer (Secretary), Koos Mars (Treasurer), Jaap van den Herik (Vice-President and Editor of the NVKI Nieuwsbrief) and a few others, among them Maarten van Someren.

The latter person was very important to us, since he had announced independently and simultaneously (together with Guus Schreiber) to organize a first NAIC conference in Amsterdam to be held in 1988. All signs were pointing in the same direction: AI was alive and kicking in the Netherlands. Even the applications had their say, since in the end of the 1980s we saw several AIT conferences (Artificial Intelligence Toepassingen). Although both conferences (NAIC and AIT) were competitors in the beginning, we could see the same speakers at their manifestations. I remember a highly esteemed colleague of that time who gave a nice presentation

at the AIT'89 on logic formalisms and was surprised to have a question from the audience: "I listened with interest to your presentation, but what is the application?" The straightforward answer he gave was: "There is no application". Afterwards we all helped him: "He had his lecture, because he is hoping to find an application at this conference". After a NAIC in Amsterdam (1988) and Enschede (1989), the third NAIC was in Maastricht (1990), to be more precise in Rolduc in Limburg, near Kerkrade. Moreover, we were successful by combining it with the AIT. Two conferences, two proceedings, one location.



Professor van der Poel at the NAIC/AIT'90 in Rolduc, Kerkrade.

WHAT A START

The organization of a NAIC is always fascinating and challenging. At that time I was three years affiliated to Maastricht and I would like to give the University its place on the AI map in the Netherlands, Europe, and the World. The NVKI board had nominated me as successor of Laurent Siklóssy, whose three-year term ended. Moreover, he was not eligible for a next term, due to personal circumstances. So, my honour was at stake to organize a good, very good conference. I had invited Professor Konrad Zuse (the constructor of the first computers Z1 up to Z4) and Professor Wim van der Poel (Delft University of Technology), one of the founding fathers of Computer Science in the Netherlands, and constructor of the TESTUDO and the ZEBRA (Zeer Eenvoudig Binair Reken Apparaat). All was organized very well in the previous educational institute for the Roman Catholic Clerus in Rolduc. They had excellent rooms for overnight,

excellent rooms for presentations, excellent rooms for lunches and dinners, and excellent rooms for receptions. The first day we had a full-dressed reception. I remember quite well, I was too busy to have a drink and a snack. All others enjoyed drinks, snacks, and the ambulant dinner. It was a fantastic start. The next day, the show-up was considerably diminished. Was the party too exuberant? Had there been too much drinking? I went up to the rooms, saw open doors and people in their beds: "Hey, come on, we are starting". "Yes, Jaap, but". After five open doors, I started to understand that this was something special. I looked in the garden and saw some people hanging around, definitely not able to employ any scientific activity. "What happened to you?" "Jaap, I really do not know, you know I am not a drinker, I don't like alcohol, but".

After a few of such conversations, I understood slowly but unputdownably that we had celebrated the opening in the active presence of "salmonella". Afterwards, I am happy that a few of my friends were able to attend the NVKI meeting to elect me to your chairman for a period of five years. Thank you for your trust in me. I learned my lessons and I am now even more "check-minded" than before.

OUR ACTIVITIES

In our Board meetings we developed the plan to host the ECAI in the Netherlands. Since the 1980s, the ECAI had grown to an established conference for all European researchers. The first version of the ECAI, then not named as such, but later counted as such, had been held in Amsterdam (1981) and was organized by Bob Wielinga *et al.* To have the conference in the Netherlands we should do a bidding at the competition during the ECAI'92 in Vienna. So we should make a bid book and organise many things in the period 1990-1991. SKBS and Erasmus Forum supported us. In Vienna, Bob Wielinga supported me during the defence and with the PR. We succeeded.

Within the NVKI, a period of very intensive cooperation started. We had a special ECAI group and I remember close cooperation with Frank van Harmelen (Tutorials), Francis Brazier (Workshops), Tons van den Bosch (Secretarial Services) and Aernout Schmidt (Financial Controller). Over two years we had a meeting every month. These were exciting times, we had to hunt for supportive money.

In February 1994 I had to decline a meeting since one of my closest friends passed away and his funeral was precisely on our meeting day and hour. At the end of that day I had a telephone conversation with Tons van den Bosch: "Jaap, sorry to disturb you, but in the meeting of today we received a

financial overview by Erasmus Forum. It showed a deficit of 800,000 guilders”. Although we operated under the “ECAI’94 Foundation” it could happen that the Chair was personally liable in case of gross mistakes. That night, I did not sleep well. I counted the number of business firms in the Netherlands with which I had contacts, and I multiplied that 20 times 40,000 is 800,000 and that 40 times 20,000 was 800,000 too. Moreover, I divided 800,000 by my annual salary of that time. Two weeks later, Aernout Schmidt did a good job, he made the mistake in calculation transparent. The ECAI’94 became a big success and the Netherlands AI community became well known in Europe and the World.

THE NEWSLETTER

Communication is the most important asset for forming a community. Right from the beginning, the AI community understood that message very well. So, in 1981 Maarten van Someren became the first Editor-in-Chief of the magazine called KININE (Kunstmatige INtelligence In NEDerland). I have the first products still as pleasant memories at my stock of Newsletters. In the revival time (1987) I became his successor, after Maarten’s wintersleep. I fulfilled that task for three years 1987-1990 and stepped down as Editor-in-Chief when I became NVKI chair. In 1990 Maarten was the secretary of the NVKI Board and we had many bets on his Ph.D. defence with bottles of whisky at stake. Finally, I had the privilege to decide on the last-bet bottle since I was at his committee many years later. Over the years, I received many bottles with pleasure and at the end I gave my share with even more pleasure. In my speech of 1995 (in Rotterdam when I stepped down as chair) I recalled my collaboration with many persons (see above) and, no wonder, I singled out Maarten van Someren as the person with whom I had cooperated the very, very best of all over eight years. Now, you know why. Maarten, thank you for these nice memories.

DISCUSSIONS

“Where smog is, is fire” is an old adage and it seems inevitable. In the NVKI we had our own saying, which reads: “Where Siklóssy is, is discussion”. I have a very high admiration of the intellectual gifts of my predecessor Laurent Siklóssy. He is bright, he is witty, he is a very gentile host – I have been several times in his home in Amstelveen, I have had many dinners with him, I have made many plans with him – , but at one time the idea slowly arose in me that I was one of the very few in the Netherlands who was privileged to have these contacts. His second Erik Esmeijer was, of course, another conversation partner. In the discussions that emerged, Laurent was a master in all details. His arguments were better, his voice was louder, his experience was more international, his examples

were furnished with Noble prize winners, his dialectic was multi-lingual, etc. As the reader may understand, the discussions led to separation. So, there was a time that Maarten van Someren and myself had twice as many NVKI meetings as the other Board members. We spoke with the reduced Board, we spoke with Siklóssy, we spoke with X, and we spoke with Siklóssy, we spoke with X, subsequently we spoke with the reduced Board, and finally we spoke with the full Board.



Siklóssy at the NAIC’89 in Enschede.

It happened several times and every time we succeeded to bring parties back in the group. The main unknown persons X are the highly esteemed colleagues Professor Nicolaas Mars (with discussions on financial affairs and editorships of proceedings) and Professor Joost Breuker (with discussions on many issues with a “principle” nature of what can be done and what not). To the reader it should be clear that my thanks to Maarten van Someren in Rotterdam 1995, actually referred to our cooperation over eight years (1987-1995) with keeping all frogs in our NVKI Board wheelbarrow. In retrospect, it was worth our time and effort. Thank you Maarten.

HONORARY MEMBER

In live, most relations are two-sided. The NVKI and later BNVKI (owing to chairman Yao Tan) have given me much pleasure and opportunities. Therefore I feel obliged to reimburse them. Since my stepping down as Editor-in-Chief (1990), I have served the Editorial Board under a variety of Editors with contributions on Ph.D. defences. I regard this task, next to the production of the Newsletter itself, as extremely important and rewarding. In these announcements we communicate our scientific

progress, the successes of the new generation, and we announce the inaugural addresses. So, I recall with pleasure that the main points of the BNVKI are the BNAICs, the Newsletter, and the Ph.D. announcements (in cooperation with SIKS).

As a last question I would like to address the following one: "To which BNAIC do I have the most pleasant memories?" This is a very personal question, and therefore I deviate for a while from the science circuit. For me, the most wonderful BNAIC was in Antwerpen (1997) when Chairman Yao Tan awarded me a Honorary Membership. I am still grateful for that Award. I wish the BNVKI all the best in the future and hope to contribute to it still for many years.



Three former chairmen together at the NAIC'95 in Rotterdam. Jaap van den Herik (right) hands over the chair to Joost Breuker (middle), who again would hand over the chair to Yao-Hua Tan (left) a year later.

BNVKI

Yao-Hua Tan
Vrije Universiteit Amsterdam

Chairman 1996-1997

It has been some time ago that I was President of the BNVKI. It was a brief period, only one year, but not uneventful. Some special features of this period were the transition from NVKI to BNVKI, the name of our conference was changed from NAIC to BNAIC, and the board decided to appoint Jaap van den Herik as honorary member of the BNVKI, because of his exceptional role as past president (numerous times!).

Although I myself have moved from artificial intelligence to inter-organizational information management, I still come across research from the

BNAIC community frequently. Multi-agents systems that are applied to explain inter-organizational collaboration between companies. Genetic algorithms that are applied in evolutionary economy. Logics and ontologies for business communication. Business models, that used to be the exclusive domain of economics and business administration, have been formalized. Recently, some researchers even started to formalize emotions. The pattern that seems to emerge from this is that Belgian-Dutch researchers have a unique talent for formalizing soft topics, and that they are boundary spanners constantly looking for new areas to integrate.

The BNAIC researcher is also a travelling salesperson going all over the globe, selling his/her ideas in the remotest parts of the world. International trade is one of the things that made Belgium and the Netherlands great, and BNAIC researchers seem to follow this path. They typically play very active and often leading roles in international (EU) research projects.

With these talents, I expect that the future of the BNVKI community will be as bright as its past.

The Addition of the B

Joost N. Kok
LIACS, Leiden University

Chairman 1997-2002

Being part of the board is an interesting experience for an AI researcher. You work closely together with other members of the board and the main task is clear: make sure that the BNAIC conference and the BNVKI Newsletter are doing well. The workload was limited due to the efficient backbone in Maastricht.

However, from time to time there were other big tasks; in our case the big issue was the addition of the **B**. The idea was that the BAAI (the Belgium AI association) and the NVKI (the Dutch AI association) should join forces and merge into one association. The main difficulty was to find a good name, but we had very good suggestions during the NAIC conference. Despite all the interesting suggestions we decided to add a B in front of the names of the association and the conference, giving the new names **BNVKI** and **BNAIC**. We thought it was nice that in this way the old names were still present and it would also give an algorithm for the future addition of more countries. Having solved the

name problem, we thought that we were ready for the new association. However, an interesting list with new issues came up. Let me give a few of them to show what kind of issues a board has to deal with:

- Open a Belgium bank account
- Have Belgium board members
- Have the newsletter in English, as a compromise between French and Dutch
- Change the name not only to BNVKI but also add the French version AIABN (hence the official name would be BNVKI/AIABN)
- Meetings of the board need to be “close” to the Dutch/Belgium border; in fact Breda and Dordrecht were favourite locations
- Have the BNAIC conference also from time to time in Belgium and/or close the Belgium/Dutch border
- BNVKI/AIABN represents two countries, do we get now two votes in the European Coordinating Committee for Artificial Intelligence?

Of course, we were very pragmatic: we introduced the concept of phone meetings and we enjoyed the advantages of the Belgium side, for example the famous lunches at the BNAIC in Leuven. Opening a bank account in Belgium turned out the most difficult part of the whole exercise ...

Most of the interesting memories relate to the BNAIC conference. One of the tricks we did during my time in the board was the inclusion of the BNVKI membership fee in the fee for the BNAIC conference. In this way you could make your department pay the membership fee! It was always nice to go to a BNAIC conference and in particular to see so many young AI researchers. If you have been there a few times, then you will be spotted and you will get the honor to be a session chair. This is a dangerous position – you have to watch the time and this is not always easy with the enthusiastic AI researchers! Luckily as a session chair you are rewarded by the obligation to write about your session in the BNVKI Newsletter!

Anyhow, I have good memories of my time in the board and the results of our efforts are maybe best represented by the Dutch/Belgium flag on the ECCAI website <http://www.eccai.org/> ☺



Reflections of a Recent Chairman

*Han la Poutré
CWI, Amsterdam*

Chairman 2002-2006

I am the latest former chair of the BNVKI. Since I thus stepped down only a few months ago, it is pretty hard for me to look back at the period in which I was member and chair of the BNVKI board. This normally takes several years to ripen. I am talking about the period from 2002 to 2006. One of the main impressions I have from that period, is that it was a very interesting period, both from an organizational point of view as well as looking at the contents: the AI developments. Maybe it is good to address both of them in this little retrospect.

ORGANISATION

In this new century, the BNVKI grew larger (especially the BNAICs) and its environment changed. This meant that several activities and relationships of the BNVKI needed to become more formal and professional. For example, the role of finance became more important in the relationships between different scientific organizations. The BNVKI had to deal with this, since this meant that, e.g., scientific organizations and companies did not want to just fund BNVKI anymore, but actually just their activities (like events) instead. Also, BNAIC organizers wanted, e.g., their secretaries refunded for their work for the BNAIC organization, and also liked a bit of financial profit from their activities, although mostly in a very modest and reasonable way. This was due to the overall finance-wave in the academic community, especially in the Netherlands. In this period, the BNVKI made many of its activities and relationships more formal, like financial agreements with BNAIC organizers or descriptions of the objectives of the BNAIC. Also, since the BNAIC had grown to over 100 participants in the late 90s, the BNAIC format had to be determined better. This led to a regulation about A and B papers (full papers and abstracts), as well as the development of guidelines and a scenario for the BNAIC organization, in order to support its organizers. In the end, it also meant a new look into the future: where do we want to go with the BNVKI and which new activities do we want to develop. These have also been discussed, e.g., at the latest General Assembly in 2006, in Namur. This is a still ongoing process, where next steps will be taken by the current Board.

POSITIONING OF THE BNVKI

The BNVKI has, in my opinion, a rather unique role in the AI society in the Benelux. Unlike other communities in computer science, it has been able to really bring together its researchers in the Benelux, especially via the BNAIC and the Newsletter. One cannot see this in other communities into this extent. Which other community of Computer Science researchers is able to hold a yearly event of two days with, say, 130 participants? I think we should be very happy that this exists. One possible threat, however, is that the senior researchers become more and more occupied in their daily jobs, and just become less visible at events such as the BNAICs. Hopefully, this will change in the upcoming years, taking into account the attention that it currently has from the BNVKI Board. Another possible threat is the sometimes-emerging idea that BNAIC (or BNVKI) should become more international, like becoming a European thing. I don't think this is a good idea at all. At the moment, there are already far too many international events, and we really do not need another one. You only have to look at your email box to see that there are more conferences and workshops than you can possibly visit in the next 5 years. So, BNVKI and BNAIC have a good (bi)national function and fill an important gap in the needs of AI researchers, being a (bi)national meeting place and showcase.

SCIENCE

In today's AI, one could (very roughly) distinguish 3 main streams: symbolic AI, computational intelligence (CI, including, e.g., machine learning), and multi-agent systems (MAS), in order of their age. Whereas symbolic AI had been prominent for a long time in the BNAICs, in this century the representation of different streams appeared to be more balanced in the activities of the BNVKI, especially the BNAIC and Newsletter. This also had to do with the increasing number of actual applications of CI, and the more and more appearing application possibilities for agent technologies. Both these fields also allow for a next step of automation: after the "standard" automation of daily society, by means of administration and information systems, and by means of communication facilities, a next step is to put some "smartness" into daily applications. This has already happened in several ways (automatic cooking devices, spam filters, car devices, management and optimization tools), but modern and future AI will allow for more of these applications. One issue for the AI research seems to be that even for small steps of putting intelligence into daily applications, substantial AI research is needed. So, making "modest" intelligent systems that really work and are applicable, is as challenging as researching towards the long-term goals of massively intelligent systems or knowledge bases.

Having large, decentralized systems of modules (like agents) with limited intelligence each, appears to be an important way to go.

Having said this, I think that we can be proud of the achievements of our research fields. Maybe one thing is still desirable: to further show this to our fellow researchers in Computer Science, that do not work in AI. Sometimes, it is good to just show what we have achieved and what we currently are doing ... This holds of course also for our relations with companies, but this is an ongoing activity already.

GOOD MEMORIES

I have enjoyed my membership and chairmanship of the BNVKI Board. Of course, this had much to do with the BNVKI objectives. But at least as important are the people involved in it. Therefore, I happily look back to the joint work with the (former) members of the BNVKI Board, having many good memories. And of course, this also holds for the cooperation with various other people involved in BNVKI activities.

I am confident of a good future for the BNVKI, and I wish the current BNVKI Board as well as the entire BNVKI a lot of success!



Maarten van Someren at the NAIC'88 in Amsterdam.

Enterprise Information Systems as a Research Area

Hans Weigand (UvT) and Richard Starmans (UU)

INTRODUCTION

Increasingly, we observe that large organizations like banks, insurance companies, health care organizations and governmental departments heavily depend on complex, large-scale integrated information systems. Their scope is no longer limited to a specific office, a single department, business process or functional area (like for example salary administration, production, sales, marketing or human resource management). Neither is their application narrowed to one “link” or “stage” in the supply or value chain, nor to just back office or front office. These systems rather cover entire organizations (and beyond), supporting and integrating complex and rapidly changing business processes, enabling organizational change and redesign, and allowing organizations to flexibly operate and to be innovative in dynamic and competing environments. They are supposed to deal with markets or societies with customers or citizens who constantly enhance their demands regarding services, quality and added value. Put in a nutshell, this is the general challenge, promise or at least sky-scraping ambition.

Well-known application areas, such as Enterprise Resource Planning (ERP), Customer Relation Management-systems (CRM), inter-organizational workflow management systems (WFM), Supply Chain Management (SCM) or even data warehouses and content-management systems all in their own way embody or – to some extent – give shape and contribute to this idea(1). The same applies to topics like E-business-systems, Web-services, Service Oriented Computing and Service Oriented Architectures, that more recently started to dominate the ICT-branch, witnessing the abundance of publications on these issues in ICT-magazines, and the plethora of seminars, courses and master classes, organized and offered by the ICT-branch itself.

It goes without saying that practitioners in the ICT-branch, working in this uninterrupted interplay between hardware, software and processes, experience the consequences of these high ambitions daily, including such divergent problems as legacy problems, interoperability, migration platforms, architectures, business-IT alignment, outsourcing, security, etc. Information analysts, system developers and architects do face greater challenges, making a strong appeal to their competence and skills.

Acknowledging that (academic) research in the information and computing sciences is an important mechanism through which progress in the field of ICT gets initiated or reinforced, one might at least expect that the aforementioned issues are a primary focus in the academic computer-science research field, more particularly in the field of information systems. And, that this research community supports the ICT field by supplying valid methodologies, sound methods, techniques, theories and standards that are applicable in real-life situations. Indeed, the aforementioned situation has invoked many new challenges and research questions, in the field of information systems. Started in the late sixties, it became a well-established field, now encompassing a variety of sub-disciplines, ranging from Business Process Modeling, Enterprise Modeling, Requirements Engineering and Business Process Integration to Workflow Management, Supply Chain Management, E-business and Web-services, but also Architectures. In view of the aforementioned developments in the branch, the classical field of Information Systems is nowadays sometimes renamed into Enterprise Information Systems (EIS); definitely a more fashionable and strategically inspired term, but also reflecting the increasing salience of the business perspective in the field.

AIM

The aim of this paper is to shed some light on the nature and structure of EIS as an academic research area, and, more specifically, to illuminate its current position in computer science in general and in the IKS (Information and Knowledge Systems) field in particular. A position, that in our view is neither entirely obvious, nor fully unproblematic. We will argue that on the one hand it has a high societal and scientific relevance, but on the other hand its position is not without concern either, which makes initiatives for reinforcing the field worthwhile and even urgent. In this paper, we will first discuss briefly the position of EIS as a research area in the Netherlands. Subsequently, we highlight a few historical episodes from the research in information systems, and try to identify a few main characteristics of EIS research regarding its nature and position, which in our view have brought EIS into a rather unique position in the IKS field. Some of our conclusions, especially those related to the situation in the Netherlands, are for the main part based on the results of a recently conducted survey on ways of funding research in computer science, obtained by analyzing over 300 research projects in the Netherlands in the period 1998-2006. Obviously, conclusions based on these data only typify the situation in the Netherlands; other results can easily and validly be generalized to the international position of the IKS field.

In April 2006, a full professor in a US university, in a contribution to an email discussion on the ISWorld List, referred to the “mission” of the IS discipline as being “to turn information technologies into business values”. However, this nice one-liner would be too restrictive. It deprives the IS discipline of any intrinsic scientific value, and the emphasis on business value raises the ethical question to what extent the IS discipline is subjugating itself willingly to the rich and powerful of this world. IS has always contained “critical theory” as well, and rightly so. Empirically, IS is strongly connected to business, but not exclusively – for example, IS has also contributed to better government and to the support of online communities.

THE POSITION OF EIS IN THE NETHERLANDS

Overviewing the entire area of information and computing sciences as a relatively new, but by now well-established academic discipline, the field of IS has certainly acquired its place on the map; it is a respectable subfield with highly regarded journals and international conferences, but it seems to have grown a little less visible and dominant in recent years, despite its obvious relevance for the aforementioned ambitions in the ICT branch. For example, if we observe national and international research agenda's in the information and computing sciences, EIS has usually a very modest place, that could easily be overlooked or even neglected. Hot topics, such as nano-technology, grid computing, parallel and distributed computing, ambient intelligence, the Semantic Web, imaging, gaming and computational intelligence gain much attention, are persistently present at the top of the rankings and thus attract the majority of the available funding. This is remarkable and in some sense regrettable since the majority of the ICT problems in society and companies relate to issues addressed to in EIS-research, rather than to the in itself quite legitimate and respectable subfields, listed above. To be more specific about the EIS position, we will work out two examples in some detail. They both concern the situation in the Netherlands.

First we will have a look at the NOAG-ICT, the Dutch National Research agenda for Computer sciences, outlining the contours for this decade's research in computer science [NOAG-ICT, 2005]. It comprises nine areas of interest:

- the computer of the future
- the data-explosion
- the digital experience
- digital security
- the networked world
- intelligent systems
- methods for design and building
- the invisible computer
- the virtual lab

Much of the research in the IKS field can be associated with or related to one or more of these highly relevant and ambitious topics. A closer look at these topics and the way they have been operationalized and implemented shows that subdisciplines like Artificial Intelligence, Computational Intelligence, Database Technology, Web-based Systems and Information Retrieval all do play their part in the NOAG-ICT and are expected to benefit from it accordingly. For EIS, this is far less obvious. It seems that according to NOAG-ICT, EIS is not considered to be a strategically relevant research area that is worth to be supported and funded by national programs.

A second example is not less worrying. A recently conducted study amongst 300 Ph.D. projects in the IKS field shows how these projects were funded in the Netherlands [Starmans and Meyer, 2006]. Analyzing the data and restricting ourselves to projects in the field of EIS, we find some disturbing results:

- In the last couple of years we observe a dramatic decrease in first-money flow financed projects. In fact for the entire scrutinized IKS-field, it dropped from 41% in 2001 to only 13% in 2006. The trend that universities more and more are inclined to not spend their first-money flow resources to fund Ph.D. research, applies to *all* IKS sub-areas: Information Systems, AI Research, Database Technology, and Software Engineering. However, it seems that the IS field is struck by this trend in a disproportional way.
- The last years we saw a strong rise for nearly all subfields in computer science on second- and third-money flow projects. Second-money flow research received a strong impetus by the setting up of NWO's special interest programs (including TOKEN, JACQUARD, PROGRESS, Catch, etc.). Third-money flow research benefited greatly from the installation of the so-called BSIK-consortia, aimed at improving the “Kenniseconomie” by investing some of the earnings of the Dutch natural gas reserves into its economy's infrastructure. Generally speaking, most areas in computer science are supported by either a NWO special-interest program or a BSIK-consortium or both. However, not so for EIS. The successful JACQUARD-program for Software Engineering has only slightly financed new research in EIS-projects. There are projects with industry, like the Smart Business Network Initiative

(Erasmus University), but this cannot correct the trend we observe here.

- With a few exceptions EIS research in the Netherlands is quite unsuccessful in attracting funding from the European Union as well. Admittedly, the Seventh Framework of the European Union, which starts as off January 1, 2007, explicitly mentions Enterprise Information Systems to be one of its foci and it may well turn out to be a more than welcome exception to the observed trend. However, whether this works out well for EIS (in the Netherlands) or not is hard to assess in advance, so we will refrain from speculating or conjecturing on it here.
- A fourth observation relates to the cooperation between academic EIS researchers and companies in the ICT industry/branch. Bilateral cooperation between such companies and research groups resulting in Ph.D. research is surprisingly small. Contract research, based on bilateral agreements between a company and a research group c.q. researcher as to financing Ph.D. research is hardly obvious in the EIS field as represented by our data. However, it may be the case that our database is biased with respect to this item, as it typically does not include all Ph.D. projects, in particular projects that are executed within companies and not instigated from the university may remain invisible.

These observations are a little disturbing, but they confirm what we can also observe from first-hand experience: there are relatively few Ph.D. students in the EIS field; with a few exceptions EIS research groups are relatively small with mainly 0-5 Ph.D. students; and a considerable part of the research is located outside departments of computer science, which obviously will not strengthen its visibility within the computer-science community.

One recent and encouraging development should be mentioned here as well. In the last decade, there has been an important rise in the number of academic "Informatiekunde" curricula. This makes the area of Information Systems much more visible in the educational domain than it used to be, especially at the academic level. But as we noted before, this development has clearly not (yet?) influenced the research domain.

SOME HISTORY AND MAIN CHARACTERISTICS

Whereas computer scientists occupy themselves traditionally with the design of systems in the

technical sense, information-systems researchers bothered primarily about the application of such systems in organizations. For them, the information system is much broader than the machine and the software. In fact, these are only possible tools: the real information system consists of the information, communication and increasingly coordination processes between people within organizations.

It all started in the 60's of the previous century, with the emergence of computer architectures designed for business applications, particularly the IBM 360-series from 1964. Electronic Data Processing (EDP) aimed at the automation of administrative processes and high-volume transactions typically in large bureaucratic organizations such as banks. Large and bureaucratic organizations existed already for quite some time then, of course. The theoretical sources of IS can be traced back to the late 19th and early 20th century rational management stream of thought, associated with Fayol and Taylor. The conceptual foundations of IS as an area of practice and academic pursuit were first expressed in an article by Leavitt and Whisler [1958!] in which they forecast the coming of "Information Technology" and speculated as to its organizational impact [Dickson, Benbasat, and King, 1982]. These authors described the combined use of computer technology, operations-research techniques and artificial intelligence to enhance the management of organizations. Gordon Davis, the first IS professor in the US, turned this subject into a research area under the term Management Information Systems. Besides Management, other disciplines that have clearly contributed to the early development of the information-systems area are Computer Science, Economics, Operations Research and behavioural science. At the more philosophical or rather abstract level, we can mention semiotics, pragmatics and general system theory.

One of the first "theorists" of information was Bjorn Langefors in Sweden, who is famous for his infological equation that distinguishes and relates "data" and "information", $I = i(D, S, T)$, where I stands for information, D data, S the recipient prior knowledge as result of the individual's life experience, T the time, and *i* the interpretation process. Most interesting is how this deviates from the classical Shannon & Weaver notion of information; a notion that works very well in data communication, but is not of much help in the organizational domain. Langefors defined an information system as "a technologically implemented medium for recording, storing, and disseminating linguistic expressions, as well as for drawing conclusions from such expressions". The Swedish IS tradition has always emphasized the essential human involvement in the information

system and has made significant contributions to the notion of socio-technical design.

But how and why is the IS field different from the rest of computing disciplines? It is far from trivial to answer this question in a straightforward way. For example, one can hardly rely on generally acknowledged classification schemes or taxonomies of these disciplines and sub-disciplines. In fact, most attempts to break down the field and come up with classification systems have not been very successful. For instance, the ACM classification and sub-classification of computer science (CS), information systems (IS) and software engineering (SE) is well known, but much criticized at the same time. In [Glass, Ramesh, and Vessey, 2004] it is convincingly argued that a straightforward comparison of the computing sciences, doing justice to their nature and structure along one dimension is not likely to be successful. One cannot distinguish IS from CS and SE on one axis. The authors discern at least five dimensions that, applied to IS researchers, give rise to the following five questions:

- What *topics* do IS researchers address?
- What *research approaches* do IS researchers use?
- What *research methods* do IS researchers employ?
- What *reference disciplines* do they use?
- On what *level of analysis* do IS researchers conduct research?

Relying on extensive empirical research and having analyzed hundreds of papers from journals, the authors manage to distinguish CS, IS and SE, along these dimensions. Here, we do not intend to repeat or extend their empirical work, but we will show that even a very global and straightforward application of their framework is sufficient to serve our purpose, i.e., illuminating the position of EIS research.

Evidently, IS researchers differ from other fields in the research topics that they address, i.e., the subject matter of the research. As [Glass, Ramesh, and Vessey, 2004] points out they focus on system/software concepts, but mainly from a managerial and organizational perspective. Organizational concepts include Technology transfer (innovation, acceptance, adoption, diffusion), Information/Technology usage/operation, IT impact, but also organizational structure, strategy and alignment / business process reengineering.

However, IS researchers also differ in the research approach, which is typically a combination of empirical evaluative research and design science.

Thirdly, it should be noticed that IS researchers use all kind of research methods which are hardly recognizable in the other fields; quantitative empirical methods such as survey research and laboratory experiments with humans, but also qualitative empirical methods, including field research, case studies and action research. Clearly, they rely less on methods that are heavily used elsewhere in computer science, such as computational experiments and mathematics (but according to Glass, conceptual analysis is the most popular research method both in IS and other computer science fields). IS also deviates from other fields by its more than average use of reference disciplines, i.e., disciplines whose theories and concepts serve as a basis or frame of reference for the research. Organizational Theory, Management and Economics definitely fulfill this role for EIS researchers. One could argue that to some extent SE and other SC disciplines also serve as a reference discipline for EIS. In practice, there are many EIS researchers who regard their work both as IS and SE, but there are also IS researchers who do not consider themselves involved in SE at all. Finally, there is a big difference in the level of analysis: for IS research, this is in principle the organization, or organizational network in which the IT is applied, whereas for CS research, this is the algorithm or at most the set of software components making up a system.

The five dimensions and Glass' elaboration on them do provide us with a first interesting characterization, showing that IS deviates not just on one dimension, but on all! However, there are a few things more to say about the field that illustrate its current position.

“The borrowing of theories from reference disciplines was essential during the early years (...). The borrowing of theories continues to be a major feature of IS work. Some are tested, whereas others are ‘convenience theories’ whose applicability to the contexts in which they are applied is unclear at first, and in some cases stays that way for long periods. There remains a predilection for ‘reference frameworks’, which is a pre-theoretic construct used as a means of organizing limited numbers of largely ad hoc observations or clusters of apparently interdependent variables, preparatory to conducting pilot studies.

The rate of change in the phenomena under study is sufficiently high that it can be argued that neither the paucity of established theories nor the prevalence of ‘exploratory studies’ and ‘research frameworks’ are defects: the IS discipline is in a permanent state of accumulating evidence about new and significantly changed phenomena, in order to enable existing theories to be adapted and new theories to be postulated.” (Roger Clarke, 2006: A Retrospective on the Information Systems Discipline in Australia)

HYBRID RESEARCH APPROACH

It is not a coincidence that EIS is a field that, by its interdisciplinary nature, has always been a platform for intense research methodology fights. Several authors have noted that from its inception, the IS field has been overly self-critical, over and over again questioning its “core”, its foundations, methodologies, etc. At present, this debate still has not come to an end. At least two traditions in the fields with their own distinct methodologies can be recognized: an MIS part, with a social sciences empirical methodology, and a CIS (Computerized Information Systems) part, with a CS design science approach. One of the old debates between these groups is to which extent IS is design science or empirical science. For a major part it is design research, aimed at improving the behaviour of organizations by developing new IT solutions. However, as we saw already it also includes evaluation research, primary inspired by social science or business schools: put roughly, this research deals with experiences of existing technology or technology that is currently being developed. Proposals for improvement for certain classes of certain problems (rather than explanation per se) are the aim of the research. This ambivalent situation with two co-existing paradigms is not unique; e.g., it is also recognizable in the HCI community. Scientifically, there is nothing against this situation; it may stimulate new debates, new insights and even progress in the field. But, it can also weaken the field; it may easily be misinterpreted as a lack of maturity and repel funding organisations.

SITUATED RESEARCH AND RESEARCH METHODS

Another important characteristic becomes visible if we elaborate a little on Glass’ notion of the level of analysis. Typically EIS relates to real-life problems, “situated” in a context, which cannot be reasonably or validly be isolated from this context in studying and solving them. Among other things, this implies that

- There is no easy escape for EIS researchers to trivial “toy examples”. In some branches of AI researchers occupy themselves preferably with toy problems in entire isolation with no clear problem environment or specification; typically one subsequently comes up with a solution, and finishes by proving some desirable properties and by concluding that it is NP-hard / not scalable. Typical IS problems are large, complex, evolving, ill-structured and political. This is the grandeur and misery of the field! One can isolate and simplify certain parts, but that will give only a partial solution. This situation explains the use of qualitative research methods such as case study research.

- Information systems run in a life environment. In studying or changing organizations one cannot start from scratch; business must continue. It is like a ship at the open sea, halfway its destination, and confronted with serious maintenance problems and damage; with no save harbor in sight and unable to return, all repairs have to be done “on the job”, with limited resources and imperfect and inadequate tools, to borrow a famous metaphor of the philosopher Willard Van Orman Quine. Be this as it may, this characteristic of the EIS field is undoubtedly an explanation for the popularity of a method like action research in this area.
- Research should not only consider technical performance, but also organizational benefits and costs. What are expected operational and strategic benefits, and how to calculate the costs? This is often a hard question. Interestingly, it may become more relevant for Computer Science as well, as more and more research projects are instigated (and sponsored) by industry or government. Traditionally, this was no direct CS concern.

INFORMATION AND COORDINATION

[Glass, Ramesh, and Vessey, 2004] already emphasized that IS unlike CA and SE has a strong reliance on several reference disciplines. A full picture and a more profound insight in the field do require a detailed study of these reference disciplines and their adoption in the EIS field. This surely is beyond the scope of this short paper, but we would like to highlight one promising and characteristic line of research here, relating to the fields of organization theory and management, more particularly to the theories on coordination that have been developed there. Coordination is a central topic in organization theory since at least the ‘60s (e.g., March, Galbraith, Mintzberg). In the beginning of the 90’s, MIT professor Tom Malone started to work on an interdisciplinary theory of coordination. Although this initiative did not get much direct follow-up, coordination questions have become more and more pertinent in several disciplines. Interestingly, what we see in modern organizations is that information systems are not just used *within* organizations, but that information system and organization tend to conflate. It is not possible to change one without changing the other. Information systems are the coordination devices of modern organizations. Whether this will lead, at some point, to a blending of management science (business studies) and information systems, remains to be seen; and also how such a blended field will be labeled. The focus on coordination mechanisms can be regarded as a new stage (some talk about a third

wave) of EIS research and will more and more dominate research agenda's in the near future.

“Socio-technical design is concerned with advocacy of the direct participation of end-users in the information system design process. The system includes the network of users, developers, information technology at hand, and the environments in which the system will be used and supported. The process includes the design of the human-computer interface and patterns of human-computer interaction. It stands in opposition to traditional system or software engineering design methods that focus attention exclusively or primarily to activities of system engineers who design the computational functions and features of a new system, and who use computer-aided design tools and notations to capture and formalize the results of such a design process. The cornerstone of the sociotechnical approach is that the fit of the social subsystem and the technical subsystem of the organization is achieved by a design process aiming at the joint optimization of the two: any organizational system will maximize performance only if the interdependency of these subsystems is explicitly recognized. Hence any design or redesign must seek out the impact each subsystem has on the other and design must aim to achieve superior results by ensuring that all the subsystems are working in harmony.”

Taken from: Scacchi, W. (2004). Socio-Technical Design. In W.S. Bainbridge (ed.), *The Encyclopedia of Human-Computer Interaction*, pp. 656-659, Berkshire Publishing Group.

CROSS-FERTILIZATION

To conclude, we will make a final observation regarding EIS and the other IKS disciplines. Over the years, subdisciplines in computer science benefited greatly from cross-fertilization. It occurs frequently that an innovation or fruitful approach in one area turns out to be applicable in another area as well, after some time. For example, SE researchers have profitably used algebraic specifications, and other formal techniques like Petri-Nets. What role does EIS play in this game?

In the early 70's, Ted Codd (IBM), Sjr Nijssen (Control Data), Peter Chen and others introduced and worked out the idea of data independence and, directly related to that, *conceptual modeling*. As Hans Akkermans noted in his EIS 2006 speech, conceptual modeling, using formal or semi-formal graphical representations, has been a successful innovation that has not only been adopted in various fields of Computer Science but also in other disciplines nowadays. On conferences such as ER (Entity Relationship) and the recent OTM (On The Move), we see a merge of this conceptual modeling tradition and ontology research in the AI field. A second interesting interplay that we currently observe is with the field of Multi-Agent Systems. We already drew attention to coordination; coordination concepts, derived from organization theory can be applied directly in the structuring of

agent societies, and conversely, the MAS field can contribute to coordination research for example by offering simulation environments in which different coordination mechanisms can be explored. More subjects could be mentioned where EIS and AI meet, for example, Knowledge Management, Business Intelligence, and Web-based Information Systems.

By definition, EIS is interested in the application of IT in organizations. For example, what are the possibilities of RFID technology in the logistic chain? From the perspective of CS, it is therefore tempting to see it as an applied science. In some sense, we think this is justified. Developing and optimizing formalisms and technologies as other CS branches such as Databases, AI or Information Retrieval do, is not EIS core business. EIS researchers may contribute actively to developing new solutions, and some certainly do, but typically not in their role of IS researcher. However, it is often overlooked that by applying CS solutions, in a disciplined way, EIS is also evaluating them. It provides them with the real-life benchmarks, they so desperately need. From a pragmatist point of view, there is no better evaluation method than actual use. Unfortunately, evaluation research is sometimes viewed inferior to solution design. For the health and strength of CS as a scientific discipline, we believe that evaluation research should receive much more recognition and weight, and not just lip service.

EIS is not a mere application of CS in the field of business, organization theory or economics, like for example AI in Law or AI in Medicine. The point is that in these cases, the application is usually restricted to isolated tasks; there is hardly any interaction between the source field and the application area. The application may impose new challenges to the source field, but these challenges are addressed then within the source field itself. With EIS, the situation is different, as technology and organization interfere often in complex and unpredictable ways. EIS as a discipline is interested in the application of IT in organizations, but also, and more fundamentally so, in information and communication processes in organizations in their own right, not just as context in which the technical systems should run. One of the theoretical frameworks on communication processes developed in the IS field is the Language/Action Perspective that just celebrated its 20th birthday in a special issue of the Communications of the ACM (May 2006).

CONCLUSION

Summarizing, we believe that EIS has a delicate position that should be acknowledged within and outside the field. The situation regarding the way its scientific research is currently funded and institutionalized is worrying. It really demands for

strong reinforcing initiatives, to prevent these funding sources from evaporating. Given the scarce research resources in the Netherlands, and the politics around it, we know that this will not be easy to realize. However, reinforcement of the EIS field is not necessarily at the expense of other fields. It is not a zero-sum game. We mentioned several examples of useful cooperation and cross-fertilization between EIS and other subdisciplines from the IKS field. What we plead for is a better balance between the engineering side of CS and the EIS side, from which not only EIS but also CS as a whole can benefit. CS will only reach its full potential if its results can be applied, implemented and used in (among others) information systems, that really function and do what they were developed for; supporting and automating processes in organizations, enabling these organizations and the people in it to achieve their goals.

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Conference centre or hospital? The beautiful location of the NAIC/AIT'90 in Rolduc, Kerkrade.

Research Contact Day of the Computational Intelligence and Learning Doctoral School

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The first research contact day of the Computational Intelligence and Learning (CIL) Doctoral School was held at the ULB, Brussels on 25 September 2006. The event was organised by the Machine Learning Group, ULB, Brussels and the Machine Learning Group, UCL, Louvain-la-Neuve. The event was a follow-up of the FNRS contact day that was organized last year in Louvain-la-Neuve.

The CIL Doctoral School (web page: <http://www.uclouvain.be/doctoralschool-cil>) is expected to become a forum where researchers in Belgium with common interests in computational intelligence, machine learning, data mining, artificial intelligence, and related fields could share their ideas and views for the benefit of this thriving research community in the country. Allowing the Ph.D. students to benefit from this multi-disciplinarity is the goal of this graduate school.

The contact day brought together over a hundred researchers of the teams involved in the Computational Intelligence and Learning graduate school from research teams across the Communauté Française de Belgique and Vlaamse Gemeenschap.

The events opened by a welcome address by Prof. Gianluca Bontempi of the Machine Learning Group, ULB which hosted and Prof. Michel Verleysen of MLG, UCL presented a brief overview of the motives of this doctoral school and its prospective initiatives.

The highlight of the event was the presentations of their research by the Ph.D. students of the participating teams of the doctoral school. There were 12 oral presentations and 25 poster presentations on the day. The oral presentations were very lively with topics ranging from machine learning theory to image processing and from web mining to trust models. The opening session of the oral presentations of research topics comprised of talks by Pieter Wellens (AI Lab, VUB, Brussels) who presented his work on how grammar emerges to dampen combinatorial search in parsing followed by Youssef Achbany (ISYS, UCL, Louvain-la-Neuve) on his research in optimal tuning of continual online exploration in reinforcement learning, and Alexandre Campo (IRIDIA, ULB, Brussels) on the robotics related subject of how to enhance cooperative transport using negotiation of goal direction. The following session included

presentations by Eveline Hoekx (Universiteit Hasselt) on the topic of mining for tree-query associations in a graph. Equally interesting were the presentations by Patrick Meyer (MLG, ULB, Brussels) on information-theoretic network inference from micro-array data followed by the talk by Patricia Victor (Computational Web Intelligence, Ghent University) on a bilattice-based trust model for personalizing recommendations aimed at social networking websites.

The lunch that followed also proved to be a venue for the researchers to interact and share their research and social interests. The professors of the constituent research groups convened their meetings to discuss on the future course of the doctoral school.

Meanwhile, the first session in the afternoon comprised of stimulating talks by Céline Mancas-Thillou (TCTS, FPMS, Mons) on enhancing the automatic recognition of natural scene texts followed by Kim Luyckx (CNTS, UA, Antwerp) on her research in stylometry using machine learning on syntax-based features, and Marco A. Montes de Oca (IRIDIA, ULB, Brussels) on estimating distribution particle swarm optimization algorithm. The concluding oral session was oriented towards machine learning theory and comprised of presentations by Joaquin Vanschoren (DL & AI Research Group, K.U. LEUVEN) on understanding learning behaviour. This was followed by Cuvelier Etienne (Institute of Informatics, FUNDP, Namur) who presented his work on probability distribution and density for functional random variables and Carlos Alzate (ESAT-SCD-SISTA, K.U. LEUVEN) in the field of out-of-sample extension for spectral clustering based on weighted kernel principal components analysis.

The thriving discussions that ensued during the special poster session were an apt conclusion for the events of the first research contact day of the CIL doctoral school.



Queuing for splendid food at the NAIC'89 in Enschede.

COMSOC-2006 in Amsterdam

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Computational social choice is a new discipline emerging at the interface of social choice theory and computer science. It is concerned with the application of computational techniques to the study of social-choice mechanisms, and with the integration of social-choice paradigms into computing.

The 1st International Workshop on Computational Social Choice (COMSOC-2006) was hosted on 6-8 December 2006 by the Institute for Logic, Language and Computation (ILLC) at the University of Amsterdam. The workshop, which was sponsored by the NWO, the ILLC, the BRICKS project, and the BNVKI, has been attended by 80 participants from around the world: Austria, Canada, France, Germany, Israel, Italy, Luxembourg, the Netherlands, New Zealand, Norway, Poland, Switzerland, the United Kingdom, and the United States.

The aim of organising COMSOC-2006 had been to bring together different communities: computer scientists interested in computational issues in social choice; people working in artificial intelligence and multiagent systems who are using ideas from social choice to organise societies of artificial software agents; logicians interested in the logic-based specification and analysis of social procedures (social software); and last but not least people coming from social-choice theory itself. And indeed, members of all these communities attended the workshop and presented their work.

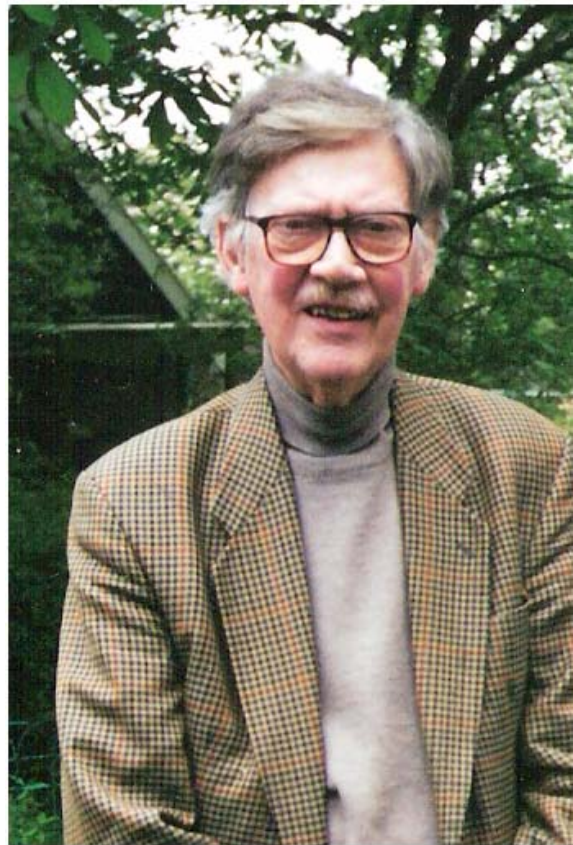
The COMSOC-2006 programme consisted of five invited talks and the presentation of 38 contributed papers, which had been selected from amongst the 48 submissions received by the programme committee. Topics covered included, amongst others, complexity-theoretic studies of voting rules, computational barriers to strategic behaviour, resource allocation and fair division, negotiation in multiagent systems, preference elicitation, ranking systems, logics for social choice, computational issues in coalition formation, mechanism design, and the study of social choice phenomena by means of simulation.

The invited talks were given by Francesca Rossi (Padova), Harrie de Swart (Tilburg), Noam Nisan (Jerusalem), Steven Brams (New York), and Boi Faltings (Lausanne). In the morning of the first day, Francesca Rossi presented recent work of her group

on preference aggregation in the presence of incomparable alternatives as well as uncertainty about the actual ordering of alternatives. In the afternoon, Harrie de Swart discussed an interdisciplinary approach to coalition formation and reported on the use of various software tools for computing stable governments.

The second workshop day started with the invited talk by Noam Nisan, who gave an introduction to the field of algorithmic mechanism design. In particular, the talk provided an overview of results relating degrees of incentive compatibility and the efficiency of approximation schemes for solving multi-unit auctions. In the afternoon, Steven Brams spoke on fair division and discussed different procedures for dividing a cake amongst several people in ways that are both fair and efficient. On the final day, Boi Faltings discussed possibilities for achieving budget balance for social-choice mechanisms, without creating incentives for manipulation amongst the agents involved.

The workshop proceedings are available from the COMSOC-2006 website: <http://www.ilc.uva.nl/~ulle/COMSOC-2006/>. A follow-up event is planned for 2008.



Adriaan de Groot.

Adriaan de Groot (1914-2006) An Obituary¹

*Henk Visser and Jaap van den Herik
MICC-IKAT, Maastricht*

On August 14, 2006 Adriaan de Groot, eminent psychologist and distinguished Emeritus Professor, passed away in his house on the island Schiermonnikoog, the Netherlands. He received international fame for his contributions to chess psychology, in particular for his Ph.D. thesis *Het denken van den schaker* (1946, English translation *Thought and Choice in Chess*, 1965, second edition 1978) and for the publication *Perception and Memory in Chess*, 1996, written together with Fernand Gobet. De Groot's list of publications contains more than 300 titles. In 1983 De Groot in cooperation with H.J.M. Lombaers and S.J. Doorman were supervisors of Van den Herik's Ph.D. thesis on Computer Chess. In 1999, Adriaan de Groot was declared "Dutch psychologist of the century". His last book, *Het forumwaarmerk van wetenschap*, appeared in 2003. (The co-author was Henk Visser.)

¹ This is a slightly adapted version of the one that appeared in the December issue of the *ICGA Journal*.

ARTIFICIAL INTELLIGENCE

Artificial Intelligence has drawn De Groot's scientific interest as early as 1963, with a paper that kept the attention of all participants, *De programmering van het creatieve (Programming Creativity)*. He presented it at a conference on man and computer, in which also Evert Willem Beth, Max Euwe, and Nico Frijda participated. The paper was a direct reaction to the writings by Newell, Shaw, and Simon (1958, 1959). De Groot's criticism was based on his elaboration of the theories developed by Selz and Bahle as previously published in his Ph.D. thesis. In this book, he succeeded in bringing back the notoriously intricately thought of Otto Selz about problem-solving procedures to a clear connected network of ideas applicable to the way in which experienced chess players *operate*. ('Otto Selz was the first to consider consistently a directed thought process as a *sequence of operations*.) De Groot considered Otto Selz as his Master in Science, but due to his passing away during the Second World War, Selz could not act as De Groot's supervisor in 1946. This task was performed by Professor G. Révész.

In the paper mentioned above, De Groot made a distinction between 'choosing' (out of a given set of possibilities) and 'making a choice' (without having the alternatives ready at hand), thereby anticipating

Jackson's distinction of state and situation space problems on the one hand and system inference problems on the other hand. This is, in our opinion, still important in the study of creative processes. It does not mean that De Groot was sceptical towards *artificial creativity*. His conclusion was that "it is, in principle, certainly possible to program the creative, on the condition that one knows what one means with it and analyzes which creative methods are used by a creative person."

PH.D. THESIS

History and the development of science do not always concur. De Groot's paper on creativity did not have the impact it deserved. Yet, Newell, Shaw, and Simon became familiar with De Groot's dissertation and they used it to their advantage in order to conclude that the predictions of their implemented theory on the amount of search were "quite consistent with De Groot's empirical findings on the behavior of highly skilled human chess players."

CHESS

In the 1960s chess obtained a top priority in the AI-research domain and it is De Groot's merit that his pioneering work has been such a great stimulation for Newell, Shaw, and Simon (1957), relatively long before the appearance of the English translation of his Ph.D. thesis in 1965. A.D. de Groot, however, was a critical psychologist, and he raised some 'fundamental methodological questions' about their approach in his book on methodology of 1961 which are also still valid today, such as: by which criteria do we judge the agreement of human protocols and computer processes?

In the revised English edition of his dissertation, which appeared under the title *Thought and Choice in Chess*, De Groot made actual comparisons between programs and persons. His conclusions were fairly negative for the chess programs of that time, not only with regard to 'goal conception', and the ways in which they go through continuous problem development, but also, and foremost, to the difficulty of programming 'the *Gesamtaufgabe* or schematic anticipation of the completed total task, to use Selz's terminology,' which is so characteristic for human subjects.

INTUITION

There is a conspicuous factor in the scientific work of Adriaan de Groot. It is almost a constant factor over more than 50 years. De Groot remained fascinated by the subject of 'intuition' that was already dealt with in his dissertation. But his conclusion of his early paper on programming got another, negative turn:

"If a programmer has no idea of how a claimed human capability functions, he cannot program it. In the case of intuition, even the person using it does not know how it works. Supposing that psychologists cannot explain it either, we can say: The answer to the question 'what computers can't do' is simple – 'intuitive processing.'"

This quotation from *Perception and Memory in Chess* shows that De Groot's opinions are still worth discussing. In fact, Gobet argued in the same book that a program such as DEEP BLUE does have intuition and that his own computational model CHREST simulates at least some aspects of human intuition.

Human intuition meant to Adriaan de Groot the ability to come to a decision by *ad hoc* general, 'holistic' considerations which stem from one's own experience, and are transformed into a relatively vague conjecture. That experienced chess players, mathematicians, musicians, ..., can have such 'feelings' is commonplace, but a more articulated analysis of intuitive inferences and promising conclusions is first needed in order to answer the question in how far they can be simulated by computer routines.

Nowadays computers frequently win matches against top Grandmasters and the World Champion, e.g., DEEP FRITZ 10 vs. Kramnik 4-2, but De Groot's statements on intuition remain stimulating. We may rephrase the remaining questions as follows: (1) is playing at Grandmaster level possible without the use of intuition?, (2) how is intuition implicitly incorporated in chess programs?, and (3) can we develop a methodology on the process of incorporation? In summary, the question still is: what is intuition? To acquire a fair notion of the concept it is advisable to be familiar with the ideas developed in De Groot (1986, 1987, 1988, 1989).

ACTIVE TO THE END

It is true that De Groot remained sceptical about the answer to the last questions up to his very high age, but it is also remarkable that he kept encouraging the investigations on the analysis on intuition. His scientific attitude and his sense of sympathy never left him alone.

With the passing away of Adriaan de Groot, a great stimulating scientist passed away.

The authors are grateful for the intensive cooperation during part of their lives with Adriaan de Groot. We both experienced it as very special, very encouraging, and always goal directed.

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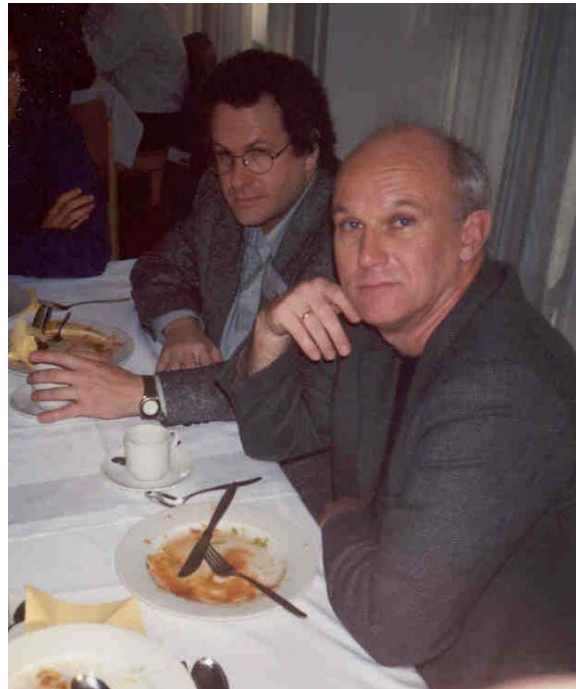
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Professors Jonathan Schaeffer (l) and Arie de Bruijn having a good time at Vaeshartelt, Maastricht (BNAIC'99).

Glorious 2006 Results SIKS establishes its position

*Jaap van den Herik
MICC-IKAT, Maastricht*

In four years (2003-2006) our AI research community made considerable progress in the publication of Ph.D. theses. According to the list of our announcements, we saw the following: 37-45-45-53. For SIKS, their numbers are: 18-20-21-28. For a detailed overview I refer to Table 1, Scores and grand total. This increase of Ph.D. theses clearly exceeds the predictions which I had given on the basis of the series 37-45-45 and 18-20-21. For the record, I quote my December 2005 contribution in the BNVKI Newsletter: "(...), I would like to predict

a slow increase of the current number towards 50 in 2008. For SIKS, I expect an increase to 25 in 2008 and to 30 in 2012.” Obviously, this was a too conservative prediction and I am happy to bring this good news.

There are many observations possible when looking at Table 1. According to my observations of last year, in which 1994–1998 stands for 20 theses, 1999–2002 for 30 theses, and 2003–2005 for 40 theses, we have now reached the period which is characterized by more than 50 AI Ph.D. thesis announcements per year. Congratulations to all AI and AI-related professors in the Netherlands and Belgium (and Luxembourg). Again, I would like to emphasize that AI-related theses form a substantial part of our announcements. These theses are supported by the following domains: AI and Medicine, AI and Law, AI and Economy, and AI and Civil Engineering.

Year	# of Theses	# of SIKS Theses
1994	22	-
1995	23	-
1996	21	-
1997	30	-
1998	21	5
1999	28	8
2000	19	11
2001	25	11
2002	33	17
2003	37	18
2004	45	20
2005	45	21
2006	53	28
Grand Total	402	139

Table 1: Scores and grand total.

SIKS: A BREAKTHROUGH

A brief look at SIKS (School for Information and Knowledge Systems) shows that the increase of the number of theses is mainly owing to the successes of their Ph.D. students. The persistent efforts by the SIKS directors, Professor Meyer and Professor Wieringa, and by SIKS manager Dr. Starmans on organizing Ph.D. courses, ordinary courses and advanced courses have now proven themselves. SIKS is self-disciplined and takes care of its Ph.D. students as do the SIKS professors, who all have an intrinsic interest in a flourishing research climate in the Netherlands.

Below we mention the 53 successful Ph.D. defenders, we provide our new expectations, and give the SIKS list with the official information. We complete the contribution by providing a new list of

announcements of Ph.D. theses and of one inaugural address.

So, we start with a courtesy to the Ph.D. students who completed their theses in 2006 by listing them below together with their promotion date.

W. Zajdel (17-1), P. Verbaan (1-2), S. Angelov (2-2), P. Withagen (3-2), R. Custers (24-2), C. Chisalita (14-3), M. Kyas (4-4), E. Herder (13-4), N. Christoph (21-4), M. Smiljanic (21-4), M. Sabou (27-4), H. Mulder (27-4), C. Pierik (3-5), H.C. van Assen (10-5), S.G.R. Nijssen (15-5), Z. Baida (29-5), P. Van der Duin (29-5), J. Van Ruth (2-6), R. Siebes (9-6), X. Van Montfoort (20-6), T. Van Laerhoven (21-6), M. Wahdan (29-6), K. Beets (3-7), B. Bongers (4-7), J. Franssens (14-7), H.J. Lebbink (18-9), L. Cheung (18-9), M. Sevenster (4-10), R. Tronçon (5-10), J. Hoorn (9-10), R. Malik (11-10), B. Arsenijević (11-10), S. Nagata (12-10), A.S. Lim (12-10), M.H.J. de Bruijne (18-10), I. Juvina (19-10), M. Spaan (20-10), C. Riggelsen (23-10), M.B. van Riemsdijk (25-10), M. Vluggen (1-11), J. Kok (3-11), A.K.A. de Medeiros (7-11), M. Velikova (13-11), L. Hollink (16-11), M. Drugan (27-11), V. Zhizhkun (28-11), S. Bocconi (30-11), V. Mihajlovic (7-12), B. van Gils (8-12), P. de Vrieze (13-12), B. Sigurbjornsson (14-12), N. Althuisen (15-12), L. Eijssen (19-12).

EXPECTATIONS

The new trend gives reason to new expectations. First of all, let us assume it is a real trend of accelerating the number of theses. It is still very difficult to give an adequate prediction. Let me start with two easy expectations: (1) for 2007 I expect 60 Ph.D. announcements and (2) for 2007 I expect (more than) 30 SIKS theses.

Taking into account the emphasis on the Ph.D. education (i.e., Ba–Ma–Ph.D.), in which the last year of the Master education will be a preparatory year for the Ph.D. thesis, then I believe that we may expect the following for 2009: 80 announcements and 40 SIKS students. For 2012, I expect these numbers to be: 100 and 50. Be assured that I will follow the developments myself carefully and that I will encourage my environment to contribute substantially to reach these numbers.

SIKS PROMOVENDI 2006

2006-01

Samuil Angelov (TUE). *Foundations of B2B Electronic Contracting*. Promotors: Prof.dr.ir. P.W.P.J. Grefen and Prof. dr.ir. J.A. La Poutré. Promotion: February 2, 2006.

- 2006-02
Cristina Chisalita (VU). *Contextual Issues in the Design and Use of Information Technology in Organizations*. Promotores: Prof.dr. G. van der Veer and Prof.dr. J.C. van Vliet. Promotion: March 14, 2006.
- 2006-03
Noor Christoph (UvA). *The Role of Metacognitive Skills in Learning to Solve Problems*. Promotor: Prof.dr. B.J. Wielinga. Co-promotor: Dr. J. Sandberg. Promotion: April 21, 2006.
- 2006-04
Marta Sabou (VU). *Building Web Service Ontologies*. Promotores: Prof.dr. F.A.H. van Harmelen and Prof.dr. H. Stuckenschmidt. Promotion: April 27, 2006.
- 2006-05
Cees Pierik (UU). *Validation Techniques for Object-Oriented Proof Outlines*. Promotor: Prof.dr. J.-J.Ch. Meyer. Co-promotor: Dr. F.S. de Boer. Promotion: May 3, 2006.
- 2006-06
Ziv Baida (VU). *Software-aided Service Bundling – Intelligent Methods & Tools for Graphical Service Modeling*. Promotor: Prof.dr. J.M. Akkermans. Co-promotor: Dr. J. Gordijn. Promotion: May 29, 2006.
- 2006-07
Marko Smiljanic (UT). *XML Schema Matching – Balancing Efficiency and Effectiveness by Means of Clustering*. Promotor: Prof.dr. W. Jonker. Co-promotor: Dr. M. van Keulen. Promotion: April 21, 2006.
- 2006-08
Eelco Herder (UT). *Forward, Back and Home Again: Analyzing User Behavior on the Web*. Promotor: Prof.dr.ir. A. Nijholt. Assistent-promotor: Dr. E.M.A.G. van Dijk. Promotion: April 13, 2006.
- 2006-09
Mohamed Wahdan (UM). *Automatic Formulation of the Auditor's Opinion*. Promotores: Prof.dr. H.J. van den Herik (UM), Prof.dr. E.H.J. Vaassen (UM). Co-promotores: Prof. H.F. Ali (Maastricht School of Management), Dr. P.H.M. Spronck (UM). Promotion: June 29, 2006.
- 2006-10
Ronny Siebes (VU). *Semantic Routing in Peer-to-Peer Systems*. Promotor: Prof.dr. F.A.H. van Harmelen. Promotion: June 9, 2006.
- 2006-11
Joeri van Ruth (UT). *Flattening Queries over Nested Data Types*. Promotor: Prof.dr. P.M.G. Apers (UT). Assistant promotor: Dr. M.M. Fokkinga (UT). Promotion: June 2, 2006.
- 2006-12
Bert Bongers (VU). *Interactivation – towards an E-cology of People, our Technological Environment, and the Arts*. Prof.dr. G.C. van der Veer (VU), Prof.dr. J.C. van Vliet (VU). Promotion: July 4, 2006.
- 2006-13
Henk-Jan Lebbink (UU). *Dialogue and Decision Games for Information Exchanging Agents*. Promotores: Prof.dr. J.-J. Ch. Meijer (UU), Prof.dr. C.L.M. Witteman (RUN). Promotion: September 18, 2006.
- 2006-14
Johan Hoorn (VU). *Software Requirements: Update, Upgrade, Redesign – towards a Theory of Requirements Change*. Promotores: Prof.dr. G.C. van der Veer (VU), Prof. Dr. J.C. van Vliet (VU). Promotion: October 9, 2006.
- 2006-15
Rainer Malik (UU). *CONAN: Text Mining in the Biomedical Domain*. Promotor: Prof.dr. A.P.J.M. Siebes (UU). Promotion: October 11, 2006.
- 2006-16
Carsten Riggelsen (UU). *Approximation Methods for Efficient Learning of Bayesian Networks*. Promotor: Prof.dr. A.P.J.M. Siebes (UU). Co-promotor: dr. A.J. Feelders (UU). Promotion: October 23, 2006.
- 2006-17
Stacey Nagata (UU). *User Assistance for Multitasking with Interruptions on a Mobile Device*. Promotores: Prof.dr. J. van den Berg (UU), Prof.dr. M. Neerinx (TUD). Co-promotor: dr. H. van Oostendorp (UU). Promotion: October 12, 2006.

- 2006-18
Valentin Zhizhkun (UvA). *Graph Transformation for Natural Language Processing*. Promotor: Prof.dr. M. de Rijke (UvA). Promotion: November 28, 2006.
- 2006-19
M. Birna van Riemsdijk (UU). *Cognitive Agent Programming: A Semantic Approach*. Promotor: Prof.dr. J.-J. Ch. Meyer (UU). Co-promotores: dr. F.S. de Boer (CWI / LIACS / UU), dr. M. Dastani (UU). Promotion: October 25, 2006.
- 2006-20
Marina Velikova (UvT). *Monotone Models for Prediction in Data Mining*. Promotores: Prof.dr.ir. H.A.M. Daniels (UvT / EUR), Prof.dr. J.P.C. Kleijnen (UvT). Co-promotor: dr. A.J. Feelders (UU). Promotion: November 13, 2006.
- 2006-21
Bas van Gils (RUN). *Aptness on the Web*. Promotores: Prof.dr. H.A. Proper (RUN), Prof.dr.ir. Th.P. van der Weide (RUN). Promotion: December 8, 2006.
- 2006-22
Paul de Vrieze (RUN). *Fundamentals of Adaptive Personalisation*. Promotor: Prof.dr.ir. Th.P. van der Weide (RUN). Co-promotor: dr. P. van Bommel (RUN). Promotion: December 13, 2006.
- 2006-23
Ion Juvina (UU). *Development of Cognitive Model for Navigating on the Web*. Promotor: Prof.dr. J. van den Berg (UU). Co-promotor: dr. H. van Oostendorp (UU). Promotion: October 19, 2006.
- 2006-24
Laura Hollink (VU). *Semantic Annotation for Retrieval of Visual Resources*. Promotores: Prof dr. A.Th. Schreiber (VU), Prof.dr. B.J. Wielinga (UvA). Co-promotor: dr. M. Worring (UvA). Promotion: November 16, 2006.
- 2006-25
Madalina Drugan (UU). *Conditional log-likelihood MDL and Evolutionary MCMC*. Promotor: Prof.dr.ir. L. C. van der Gaag (UU). Co-promotor: dr.ir. D. Thierens (UU). Promotion: November 27, 2006.

- 2006-26
Vojkan Mihajlovic (UT). *Score Region Algebra: A Flexible Framework for Structured Information Retrieval*. Promotor: Prof.dr. P.M.G. Apers (UT). Co-promotor: dr. D. Hiemstra (UT). Promotion: December 7, 2006.
- 2006-27
Stefano Bocconi (Centre for Mathematics and Computer Science). *Vox Populi: Generating Video Documentaries from Semantically Annotated Media Repositories*. Promotor: Prof.dr. L. Hardman (CWI/TUE). Co-promotor: dr. F. Nack (CWI). Promotion: November 30, 2006.
- 2006-28
Borkur Sigurbjornsson (UvA). *Focused Information Access using XML Element Retrieval*. Promotor: Prof.dr. M. de Rijke (UvA). Co-promotor: dr. ir. J. Kamps (UvA). Promotion: December 14, 2006.

NEW ANNOUNCEMENTS

The current list of new Ph.D. defences, officially ranging from December 2006 up to the future in 2007 is given below. It implies that we have four doubles with respect to the SIKS list. However, I consider the additional mentioning is a form of congratulations from the BNVKI editors.

Vojkan Mihajlovic (December 7, 2006). *Score Region Algebra: A Flexible Framework for Structured Information Retrieval*. Universiteit Twente. Promotor: Prof.dr. P.M.G. Apers (UT). Co-promotor: dr. D. Hiemstra (UT).

Bas van Gils (December 8, 2006). *Aptness on the Web*. Rijksuniversiteit Nijmegen. Promotores: Prof.dr. H.A. Proper (RUN), Prof.dr.ir. Th.P. van der Weide (RUN).

Paul de Vrieze (December 13, 2006). *Fundamentals of Adaptive Personalisation*. Rijksuniversiteit Nijmegen. Promotor: Prof.dr.ir. Th.P. van der Weide (RUN). Co-promotor: dr. P. van Bommel (RUN).

Borkur Sigurbjornsson (December 14, 2006). *Focused Information Access using XML Element Retrieval*. Universiteit van Amsterdam. Promotor: Prof.dr. M. de Rijke (UvA). Co-promotor: dr. ir. J. Kamps (UvA).

Niek Althuisen (December 15, 2006). *Analogical Reasoning as a Decision Support Principle for Weakly-Structured Marketing Problems*. Erasmus

Universiteit Rotterdam. Promotor: Prof.dr. B. Wierenga (EUR).

Lars Eijssen (December 19, 2006). *Analysis of Microarray Gene Expression Data Sets*. Universiteit Maastricht. Promotor: Prof.dr. J.P.M. Geraedts (UM). Co-promotores: dr. P.J. Lindsey (UM), dr. H.J.M. Smeets (UM).

Jürgen van Grinsven (January 9, 2007). *Improving Operational Risk Management*. Technische Universiteit Delft. Promotor: Prof.dr. H.G. Sol (TU Delft).

Ruben Sietsma (January 10, 2007). *Gegevensverwerking in het Kader van de Opsporing. Toepassing van datamining ten behoeve van de opsporingstaak: afweging tussen het opsporingsbelang en het recht op privacy*. Universiteit Leiden. Promotor: Prof.mr. H. Franken (Universiteit Leiden). Referent: Prof.mr. Y. Buruma (RUN).

Joan De Boeck (January 15, 2007). *A User and Designer Perspective on Multimodal Interaction in 3D Environments*. Universiteit Hasselt. Promotor: Prof.dr. K. Coninx (U. Hasselt).

Martin Apistola (January 18, 2007). *Advocaat en Kennismanagement*. Vrije Universiteit Amsterdam. Promotor: Prof.mr. A. Oskamp (VU).

Wouter Teepe (January 18, 2007). *Reconciling Information Exchange and Confidentiality: A Formal Approach*. Rijksuniversiteit Groningen. Promotor: Prof.dr. L.R.B. Schomaker (RUG). Co-promotor: dr. L.C. Verbrugge (RUG).

Kees Leune (February 28, 2007). *Access Control and Service-Oriented Architectures*. Universiteit van Tilburg. Promotor: Prof.dr.ir. M.P. Papazoglou (UvT). Co-promotor: Dr. W-J. van den Heuvel (UvT).

Bart Schermer (May 9, 2007). *Software Agents, Surveillance, and the Right to Privacy: A Legislative Framework for Agent-enabled Surveillance*. Universiteit Leiden. Promotor: Prof.dr. H.J. van den Herik. Referent: Prof.mr. H. Franken.

INAUGURAL ADDRESSES

We are pleased to announce the following inaugural address.

Prof.dr. Cees Witteveen (January 17, 2007). *De prijs van onafhankelijkheid*. Chair in Algoritmiek. Technische Universiteit Delft.



Cees Witteveen receives the best-paper award from Jaap van den Herik at the NAIC'90 in Rolduc, Kerkrade.



Second International Workshop on Value Modeling

On January, 18 and 19, 2007 Tilburg University will host the 2nd Int. Workshop on Value Modeling. The workshop offers a forum for presentations of research results, research in progress and discussions on all aspects and applications of value modeling, particularly using the e3value approach. The workshop is part of the *advanced components stage* of SIKS' educational program. Especially students working in the field of *Enterprise Information Systems* are strongly encouraged to participate.

PRELIMINARY PROGRAM

January 18
09.45 coffee
10.15 Hans Weigand (UvT), Strategic analysis using c3value
11.00 Michael Petit (Univ Namur), Goal-modeling and e3value
12.00 break

- 12.30 lunchseminar Paul Johannesson (KTH Stockholm), Goal modeling vs value modeling
- 13.45 Vera Kartseva (VU), Control patterns
- 15.15 break
- 15.45 Plenary discussion

January 19

- 09.15 Jaap Gordijn (VU), Recent developments in e3value
- 10.00 break
- 10.15 Yao-Hua Tan (VU), The ITAIDE project
- 11.00 Pascal van Eck (UT), Real option theory and value bundling
- 12.00 lunch
- 13.00 (open slot)
- 14.00 Plenary discussion
- 15.30 Closing

More information on value modeling can be found at www.e3value.com.

REGISTRATION

The workshop is supported by the Dutch Research School SIKS. Participation is free for all SIKS members, but you have to register in advance (before January 12 with Hans Weigand, H.Weigand@uvt.nl). The number of seats is limited.

LOCATION

Room K702 (Koopmansbuilding). See <http://www.tilburguniversity.nl/university/signpost/> for how to get there.

If you want accomodation, you can arrange it yourself using the following list of hotel suggestions. There will be no reimbursement by SIKS. For any kind of support, please contact Alice Kloosterhuis, A.M.Kloosterhuis@uvt.nl.

TENCompetence Winter School 2007 for SIKS-Ph.D. Students

From January 22-26, 2007 the TENCompetence Winter School 2007 takes place in Innsbruck, Austria. The event is considered as an intense training and collaboration on the core topics related to the TENCompetence project, building the European Network for lifelong competence development. The programme includes lectures and hands-on sessions from leading experts in the field. Details on program and location can be found at <http://www.tencompetence.org/node/88>.

As a result of the cooperation between SIKS and the TENCompetence organisation, SIKS-Ph.D. students

can participate without paying entrance fee. The winter school is part of the advanced components stage of the school's educational program. However, there is a fixed number of places available for SIKS-Ph.D. students at the winter school.

DEADLINE for registration: December 8, 2006.

A free participation as a SIKS-Ph.D. student is only possible by submitting your application to the local organiser milos.kravcik@ou.nl. The application should include a Curriculum Vitae and an abstract (approximately 2 pages) describing the student's dissertation. Please, state your full name, affiliation and that you are a SIKS-Ph.D. student. Ph.D. students will receive a notification whether they can participate as soon as possible. For all questions regarding SIKS and its educational program, please contact office@siks.nl.



Enjoying dinner at the NAIC'95 in Rotterdam.

NVTI Theory Day 2007

First announcement

Friday March 9, 2007, starting at 9:30, Hoog Brabant, Utrecht (close to Central Station).

Lecturers: Tom Ball (Microsoft), Nitin Saxena (CWI), Rineke Verbrugge (RUG), Gerhard Woeginger (TU/e)

The Dutch Association for Theoretical Computer Science (NVTI) supports the study of theoretical computer science and its applications. Again, the organization has managed to compose an interesting program with excellent speakers from the Netherlands and abroad, covering important streams in theoretical computer science. Below you will find the abstracts. NVTI Theory Day 2007 is supported by several organizations, including the Dutch research School for Information and Knowledge Systems (SIKS). All SIKS-members are invited to participate.

The full programme will be made available in due course.

Tom Ball (Microsoft)

On the Design and Implementation of Static Analysis Tools

Abstract: At Microsoft, we now regularly apply a new generation of static analysis tools that can automatically identify serious defects in programs. These tools examine millions of lines of code every day, long before the software is released for general use. With these tools, we catch more defects earlier in the software process, enabling Microsoft to deliver more reliable systems. A number of these tools have been released for general use through Microsoft's Visual Studio integrated development environment as well as freely available development kits.

In this talk I will address the question: "How does one design and implement a static analysis tool chain to help people effectively address a software reliability problem?" In particular, I will identify a set of basic techniques that have proven very useful in constructing static analysis tools and have shown their worth through numerous applications. Experience with these techniques suggests we are approaching an exciting time when more people can contribute to the design and implementation of static analysis tools.

Nitin Saxena (CWI) (Goedel prize winner for 'Primes is in P')

Title: to be announced

Rineke Verbrugge (RUG)

Reasoning about others in multi-agent systems

Abstract: Everyone reasons about others almost daily – when leading a team, negotiating a raise, deciding whether to send email to a group of colleagues with the 'cc' or the 'bcc' option, or deciding how to formulate feedback tactfully. Social cognition and cooperation are essential to success in human life and increasingly essential to modern computer science.

Multi-agent systems consist of dynamically cooperating computational systems, engineered to solve complex problems that require expertise and capabilities beyond the individual components. Investigations into cooperative interactions in the behavioral sciences and computer science show a marked convergence: after all, people cooperate, machines cooperate, and mixed teams consisting of software agents, robots and people cooperate, sometimes even better than people and machines separately.

The area of multi-agent systems has started in the early nineties from distributed artificial intelligence. In recent years fields like social psychology, game theory, logic, and argumentation theory have also contributed substantially to multi-agent systems in order to understand cooperation and to design effective computational and mixed human-machine multi-agent systems.

Understanding social interactions requires rich formal models of cooperation and social cognition, because multi-agent systems consist of several agents that can act and communicate autonomously, without central control. This talk will present some recent results about cooperation and social cognition in multi-agent systems, as seen from the logical point of view.

G.J. Woeginger (TU/e)

Division of a shared resource

Abstract: The talk discusses various notions of "fairness" when n processes have to share a common resource. We describe and analyze some simple protocols, and compare their various advantages and disadvantages. The quality of a protocol is usually measured in the worst-case number of queries that the protocol issues to the processes. We present some lower bound results on the number of these queries, and we discuss the trade-off between keeping this number small and reaching decent approximate fairness.



Joke Hellemons selling "stuff" to John-Jules Meyer at the NAIC'96 in Utrecht.

Workshop on Latent Semantic Analysis for SIKS-Ph.D. Students

On March 29 and 30, 2007 the First European Workshop on Semantic Analysis in Technology-Enhanced Learning takes place in Heerlen at the Open University of the Netherlands. As a result of the cooperation between SIKS and the organisers of the workshop, SIKS-Ph.D. students can participate without paying an entrance fee. The workshop is part of the advanced components stage of the school's educational program. However, there is a fixed number of places available for SIKS-Ph.D. students at the workshop and applications to participate will be honoured in a first-come first-serve manner.

DEADLINES

January 31, 2007: Abstract submission deadline
February 15, 2007: Notification of acceptance
March 15, 2007: Registration closes
March 29-30, 2007: Workshop

A free participation as a SIKS-Ph.D. student is only possible by submitting your application via the conference website: <http://homer.ou.nl/lsa-workshop07/>. Please, state your full name, affiliation and inform the local organisation that you are a SIKS-Ph.D. student. Ph.d. students will receive a notification whether they can participate as soon as possible.

For all further questions regarding SIKS and its educational program, please contact office@siks.nl.

CONFERENCES, SYMPOSIA WORKSHOPS

Below, the reader finds a list of conferences, symposia and workshops, and websites or addresses for further information.

MARCH 28-29, 2007

7th Dutch-Belgian Information Retrieval Workshop (DIR 2007), Katholieke Universiteit Leuven, Leuven, Belgium.
<http://law.kuleuven.be/icri/liir/dir2007/>

APRIL 17-18, 2007

NIOC 2007 Conference: Het perspectief op lange termijn, Amsterdam, The Netherlands.
<http://www.nioc.nl>

MAY 9-12, 2007

4th International Conference on Informatics in Control, Automation and Robotics (ICINCO-2007), Angers, France.
<http://www.icinco.org>

MAY 13-16, 2007

ISCRAM 2007: 4th International Conference on Information Systems for Crisis Response and Management, Delft, The Netherlands.
<http://www.iscram.org/>

MAY 14-15, 2007

BeNeLearn 2007, Amsterdam.
<http://staff.science.uva.nl/~katrenko/benelearn07/>

MAY 14-18, 2007

AAMAS 2007: 2007 International Conference on Autonomous Agents and Multiagent Systems, Honolulu, Hawai'i.
<http://www.aamas2007.org/>

JUNE 12-16, 2007

9th International Conference on Enterprise Information Systems (ICEIS 2007), Funchal, Madeira, Portugal.
<http://www.iceis.org>

SEPTEMBER 12-14, 2007

ACII 2007: Affective Computing and Intelligent Interaction, Lisbon, Portugal.
<http://gaips.inesc-id.pt/acii2007/index.html>



Kowalski advertising logic programming at the NAIC/AIT '91.

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