The Netherlands Organization for Scientific Research, NWO, has launched a special research programme for the cognitive sciences. The programme is an initiative of the General Board of NWO and the councils ALW, EW, GW, MaGW and ZonMW, within the strategic theme Cognition & Behaviour. The Cognition programme explicitly aims to strengthen the theoretical and empirical foundations of the cognitive sciences; to strengthen the cross-disciplinary coherence between the cognitive disciplines; to contribute to their national coherence; and to establish a solid level of public acceptance and support for the cognitive sciences.

The Cognition Newsletter is published under the auspices of the Cognition programme. The newsletter is directed at the Dutch cognitive science community and appears three times a year.

Editor: Eva Hoogland

Reactions, corrections and announcements may be sent to cognition@nwo.nl.
Contributions for the next issue are due July 1, 2003. Announcements for the Cognition E-mail Alerts may be sent to the same address.

Subscription is possible via the above e-mail address. Subscription is free.

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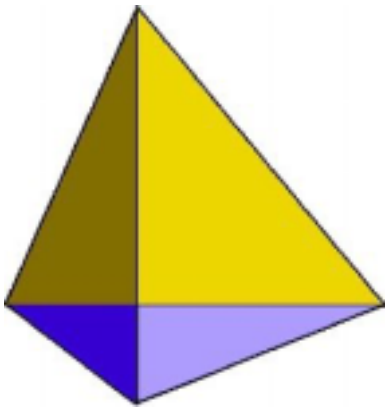
Special Programme for the Cognitive Sciences



Issue 2
March 2003

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Cognition Newsletter

Editorial: The adolescent phase of the Cognition Programme

In this edition of the Cognition Newsletter we pay attention to the second phase of the NWO Cognition programme that is about to start. In this adolescent phase, the programme committee and the steering committee wish to stimulate further integration across the cognitive disciplines. In the present newsletter we explore how the committees intend to achieve this goal.

The bulk of the budget of the programme -- that remains after the first Call for Proposals -- will be laid out on the final *Call for Integrated Research Projects* which is expected to open in May 2003. In addition to this general Call, the Cognition programme has opened a continuous opportunity for smaller grant applications that fit to its further action lines. These include grants for *dissemination activities, educational activities* and for *scientific meetings.* More information about all of these opportunities can be found in the section *News from the Programme Office*.

Moreover, the programme has its own calendar of activities. Each fall, the programme organizes a *public event.* The ball was set rolling at November 1, 2002, by the startsymposium "Tussen Brein en Bewustzijn". In the section *Programme Activities* you find a photo impression of this successful event. Then, in June, the programme organizes an *annual strategic symposium*. This year, the symposium will probably be concerned with "Learning & Language". More on this theme can be read in the article *Taal als Termietennest* (in Dutch).

Let me say a few more words on the programme activities. The intention of all our activities is to seek alliance, as much as possible, with existing initiatives. The European Conference for Cognitive Science, which is discussed at page 8 below, is one such example. We are eager to learn whether there is any enthusiasm to try to get this conference to the Netherlands. But more general, we are eager to learn what we could do for YOU. Which initiatives do you find that we might well seek alliance to? Which activities do you feel that are missing in the Dutch cognition community? Which initiatives do you think may well be coordinated at a national level? We highly appreciate any suggestions on these matters.

One of the aims of the Cognition Newsletter is to set the floor for discussions. Discussions of the above type. But also, e.g., discussions on social issues. Issues that confront a society in which cognition and knowledge are becoming increasingly important. An example is the discussion that is incited in the article *Neuroethics: moral issues that concern us all* on issues on the intersection of neuroscience and ethics. Cognitive science as the 'New Inquisition'? Finally, the Cognition newsletter aims to stimulate more fundamental discussions, as in the column *What is Cognitive Science?* Are the cognitive sciences really "…. a grouping term for a family of related disciplines, a United Nations instead of an Empire", as Johan van Benthem argued in the previous Newsletter? Or is Peter Hagoort right in stating in this edition that ".. for the very same reason why we don't conclude from the division of labour in physics that it makes sense to talk about the sciences of physics, it is nonsense to talk about the cognitive sciences (plural)"?

We heartily invite you to participate in the discussions. Reactions, suggestions and comments may be sent to cognition@nwo.nl. Your letter will be published in the new *Readers' Opinion* section that will take off in the next edition of this Newsletter. Also, more pressing announcements that may be of interest for the Dutch cognition community may be send to the above e-mail address. These announcements will be electronically distributed via our monthly Cognition E-mail Alert Service. We are looking forward to hearing from you.

Eva Hoogland
editor

Taal als termietennest?

door Eva Hoogland

Hoe leren wij een taal? Op het startsymposium 'Tussen Brein en Bewustzijn' bleek dat de Nederlandse cognitie gemeenschap er nog niet uit is. Taal als een termietennest. Of worden we geboren met een talenknobbel?

Het vraagstuk laat zich eenvoudig formuleren. Mensen zijn in hun kindertijd in staat om een taal te leren, een ongelooflijk complex systeem, en doen dit op basis van een talig aanbod dat op allerlei manieren ontoereikend is. Hoe kan een kind deze kloof tussen ervaring en resulterende kennis overbruggen? Het antwoord dat Chomsky hierop 40 jaar geleden heeft gegeven is dat dat gedeelte van de menselijke taalkennis dat niet aangeleerd is, gezien moet worden als het product van een algemeen, aangeboren taalvermogen. Dit universele taalvermogen, of universele grammatica, legt beperkingen op aan de specifieke taalsystemen die mogelijk zijn. Het leren van een taal kan zo gezien worden als het instellen van de parameters in de universele grammatica. Dit verklaart ook de snelheid en de uniformiteit waarmee kinderen een taal leren. Sindsdien zijn vele taalkundigen op zoek naar deze 'talenknobbel'.

Peter Coopmans, hoogleraar Taalverwerving aan de Universiteit Utrecht, legt in zijn lezing op het symposium 'Tussen Brein en Bewustzijn' uit dat deze ‘talenknobbel’ als metafoor opgevat moet worden; de mens bezit niet echt zoiets als een taalorgaan. Echter, de scheiding van de universele principes van taal van de taalspecifieke aspecten heeft wel een grote ontwikkeling in gang gezet. Het geeft veel informatie over de architectuur van de taal, en ons vermogen om taal te begrijpen en produceren.Zo geeft het bijvoorbeeld inzicht in de subtiele manier waarop de vorm van zinnen samenspeelt met hun betekenis en achtergrond informatie uit een gesprek of andere vorm van communicatie. Dat is de expertise van de moderne taalkunde.

De Brusselse hoogleraar Luc Steels mist in deze verklaring een aantal zaken. Zo verklaart de theorie niet waarom iets als taal überhaupt is ontstaan, waarom natuurlijke talen een evolutie doormaken en waarom er zoveel verschillende talen zijn. Deze zaken vallen bij Steels op hun plaats via het begrip *zelf-organsatie*. Standaard voorbeelden van zelf-organiserende systemen zijn biosystemen als de vorming van termietennesten of de vorming van paden in een mierenkolonie. Steels vat de vorming van taal op soortgelijke wijze op. Net als in de eerder genoemde biosystemen heeft ook binnen een taalsysteem geen enkele afzonderlijke deelnemer een volledig beeld van het hele systeem, of kan één enkele deelnemer het gedrag van de hele

De natuurlijke taal die wij allemaal spreken is net zo 'gewoon' als drinkwater uit de kraan. Je denkt er niet bij na. Maar taal is voor ons functioneren even onmisbaar als water. En als je wel even doordenkt is taal heel ongewoon. Hoe werkt dit unieke medium van menselijk denken en communicatie, hoe is het in de evolutie ooit ontstaan, en hoe leer je mee te doen aan de wereldwijde gemeenschap van taalgebruikers?

Niet toevallig is dan ook het leren van taal één van de centrale thema's in het Cognitie programma. Naar resultaten hierover wordt reikhalzend uitgekeken binnen allerlei geledingen in de maatschappij, ondermeer binnen het onderwijs. Zoals uit dit artikel blijkt, is er nog heel wat fundamenteel onderzoek voor nodig om duidelijkheid te krijgen in hoe wij nu eigenlijk een taal leren. Tegelijkertijd wordt hier steeds meer en meer over bekend. Vanuit allerlei verschillende disciplines. Het NWO programma Cognitie is van plan een breed congres te organiseren over dit onderwerp waar de laatste resultaten en bevindingen vanuit al deze verschillende disciplines worden gepresenteerd. Wij zullen u hierover op de hoogte houden.

groep beheersen. Kortom, ook taal is een zelf-organiserend systeem. Dit verklaart ook waarom talen evolueren. Namelijk, om dezelfde redenen als waarom zelf-organiserende systemen in het algemeen evolueren: vanuit de noodzaak om het succes te optimaliseren. In het geval van taal is dit het succes tot communicatie.

Prof. L. Steels op het symposium 'Tussen Brein en Bewustzijn'

In zijn Artificiële Intelligentie Laboratorium heeft Steels een serie van experimenten met robots ontwikkeld waarin hij deze hypothese onderzoekt. Aan het begin van de experimenten worden een aantal autonome robots bij elkaar gezet die ieder hun eigen vocabulaire hebben. Echter, om het voordeel te krijgen van samenwerking moeten de robots met elkaar kunnen communiceren. Hiertoe moeten ze een gemeenschappelijk vocabulaire hebben. De robots passen daarom voortdurend hun eigen vocabulaire aan tot deze convergeren naar een gemeenschappelijke vocabulaire. Uit de experimenten blijkt dat onder zekere voorwaarden op deze manier inderdaad een coherente, gemeenschappelijke vocabulaire ontstaat. In één van de experimenten ontwikkelen de robots op deze manier volledig uit zichzelf een vocabulaire om over zichzelf te kunnen praten en om posities tussen henzelf te kunnen localiseren ("Jij staat recht tegenover mij").

Coopmans en Steels benaderen dezelfde vraag dus op heel verschillende manieren. Met verschillende methodes. Vanuit verschillende disciplines. Taalkunde wordt hier samengebracht met informatica, psychologie, en zelfs filosofie. Dit verschijnsel is typerend voor de meeste vragen die cognitiewetenschappers zichzelf stellen. Hoe werkt ons geheugen? Wat is bewustzijn? Hoe komen we tot waarnemingen, tot oordelen, tot beslissingen? Bij het beantwoorden van deze vragen wordt gebruik gemaakt van expertise uit vakgebieden die uiteenlopen van taalkunde en artificiële intelligentie tot psychologie, neuro-wetenschappen en filosofie. Dit soort vragen zijn net puzzles, waarbij iedere discipline een ander puzzlestukje op zijn plaats legt.

Op het symposium 'Tussen Brein en Bewustzijn', waar onderzoekers uit de volle breedte van het cognitieveld bijeenkwamen, werd eens te meer duidelijk hoe complex deze puzzles zijn. Uit hoeveel stukjes ze wel niet bestaan. Tegelijkertijd werd duidelijk dat grote delen van de puzzles als hapklare brokken klaarliggen om in het geheel te worden ingepast. Uiteindelijk draait het er in de cognitiewetenschap nu om deze brokken in elkaar te leggen. Oftewel, hoe kunnen talenknobbels en termietennesten in elkaar worden gepast?

Ter gelegenheid van de start van het NWO Cognitie programma vond op 1 november 2002 het symposium 'Tussen Brein en Bewustzijn' plaats in het Amsterdamse NEMO. Op deze druk bezochte dag kon het publiek actief kennis maken met een scala aan cognitieonderwerpen. Er waren lezingen, intensieve publieksdiscussies en tal van demonstraties, tests en experimenten. De puzzlestukjes lagen op deze dag soms letterlijk voor het oprapen.

Op de volgende bladzijde vindt u een beeldende impressie van deze geslaagde dag.

“Tussen Brein en Bewustzijn”: a photographic impression

photo’s by Céline Bovy (NWO)

“The Daily Memory Test” by Toni Chessa (sitting left) Stef Janssen (standing at the left) and Jaap Murre (not at the picture).

“Lerende Computers”, by Ben Kröse (not at the picture) and Bas Terwijn (standing).

“*Designing for experience*” *by Marijke Melles and others from the ID-StudioLab, Delft.*

From left to right: John Marks, John Michon, Carel ten Cate and Henkjan Honing.

What is Cognitive Science?

by Peter Hagoort

In this section we ask outspoken cognitive scientists the question: What is Cognitive Science? This time we give the floor to Peter Hagoort, director of the F.C. Donders Centre for Cognitive Neuroimaging in Nijmegen and member of the programme committee of the NWO Cognition programme. "I strongly believe that we should stop speaking of cognitive sciences, and use THE cognitive science instead."

***H**ow do you explain to the man next door what Cognitive Science is about?*

Cognitive Science is the science of the mind. It should explain how the nervous system of man and other complex organisms enable perception of the environment, remembering the past, planning the future, acting upon the world, and the feelings and the awareness that are concomitant with perception, memory, action, and such like.

Prof. P. Hagoort

The image of a man on the moon has probably been an invaluable driving force in generating a general interest in astronomy. The image is clear, powerful and tantalizing. It appeals to students, politicians and the big public alike. Somewhat similar, genomics promises to find a cure to genetically inherited diseases and at the other end of the A.I.-rainbow there are robots that facilitate our everyday life. What is Cognitive Science's "man on the moon"?

One should realize that the appeal of the "man on the moon" depends on the fact that we were able to perceive the man on the moon, hear the voice of the man on the moon, encode these events in our memory, and to retrieve this information at will. In other words, since the landing on the moon the "man on the moon" exists mostly in our mind. Cognitive science can explain the how and why of these mental events. For the rest, the "man on the moon" has lost its appeal, and even the stories are popular these days that there never was a man on the moon. The "man on the moon" of Cognitive Science is named Homunculus. As the Gagarin of the 21st century Homunculus travels through the microcosm of our brain with its billions of neurons and its even larger number of connections. What Homunculus sees and hears is far more fascinating than the dust collected by our "man on the moon".

"Homunculus … the Gagarin of the 21st century"

Now that we are at it, is it in fact appropriate to speak about THE science of cognition? With an eye on the broad range of disciplines involved, it may be better, and is often done, to speak about the cognitive sciences. What do you think, is cognitive science multi-disciplinary per se? Is this an indication of the complexity of the subject matter? Or will there eventually be a unifying paradigm by which to study cognition?

Yes, I think it is highly appropriate to speak about cognitive science (singular). Special sciences should not be defined in terms of

historical boundaries and infrastructural distinctions, but rather in terms of coherent sets of research questions. Cognitive science has a coherent set of research questions. This does not mean that there shouldn't be a division of labour. Just as in physics where there are theoretical physicists and physicists that realize and exploit complex measurement environments to investigate aspects of physical reality, there are divisions of labour in the cognitive science. Some researchers focus on behavioural paradigms, some others focus on modelling. Others again investigate the neural basis of cognition, and, finally, there are theoretical cognitive scientists. They are all needed. But for the very same reason why we don't conclude from the division of labour in physics that it makes sense to talk about the sciences of physics, it is nonsense to talk about the cognitive sciences (plural). A coherent set of research questions should often be approached with different paradigms. Crucially, however, is that nature is carved at the same joints (but in different ways) by researchers doing linguistic analyses of natural language, recordings of electrophysiological responses in monkey under conditions of binocular rivalry, making a computational model of grasping, and writing a book with the title "Consciousness explained". I, therefore, strongly believe that we should stop speaking of cognitive sciences, and use THE cognitive science instead.

"For the very same reason why we don't conclude from the division of labour in physics that it makes sense to talk about the sciences of physics, it is nonsense to talk about the cognitive sciences (plural)."

Given the diverse original background of cognitive scientists, one would like to know what appeals to them in the label "cognitive scientist", assuming they are willing to use that at all. What is the appeal to you?

I guess, that the appeal for most of us is to understand what is going on between stimulus and response, to be Mr. and Mrs. Homunculus, to have a deeper insight into human and animal cognition, and in this way, to understand ourselves better, and to use this knowledge for making an environment that is better tailored to the possibilities and limitations of our cognitive systems.

H.M. the Queen at the Opening of the F.C. Donders Centre, October 1, 2002

Peter Hagoort is director of the F.C. Donders Centre, a research centre of the University of Nijmegen with participation of the Universities of Maastricht, Tilburg, Utrecht, and the Max Planck Institute for Psycholinguistics in Nijmegen. The Centre was officially opened at October 1, 2002, by H.M. the Queen.

The F.C. Donders Centre is unique in that it houses all human imaging facilities (EEG/ ERP/ MEG and fMRI facilities) in a single building. The institute provides courses and co-organizes a series of lectures. For more information, see www.kun.nl/fcdonders/.

A European Cognitive Science Conference

by Maarten van Someren and Keith Stenning

Since 1979 each year a Cognitive Science Conference is organized by the Cognitive Science Society[1] which also publishes the Cognitive Science journal since 1976 and recently together with Elsevier Science. Although the society and the conference are aimed at an international audience, the conferences have always been in the US or Canada (which has had a well-established Cognitive Science community for many years). In Europe there has never been a regular counterpart to the CogSci conference and indeed not all countries have cognitive science societies (the UK is one prominent example). Several workshops have been organized in different Western European countries but they have never attracted a broad and large audience. In several countries national events thematically close to the CogSci conference have been held, for example in France and Germany. For a long time, however, Cognitive Science was viewed as marginal by the established disciplines that are related to it and perhaps the European situation was less flexible than the American. Around 1997 the area of Cognitive Science in Europe suddenly, and for many also unexpectedly, raised new interest, especially in Germany and France. In 1996 a series of workshops started in Europe under the name International Workshop on Cognitive Modelling which attracted an unexpected number of 60 participants. About three years ago Richard Young raised the idea of starting a European series of conferences that mirror and complement the international/American series. Another idea was to start a European society or a European "chapter" of the international society. In 2001, Keith Stenning persuaded the Cognitive Science Society to hold its conference outside America, in Edinburgh. Expecting that this conference would be successful, a proposal was made to the Cognitive Science Society that it internationalize its activities by undertaking various activities in support of cognitive science in European---formation of a chapter and agreement to organize regular conferences in Europe were examples discussed. The Edinburgh conference was successful and after some negotiations the Cognitive Science Society agreed to hold its main conference in Europe every four years, and to sponsor European Regional Conferences in every other interim year.

As a result of this, the German Cognitive Science Society agreed to co-host with the Cognitive Science Society the first European Regional Conference in 2003. This conference will be chaired by Franz Schmalhofer and his colleagues in Osnabrück in September, under the name EuroCogSci-03.[2] The next international Cognitive Science Conference will also be in 2003, in Boston[3]. In 2005 the international conference will be held in Europe, in Turin (Italy) and thus there will be no additional regional European conference, leaving the next EuroCogSci for 2007. Proposals for this conference will be discussed at EuroCogSci in Osnabrück. The Board of the Cognitive Science Society decides about the location. This process will probably be completed some time in 2003/4.

The Cognitive Modelling workshop developed into an International Cognitive Modelling Conference. In 2001 this European initiative was held for the first time in the US. This year, the conference will be held in Bamberg, Germany.[4] The focus of this workshop is specifically on the use of computer simulation for explaining cognitive processes. In practice it has a focus on the behavioral level rather than the biological level. There has been some discussion of setting up an 'interest group' in the Cognitive Science Society to support this activity.

Maarten van Soomeren has been working at the Department of Social Science Informatics at the University of Amsterdam since 1985. His current interests include modelling human learning and problem solving, and machine learning with

www.cognitivesciencesociety.org[1]

www.eurocogsci03.uos.de/[2]
www.cognitivesciencesociety.org/conf03[3]
http://iccm2003.ppp.uni-bamberg.de/[4]

applications in knowledge engineering. He is co-author of a book on the Think Aloud Method.
Keith Stenning is professor at the Human Communication Research Centre at the Universities of Edinburgh and Glasgow. A theme running through his work is the investigation of the relation between logical and psychological analyses of reasoning processes. The book *Seeing Reason: language and image in learning to think* summarises much of his recent work.

A Dutch contribution?

One of the aims of the NWO Cognition programme is to contribute to the coherence of the cognitive sciences as an active intellectual community. But how do we arrange this community-building? This is something that can be discussed at great length. Or we can take a more pragmatic stand and ask ourselves two questions: what do we want? And how do we get it?

In this perspective, it is useful to hear Keith Stenning's motivations for organizing EuroCogSci'01. Stenning: "My motivations in persuading the Cognitive Science Society to hold its annual meeting in Edinburgh was to encourage the Society to see itself as an international society. I felt that was important because it would be preferable to have an over-arching international society rather than independent US, European, Asian, … societies, and that this would achieve many of the goals of a European Society with minimal duplication of effort. This feeling was very widely held on the Board---even those who were cautious were so mostly because of worries about whether it would work. The principle was universally accepted."

This principle sounds valid indeed. Why build up a Dutch Cognitive Science Society if we may as well join an existing, flourishing organisation and strengthen this community with an active Dutch participation? This will not only effectively contribute to the national coherence of the cognitive sciences, but will also enhance our international visibility. Again, we may start a broad discussion about the organization of this participation. Or we may roll up our sleeves. We may for e.g. try to get one of the EuroCogSci conferences to the Netherlands. The experiences in Edinburgh, two years ago, are promising. Keith Stenning: "The conference was successful in demonstrating to the Board that such conferences were viable (basically enough US delegates travelled, and enough extra Europeans came along. In fact attendance was high). This was the basis of an immediate decision to rotate annual and regional conferences in Europe. If the Osnabrück conference is a success (I hope you are all going) then there will be a tangible knock on benefit. Its harder for me to say what impact it had on UK cognitive science, or local Edinburgh activities---there was already quite a sense of community locally."

Organizing a conference of this magnitude is hard work. It will require a big effort by an enthusiastic organizing committee. On the other hand, it would offer a unique opportunity for the Dutch cognitive science community. And now that NWO started their special programme for the cognitive sciences, hereby creating extra momentum for this field in the next 5 years, it is just about the right time to undertake such an enterprise. Stenning: "I would be very happy to offer advice to any Dutch colleagues who embarked on organising a conference---it's hard work but its also very worthwhile." At this point I merely want to bring this plan under your attention. Some asking around already revealed a certain enthusiasm. If this enthusiasm turns out to be broadly-based, we may start to make some serious plans. Readers who are interested/ supportive/ enthusiastic please contact me at cognition@nwo.nl or by phone 070 – 3440 858. I would be very happy to hear your reactions. On my part, I will keep you posted.

Eva Hoogland
(coordinator NWO Cognition programme)

Neuroethics: moral issues that concern us all

by Eva Hoogland

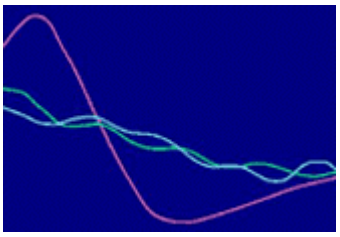
Read today at www.brainwavescience.com/ "Brain Fingerprinting is a revolutionary new technology for investigating crimes and exonerating innocent suspects, with a record of 100% accuracy. Brain Fingerprinting solves the central problem by determining scientifically whether a suspect has the details of a crime stored in his brain. The technology is fully developed and available for application. Brain Fingerprinting is a powerful tool for the investigation of suspected terrorists. Brain Fingerprinting can identify trained terrorists before they strike."

As the above ad nicely exemplifies, knowledge in the neurosciences is rapidly expanding. This expansion is enhanced by advances in neuro-technologies and pharmacology. All of this raises questions on the intersection between ethics and neuroscience. In May 2002, Stanford University and UCSF hosted the conference "Neuroethics: mapping the field" in which neuroscientists, ethicists, public policy makers and lawyers discussed the recent advances in neurosciences and their potential implications for society.[5] Clearly, neuroethics will overlap substantially with traditional issues in biomedical ethics. However, the close link from brain to behavior (much closer even than that from genetics to behavior) and the intimate connection between our brains and ourselves generate distinctive questions that beg for identifying neuroethics as a new field. My aim here is to lay out some of the leading issues. The view here has been informed by the articles listed in the selected reading at the end.

Who is to know me?

Neuroscientists may soon be able to screen people's brains to assess their mental health. This could, for example, identify children whose brains are not maturing normally—making possible early intervention with, say, special lessons. But who should have access to the data? Employers? Insurance companies? Judges? Will courts be asked to treat brain-image data as exculpatory evidence? Are we going to use scanners as lie detectors? Someday, say proponents, it will be possible to recognize brain waves emanated by guilty thoughts. They predict that the day will come when it will be possible to scan the skulls of everyone going through airports to search for potential hijackers. Is George Orwell's *thoughtcrime* becoming a reality?

This is no science fiction. At the Brain Fingerprinting Laboratory of Fairfield, Iowa, scientists scan the brains of criminal suspects to see if they recognize incriminating images. To this end, they check their EEGs for P300 waves. These waves are produced when the brain encounters words or images that it recognizes. An Iowa judge recently admitted brain fingerprinting in a murder convict's appeal for a new trial. However, the judge denied the appeal. High time to start the discussion on the privacy issues associated with thought.



The test proved that the record in the subject's brain did not match the crime and did match his alibi.[6]

[5] http://scbe.stanford.edu/neuroethics_conference.html

[6] www.brainwavescience.com/_Investigations.htm

Punishment or treatment

My next concern is the impact of the advances in neuroscience on existing social and legal structures. For example, modern methods (will) allow us to discover that there is a strong biological basis for traits that we now believe are under our control. Traits like aggression, or a predisposition to become addicted to drugs. Should a person be held accountable for drug use if they are biologically susceptible to addiction? Should those with brain injuries or other anomalies be considered culpable for their crimes? Or should a person, knowing that he is at risk for, say, a psychotic episode, be held legally responsible for actions undertaken while delusional, in virtue of not having prevented the attack? These situations raise legal questions regarding the punishment and treatment of such individuals.

The self

However, what most terrifies those who fear the advance of neurotechnology is that it will one day be capable of "enhancing" human beings. There are already many psychopharmaceuticals which can alter personality; Prozac to counter depression, Ampalex to treat schizophrenia or memory deficits, Ritalin to treat hyperactivity. These psychopharmaceutical advances, that stem from neuroscientific ones, present the following question: when can drugs be ethically used to enhance normal capacities rather than to treat deficits? One example of the trend towards making the normal treatable is research into "mild cognitive impairment", the kind of slight deterioration in memory that goes with getting old. Many companies are hunting for drugs and other technology (such as transcranial magnetic stimulation (TMS)) to fend off this sort of memory loss. Another example is Provigil. This medication keeps the mind fully awake and attentive. It could prevent deadly mistakes by sleep-deprived truck drivers, doctors and other night-time workers -- but also poses the risk of misuse. When is sleepiness a sickness? Should you prescribe medication for a student or worker who is intentionally sleep-deprived?

Drawing the line between necessary therapy and discretionary enhancement is genuinely difficult. One argument is that drugs for the brain are simply one more step down a road taken by orthodontics, face lifts, Viagra and other medical extras. This may be so. But it could be a step in seven-league boots. For many of us believe that our brains define who we are. Hence the possibility of altering our brains may change our concept of personal identity. If forgetfulness, shyness, sleepiness, xenophobia and a whole host of the other eccentricities that make up a person's character become optional traits rather than inevitable ones, people may opt for socially preferable traits. A paradise full of assertive, confident, resilient, extravert people. But are we still ourselves? And who should be allowed in paradise? Should we all, making the world one homogeneous mass? Or only the rich, hereby increasing the gap between the haves and have-nots.?

The above considerations show the need for a forum on neuroethical issues that need the participation of a broad public. However, as Adina Roskins from the dept. of Linguistics and Philosophy at MIT points out in her commentary *Neuroethics for the New Millenium*: "To make this dialogue with the lay public possible, it is imperative to strive for "neuroliteracy" of the public and the media. For it is only with a nuanced understanding of the science, and a renewed trust in the goals of neuroscience that real progress can be made on these difficult issues." With Roskins, I hope we will hear more of such a dialogue in the near future.

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J.D. Moreno, Neuroethics: an agenda for neuroscience and society, *Nature Reviews Neuroscience* **4**, 149 –153, 2003.
A. Roskins, Neuroethics for the New Millenium, *Neuron*, Vol. 35, 21-23, 2002

Reactions to this article are very welcome. They can be send to cognition@nwo.nl. Your letter will be published in the new *Readers' Opinions* section that will take off in the next edition of this newsletter. Letters may be shortened for space requirements.

News from the Cognition programme office

Final Cognition Call expected May 2003

The final call in the Cognition programme is expected to open May 2003.

In this phase of the programme, the programme committee and the steering committee wish to achieve further integration across the cognitive disciplines, and to explore strategic applications. The second call will therefore invite strong groups working in different domains of the cognitive sciences to submit proposals for collaborative research projects. Some non-exclusive examples of the relevant interfaces are (a) perception in (neuro)-psychology and computer science, (b) linguistic grammars and brain models, (c) logical reasoning and cognitive psychology, (d) learning in computational and biological systems, (e) social intelligence, games and multi-agent models of distributed cognition, (f) situated cognition, (g) parallels between animal and human communication systems, (h) animal models for studying complex cognitive processes, (i) mathematical simulations and experimental analyses of cognitive processes, (j) mathematical and philosophical integration of cognitive frameworks and levels. In addition to such fundamental research themes, however, a strong need is also felt for research that can fruitfully connect to the problems that confronts a society in which cognition and knowledge are becoming increasingly important. Prominent public issues include education and training, quality of life (e.g., health care, public safety) and behaviour under uncertainty. The Programme also encourages serious and well-founded efforts in this direction.

Funding

The total budget of this final Call for Integrated Research Projects amounts to 4.5 million Euro.

Timeline

To decrease effort overall, applicants must submit a preliminary proposal in early September 2003. Only those who submitted a preliminary proposal may submit a full proposal in December 2003. Assessment and ranking of full proposals by the Programme Committee will take place in May 2004. Shortly thereafter the Steering Committee will make the final funding decision.

More information can be found in due time at www.nwo.nl/cognitie.

Would you like to be personally informed about the activities in the Cognition programme? This is possible both by surface mail and E-mail. If you have ever received surface mail from us, you will automatically have the final Call for Proposals in the post. If you have not received information from us before, but you would like to do so in the future, then please contact the Cognition programme office. We will add your name to our mailing list. Besides that, we can also keep you informed electronically and directly via the monthly Cognition E-mail Alerts. To subscribe to any of our services, send a message to cognition@nwo.nl.

NEW: Grants for dissemination activities and scientific meetings

As of January 2003, it is possible to apply within the NWO Cognition programme for grants for dissemination activities and scientific meetings that support the general aims of the programme.

Via *Netwerksubsidies* the programme financially supports scientific meetings that enhance a fruitful exchange of ideas and results between the different cognition disciplines. The *Integratiesubsidies* give financial assistance at

the organisation of broad Cognition Summer Schools. Finally, *A la Carte subsidies* support dissemination activities that aim to enhance the visibility of the cognitive sciences and establish a solid level of public acceptance.

In all of the above categories, it is possible to apply for smaller and larger grants. The programme committee will pay special attention to the balance between project size and potential benefit for the programme.

Applications are possible throughout the year and have to be submitted electronically. More information can be found in the *Cognitie Subsidiewijzer* that can be downloaded from the cognition site www.nwo.nl/cognitie.

Before applying, we welcome you to contact the Cognition programme office by phone for an exploratory talk: dr. Eva Hoogland (070 – 3440 858), dr. Alice Dijkstra (070 – 3440 736) and dr. Annemieke van der Kooij (070 – 3440 866).

News and Announcements

Do you have news for us? Do not hesitate to send an e-mail to cognition@nwo.nl. Also, more pressing announcements that may be of interest for the Dutch cognition community may be send to this address. These announcements will be electronically distributed via our monthly Cognition E-mail Alert Service.

New initiatives by CSCA

In the recently opened Cognitive Science Center Amsterdam of the University of Amsterdam (CSCA) scholars participate from the Faculty of Social and Behavioral Sciences, the Faculty of Science and the Faculty of Humanities. The center aims at communicating recent advances in Cognitive science to a broad audience interested in the structure and function of cognition (natural and artificial), and the relation of cognition to brain and machine. A series of initiatives has been started.

As of January 2003, CSCA presents a series of *Cognitive Science lectures*. The next lecture is "The harmonic mind" by professor P. Smolensky (Johns Hopkins University) at May 7.

From June 16 to July 4, CSCA organises an interdisciplinary *Summer School* for master's students around the visiting professor Keith Stenning of Edinburgh University. The central theme of the summer school is 'Human reasoning and cognitive science'. The process of reasoning will be viewed from various perspectives (psychological, philosophical and biological). There will be lectures, project groups, and tutorial sessions.

The end of the Summer School is marked by the *international symposium* 'Logic and cognition: some novel interactions' on Saturday, July 5. The purpose of the symposium is to bring novel logical perspectives on cognition into interaction with newly available empirical methods of investigation, especially with an evolutionary background in mind. On the eve of the symposium, Friday, July 4, the Frijda lecture 'A passion for knowledge: Accounting for the evolution of human communication' will be held by professor K. Stenning.

For more information, consult the Cognitive Science Center webpage www.csca.uva.nl/csca/.

Top masters Cognitive Neuroscience at KUN

Starting in the academic year 2003/2004, Nijmegen University will offer an international master's programme in Cognitive Neuroscience.

A commission of the Dutch Ministery of Education has assessed 50 proposals for so-called topmasters or research masters. Five of these proposals, including the topmaster in

Cognitive Neuroscience of Nijmegen University, have been granted € 200.000 to further develop and start the programme.

The new master's programme is embedded in the expertise centres on the campus: Max Planck Institute for Psycholinguistics, F.C. Donders Centre, Centre for Language Studies, Nijmegen Institute for Cognition and Information, the departments of Biophysics and Medical Physics and several research groups of the University Medical Centre Nijmegen. More information can be found at www.kun.nl/fcdonders.

Tool-kit of cognitive neuroscience Nijmegen, July 7-11

After a successful tool-kit course in 2002, the F.C. Donders Centre for Cognitive Neuro-imaging announces further developments of this initiative for 2003.

The 2003 tool-kit course is an intensive 5-days course, which will provide participants with the essentials of all major neuroimaging techniques, including ERP, MEG, fMRI, PET, and TMS. Aspects of the measurement methods, design requirements, experimental set-up, data processing, and multi-modal imaging will be discussed. The course will be in the form of lectures, and video demonstrations. Smaller mentor groups will be formed for question-answer sessions, exercises, and on-site visits. To allow a sufficient number of participants, lab demos will be given on video. The course will be given by qualified experts from the FC Donders Centre and other research centres.

The 2003 course will take place from July 7- 11 in the new auditorium of the Medical School of the University of Nijmegen. Each participant will receive the presentations and demos on CD. Following the tool-kit course, three in-depth advanced courses will be given in the autumn/winter period of 2003/2004. For more information, see www.kun.nl/fcdonders.

A European Cognitive Science Conference, EuroCogSci'03

Starting in 2003, the Cognitive Science Society will sponsor a regional meeting in Europe every four years. The first of these meetings will be held September 10-13, 2003 in Osnabrück, Germany.

The aim of the conference is the presentation of empirical, theoretical, and analytical work from all areas of interest in cognitive science, such as artificial intelligence, education, linguistics, neuroscience, philosophy, psychology and anthropology. The focus is on interdisciplinary work that is either of interest for more than one of the mentioned research areas or integrates research methods from different fields. Furthermore, applications of cognitive science research in such domains as human-computer interaction, education, knowledge management, or engineering are equally welcome.

Invited speakers include Ellen Gurman Bard (Edinburgh) *Toward a psycholinguistics of dialogue*, Rainer Goebel (Maastricht) *Tracking cognitive processes with functional MRI mental chronometry*, Alan Lesgold (Pittsburgh) *Cultural factors in the effective use of technologies for learning* and Ipke Wachsmuth (Bielefeld) *Embodied communication*.

For more information, visit the conference site at www.eurocogsci03.uos.de/. Elsewhere in this newsletter you will find an article on the historical background of EuroCogSci'03.