

Let's Stop Throwing Stones

One of the biggest problems in AI (and also in the simulation of behaviour actually) at the moment is its apparent fragmentation. It's a problem that that often has to be confronted in putting together the Quarterly, but it's also a problem for SSAISB as a whole. Neither the Quarterly newsletter nor SSAISB wants to become associated with just one of the many cliques in the field. I hesitate to actually name any cliques because so often the names chosen by researchers for approaches different from their own are frankly insulting.

It's an awkward situation even to write an editorial about. The slightest hint (like using the usual name for a particular way of doing AI) may well be read as partisanship for a different way of doing things. The lack of tolerance for other different research programmes within our field is rarely positive, often absurd, and sometimes fanatical.

My personal view is that this can and should be corrected. Lets first deal with the second claim – namely that it *should* be corrected. There is an important reason why I included the word *apparent* in the first sentence. The idea that there is one and only one route to building intelligence is just plain false. Intelligence is an immensely complex and poorly understood area. Many different techniques need to be employed simultaneously to research this area. That there should be any sort of theoretical separation between, say, neural modelling and knowledge elicitation is rather daft. That both these approaches are roundly condemned by those who value situatedness moves us into the area of farce. Wouldn't any worthwhile account of intelligent behaviour have to include (at the very least) knowledge, neurons, and situatedness? Surely we can only be considering differences of emphasis?

What's wrong with differences of emphasis? Well nothing, provided it doesn't lead to the sort of fragmentation that seems to be a recurrent problem in AI. Other researchers may approach AI from a different perspective to your own, but if you call them *wrong* or *foolish* rather than simply *different* then you

will only harm your own research. The reason for this is that you have thereby created a totally unnecessary obstacle to borrowing from their ideas, their methods, or sometimes even considering certain questions. Research into intelligent behaviour is difficult enough anyway. There really is no need to create extra obstacles like these. It's important to accept that most of the different approaches to AI that have emerged over the years have yielded useful parts of the answer to some very difficult scientific questions and they should not be 'rubbished' for failing to provide some sort of complete solution.

It has long been my view that what is needed in AI is a rejection of simplistic *gold standards* of intelligent behaviour. The Turing test is the most famous of these and an object lesson in how not to frame the ultimate goal of AI.

On the second point – can the verbal hostility between different approaches to AI be changed – of course it can. There may be a *slight* reduction in self-aggrandizement involved, but researchers can learn to talk in terms of *An important contribution to...* rather than *The final answer to the problems of...* Outside the academic world different approaches to AI cohabit not only in the same office, but often in the same program. When I talk to researchers over coffee and ask why just so much effort goes into criticising the efforts and views of others, one particular response occurs most frequently. It's necessary to get funding, they say. Well these days one has to play some strange games in order to obtain and justify research support, but I for one am not convinced that criticism of different research paradigms is one of those games. As I have said, this does not help make progress. It is not the practice in industry where the question: *does it work?* seems much more important than *Is it politically acceptable within our research paradigm?* There's an old proverb about glass houses and stones.

Blay Whitby
Editor

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Editor: Blay Whitby

Editorial Manager: Medeni Fordham

Layout and Design: Medeni Fordham

Contact us at:

aisbq@aisb.org.uk

School of Cognitive and Computing Sciences
University of Sussex
Falmer
Brighton BN1 9QH

T: (01273) 678448

F: (01273) 671320

Awareness: Mystery of the Mind

TUCSON, Arizona — In the quest to make a brainpower computer, perhaps the biggest mysteries remains the most nebulous: where does awareness come from? Can it be simulated? What does awareness by itself look like?

While the first question remains unanswered, Rodney Brooks of MIT presented new research on robot algorithms that mimic aware behavior, which leaves open to interpretation whether it will pave the road to machine consciousness or simply build a better parrot.

The third question has inspired new studies that coax consciousness into the open, discovering that some heightened forms of awareness continue after the mind falls asleep, while more rudimentary kinds of awareness can even enter the mind through a temporarily blinded eye.

At the latest Toward a Science of Consciousness conference, which ended in Tucson on Friday, Brooks reported on his lab's latest efforts to teach its robot, named Kismet, some basic protocols of aware behaviour.

First, he said, came the task of finding every set of human eyes in its field of view, so Kismet could follow the primary human medium for sending cues. This was done by detecting any oval-shaped objects with human skin tones and using geometrical models of faces to isolate that face's windows on the world.

From there, motion-detecting software — combined with knowledge of the laws of classical physics — allowed Kismet to sense when an object was ballistic and when it was guided by a conscious hand. Algorithms such as these allowed the robot to perform basic interactions, such as simulating short conversations with humans and following a pointing hand toward the object it points at — a task that cat and dog owners know nature's programmers never quite debugged for some species.

"Unlike neuroscience, where scientists are presented with an existing object they have to study, we get to build these objects and

understand what we put into them," Brooks said. "Pure awareness, stripped of any corresponding mental state, does present itself for study in humans", said Fred Travis of the Maharishi University of Management. Travis reported on his recent efforts to isolate patterns of brain activity in subjects who regularly practice transcendental meditation. "Can there be a sense of self without mental content, which is just aware of its own structure without perception or thinking?" he asked.

This state of consciousness in experienced meditators was characterized by EEG data that Travis presented, which showed brain patterns of wakeful awareness (so-called theta and alpha activity) that appeared even when the subjects were in deep sleep. These findings were also consistent with meditators' claims. "Subjects report a permanent integration of transcendental experiences with waking, sleeping and dreaming," Travis said.

Basic forms of awareness can be studied in the absence of conscious awareness, said Randolph Blake of Vanderbilt University. He presented a series of results involving subjects who were shown different images in each eye. The brain, when presented with an image from the left eye that's completely different from the image in the right eye, cycles its conscious attention between eyes. Thus, at a moment when one eye is dominant, the images appearing before the other eye lie outside a subject's visual consciousness. This laboratory trick — called *binocular rivalry* — allows researchers to provoke mental responses to changing images in one eye, even though the mind may be focused on the input coming from the other.

For instance, Blake summarized the results of a study in which subjects watched a rotating pinwheel pattern and then trained their sight on a still image that appeared to move. This optical illusion, his lab found, could even be provoked when the spinning pinwheel was only observed by the unconscious eye. Subsequent studies, including brain-imaging studies, indicate that the brain's more basic regions for visual processing (including the primary visual cortex) handle these images, even though

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the pinwheels are suppressed from a person's awareness. Yet when the researchers presented the subjects' temporarily "blinded" eye with images that required advanced visual or verbal processing — requiring more sophisticated tasks beyond the range of the visual cortex — they could not provoke unconscious awareness.

Blake said that binocular rivalry is a useful tool for probing some of the rudiments of awareness, but the "knife is not sharp enough" to slice into the root cause of awareness. To that end, he cited the early 20th century psychologist William James. "We know what consciousness is," James famously wrote, "as long as no one asks us to define it."

Mark K Anderson

2:00 a.m. April 15, 2002 PDT

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New membership types at AISB!

AISB has a variety of membership types that range in cost, from student memberships to corporate memberships. As a student member (£15 per annum if UK based), your fees are literally at cost price. What is more, you can gain extra funding for travel to conferences via the travel grants that the Society issues (contact David Bree or look at the awards page on the AISB web-site).

Ordinary memberships (£30 per annum if UK based) cater for the majority of our non-student membership. The ordinary membership fees mainly cover the cost of producing and sending both the *AISBQ* and the twice yearly *AISB Journal*. Besides from getting these regular AISB literature, ordinary members (and indeed any AISB members) are also entitled to reduced registration fees for AISB Conventions.

The Supporting (£100 per annum worldwide) and Patron (£300 per annum worldwide) memberships are geared towards the more prestigious researchers amongst our membership who may be keen to put something back into the society. The extra revenue from such membership fees enables the society to provide support to those members who are only just starting out in

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their AI careers. For example, it helps to pay for the travel grants that we give to our student members. Both types of membership come with their own AISB e-mail address. Patron members will be listed in the inside cover of the *AISBQ* in recognition of their significant contribution to the Society. AISB would welcome current members to upgrade their membership to one of these categories of membership (remember, the fees are tax deductible!).

Corporate memberships (£300 per annum worldwide) offer various incentives for professional institutions to join the Society. As a Corporate member, a company can advertise their corporate logo on the AISB corporate members web-page, as well as being able to place free features in the *AISBQ* or on the web-site, and placing free job advertisements on the AISB jobs web-page. If you are an AISB member who is currently working for an AI based company, perhaps you'd like to suggest that they become a Corporate member.

Institutional memberships (£100 per annum worldwide) offer institutions such as libraries the opportunity to receive regular AI information via the *AISBQ* as well as having the *AISB Journal* twice yearly for all their members to read.

We hope that you think that our membership fees are not substantial for the benefits that each type of membership receives. Remember, all members receive the quarterly *AISBQ* newsletter, the twice yearly *AISB Journal* and the weekly electronic bulletin, as well as being entitled to discounts in registering for many AISB events, and reduced rates on various publications. The fees are also tax deductible. It's a bargain!

Gary Jones

AISB Membership Secretary

Publications dates for the next issue of AISBQ:

*All submissions for the Autumn issue of AISBQ must be made no later than **26 July 2002.***

Publication of the AISBQ will be in March, June, September and December, with copies of the AISBQ being sent out with the June and December issues.

AISB News

AISB COMMITTEE MEMBERS

Chair

Dr Geraint Wiggins,
City University,
London
chair@aisb.org.uk

Vice Chair

Prof John Barnden,
University of
Birmingham
vicechair@aisb.org.uk

Secretary

Dr Rudi Lutz,
University of Sussex
secretary@aisb.org.uk

Treasurer and Travel Awards

Prof Paul Chung,
Loughborough
University of
Technology
paul.chung@aisb.org.uk

Membership

Dr Gary Jones,
University of Derby
membership@aisb.org.uk

Public Relations

Prof David Bree,
University of
Manchester
treasurer@aisb.org.uk/
travel@aisb.org.uk

Ms Sunny Bains,
The Open University
sunny.bains@aisb.org.uk

Webmaster

Dr Simon Colton,
Universities of
Edinburgh and York
simon.colton@aisb.org.uk

Industrial Liason

Dr Gill Hayes,
University of
Edinburgh
gillian.hayes@aisb.org.uk

Dr Frank Ritter,
Pennsylvania State
University
frank.ritter@aisb.org.uk

Publications

Dr Eduardo Alonso,
City University,
London
eduardo.alonso@aisb.org.uk

Schools Liason

Dr Louise Dennis,
University of
Nottingham
louise.dennis@aisb.org.uk

EX OFFICIO

AISBQ/AISBJ

Mr Blay Whitby,
University of Sussex
editor@aisb.org.uk

Chair's Message

The past three months have been a period of further stabilisation for AISB. Having launched the new Journal in December 2001, we are now working on the second issue, and on the recruitment of the editorial board. As reported at the 2002 AGM (more on which below), we are now on a more stable financial footing than has been the case for some years, and we have been working hard to make the organisation match this stability, with more explicit devolution of responsibility within the committee. With this devolution, it has been possible to revive some activities which have been temporarily quiescent, notably the AISB Fellowship scheme, for which nominations are currently being sought, and the publications shop, now being properly established by our Publications officer, Eduardo Alonso. Further information on publications will follow soon.

I'm pleased to announce that the 2002 Convention was another success, with six symposia attracting around 150 delegates. I'd like to thank Jim Cunningham, Jeremy Pitt and their team for organising such a worthwhile and positive event, which (on general impression) seems to have attracted more international contributors than ever before. From my point of view as Chair, one very satisfying aspect of the Convention was the very high turnout of members at the AGM - certainly the highest by two or three times since I have occupied that exalted office. A big "Thank you!" to the members who came along to express their opinions, to make suggestions and to show interest: without the activity of its members, the society is nothing, so it is good to see increased engagement.

One of the suggestions arising from the AGM was the establishment (or, in fact, re-establishment) of AISB summer schools. This was generally met with approval, and the committee will welcome proposals from members as to what form and content such events should have. A clear possibility would be something of the same broad form as the Convention: a number of short, specialist sessions, organised by different people, joined together in one larger administrative group. AISB's members could clearly produce world-class events of this kind, given the will

and the time. So now it's over to the members: the committee can support and advise, but cannot take on the running of summer schools over and above its existing activity.

Since some changes in responsibility for committee activity were announced at the AGM, it's appropriate to remind ourselves of the specific duties of the committee members (*in alphabetical order*):

Eduardo Alonso, City University, London
(Publications)

John Barnden, University of Birmingham
(Vice-Chair)

Sunny Bains, Open University and Imperial College, London

David Brée, University of Manchester
(Public Relations)

Paul Chung, Loughborough University
(Treasurer elected unopposed, March 2002)

Simon Colton, Universities of Edinburgh and York
(Webmaster)

Louise Dennis, University of Nottingham
(School Liaison)

Gillian Hayes, University of Edinburgh
(Industrial Liaison)

Gary Jones, University of Derby
(Membership)

Rudi Lutz, University of Sussex
(Secretary)

Frank Ritter, Pennsylvania State University
Blay Whitby, University of Sussex
(Editor of AISBJ & Q ex officio)

Geraint Wiggins, City University, London
(Chair)

Finally, a reminder to all our members that, for AISBQ and the new Journal to flourish, we need input from the members. All UK academics are busier now than ever before, and no doubt our international members are feeling the pressure too. But if we don't use the fora available to us for the development of our own field, then we risk fragmentation and obscurity; from the public's point of view, the robots will take over the world after all. Please add to the strength and utility of your society by making your contribution, no matter how short. AISBQ correspondence can be submitted by plain text email to editor@aisb.org.uk, and formatting instructions for AISBJ papers can be found at <http://www.aisb.org.uk/aisbj/>.

Geraint Wiggins
Chair

AISB News

Treasurer's report for the year 2001

I am pleased to be able to report that 2001 was another successful year for AISB financially. The excess of income over expenditure increased from just over £2,000 to just under £7,000. The difference of £5,000 was due in part to an increase in income of over £2,000. Once again the annual AISB convention, this time at York, was a financial success; without this AISB would be in financial difficulties. However, the increase this year came mainly from an increase in income from inserts in newsletters.

The remaining £5,000 increase came from a reduction in expenses of almost £3,000, mainly due to a reduction in our office costs with CASA at the University of Sussex. This has come about through a different costing method. We are now charged by service, so that we can adapt our demands accordingly, which we have done. The new format of the *AISB Quarterly* has meant a considerable reduction in its preparation time. Its scientific content has now been moved to the AISB Journal, in which most of the layout work is carried out by the authors themselves. It still remains to be seen if the costs of four issues of the new format *AISBQ* and two issues of *AISBJ* a year can be produced for roughly the same costs as three issues of the old style *AISBQ*. But the whole change over process has gone very smoothly, thanks in large part to the *AISBQ* editor, Blay Whitby, and to the production team at CASA, Medeni Fordham and Therie Hendrey-Seabrook. The CASA team have also been dealing with the move from payment of membership fee by Standing Order, to payment by Direct Debit. Direct Debit is considerably more flexible, but the change over has had some teething problems caused by banks failing to note requests for the cancellation of Standing Orders, for which our apologies to those affected.

This is my last report as Treasurer for AISB. It has been my pleasure to see the Society move from a position of being almost bankrupt to having a reasonable reserve, sufficient to survive a poor financial outcome from an annual convention, if that should occur. My best wishes to your new Treasurer,

Professor Paul Chung, whom I am sure will continue to look after the financial health of the Society so that the rest of us can get on and do the things we want the Society to be able to do.

David Brée
Treasurer

INCOME AND EXPENDITURE ACCOUNT

	<u>2001</u>	<u>2000</u>
	£	£
Turnover	26,996	30,739
Direct costs	(7,730)	(13,814)
Excess of income over expenditure before overheads	19,266	16,925
Administrative expenses	(12,251)	(14,855)
Excess of income over expenditure before taxation	7,015	2,040
Taxation	(30)	(38)
Excess of income over expenditure for the year	6,985	2,002
Retained profit brought forward	2,002	
Retained profit carried forward	8,987	2,002

BALANCE SHEET

	<u>2001</u>	<u>2000</u>
	£	£
Debtors	10	6,026
Cash at bank and in hand	<u>27,296</u>	<u>21,759</u>
Current assets	27,306	27,285
Creditors: amounts falling due within one year	<u>(4,426)</u>	<u>(11,890)</u>
Total assets less current liabilities	<u>22,880</u>	<u>15,895</u>
Reserves		
Other reserves	13,893	13,893
Income and expenditure reserve	<u>8,897</u>	<u>2,002</u>
Total reserves	<u>22,880</u>	<u>15,895</u>

INCOME AND EXPENDITURE

IN DETAIL

	<u>2001</u>	<u>2000</u>
	£	£
Turnover less direct costs:		
AISB Convention this year	13,858	19,740
AISB Convention this year: costs	<u>(7,730)</u>	<u>(13,814)</u>
AISB Convention this year: net	6,128	5,926
ECAI'98 conference	513	-

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AISB FELLOWS

Prof Harry Barrow,
Schlumberger

Prof Margaret
Boden, University of
Sussex

Prof Mike Brady,
University of Oxford

Prof Alan Bundy,
University of
Edinburgh

Prof John Fox,
Imperial Cancer
Research Fund

Prof Jim Howe,
University of
Edinburgh

Prof Christopher
Longuet-Higgins,
University of Sussex

Prof Aaron Sloman,
University of
Birmingham

Dr Richard Young,
University of
Hertfordshire

	<u>2001</u>	<u>2000</u>
AISB Convention 1999	-	15
AISB Conventions	6,641	5,941
Membership fees	11,121	10,552
Inserts in newsletters	1,200	110
Gross interest received	304	322
Excess of income over expenditure		before
overheads	19,266	16,925

Less: overhead expenses

Office costs	5,373	8,033
Newsletter: production	2,526	2,377
Newsletter: distribution	602	735
Postage costs	495	555
Committee expenses	780	489
Computer costs	111	636
Sundry expenses	330	15
Travel awards	300	200
ECCAI membership fee	524	767
Accountancy fees	1,011	969
Bank charges	199	109
Total overhead expense	(12,251)	(14,885)

Excess of income over expenditure for the year
7,015 **2,040**

~~Minutes of the AISB AGM (Imperial College, April 2002)~~

1. Committee Members present:

Eduardo Alonso, Sunny Bains, John Barnden, David Bree, Paul Chung, Simon Colton, Louise Dennis, Rudi Lutz, Geraint Wiggins

2. Apologies for Absence (from Committee members):

Gill Hayes, Blay Whitby

3. Minutes of Previous AGM

These were accepted by the meeting

4. Chair's Report

Geraint Wiggins reported that:

AISB continues to function effectively

i) The convention series is now well established and successful:

- ⇒ AISB'99 had 225 attendees
- ⇒ AISB'00 had 120 attendees
- ⇒ AISB'01 had 203 attendees

These were all academic and financial successes.

AISB'02 had 150 attendees, and is an academic and (projected) financial success, many thanks to Jim Cunningham.

The committee aims to continue with the

general idea of conventions consisting of several symposia, linked by a common theme. It also hopes to organise these events further in advance.

We are still looking for local and convention chairs for AISB'03 and beyond. Please volunteer!

ii) AISB now produces the two "new-style" publications (*AISBQ* and *AISBJ*).

Thanks to CASA for their cooperation and leadership in producing these two publications. They provide good value for money (4 per year for the newsletter, 2 per year for the journal), especially in light of the fact that membership fees have only increased by about £5 in the last 5-10 years.

Since AISB'99, AISB has been a registered publisher. The proceedings of the conventions are now published by AISB, with an ISBN number (and therefore count in the RAE). The *AISBJ* is an archival publication.

Please submit papers!

The committee would welcome suggestions from the membership about other publications we could do, or for other publication types. For instance, we could possibly publish refereed proceedings of other workshops.

iii) In the future the committee aims to:

- ◆ Continue the success of the conventions
- ◆ Increase the services we offer. At the moment these are primarily student travel awards, and *AISBQ* and *AISBJ*
- ◆ Increase member involvement
- ◆ Increase membership (especially student membership). Please can anyone who teaches large MSc courses please hand out membership forms. (*contact gary.jones@aisb.org.uk for forms*)
- ◆ Raise the profile of AI and Cognitive Science in the UK (David Brée is now our official press and publicity manager).
- ◆ Paul Chung has been elected unopposed as treasurer of the Society. Many thanks to David Brée for his excellent work as treasurer, and his

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success at *turning round* the Society's finances..

5. Membership

The membership numbers are holding steady now (they have actually increased again after dropping previously). There are currently about 445 members.

6. Treasurer's Report

The main news is that our total reserves now stand at £22880 (up from £15895). Many thanks to CASA for raising an extra £1000 from newsletter inserts.

7. AOB

It was asked if it might be possible to hold a Summer School for the large PhD student community. Unfortunately the committee members themselves have no time to organise such an event. Volunteers would be welcome however!

It was also pointed out that summer schools do not have to be large general events. Short courses were another possibility. Possibly it might be a good idea to reintroduce a *doctoral symposium* for PhD students (with linked travel grants) into the main AISB convention. It was pointed out that all the symposia are organised by volunteers. If anyone wants to volunteer to organise such a symposium they would be welcomed.

It was asked if the Society should be more active about the public understanding of science. The meeting was again reminded that we now have a press and publicity officer, part of whose role is to deal with this sort of issue. It was suggested that AISB could possibly apply to EPSRC for one of their public understanding of science grants. Geraint replied this was a good idea, and that the committee had been considering it for some time. Perhaps now was the time to revisit this idea.

STOP PRESS!

We are pleased to announce that the AISB 2002 Convention will be hosted by the University of Wales, Aberystwyth, between 7th and 11th April 2002.

Calls for symposium proposals will be issued shortly.

Dear AISBQ,

As some readers will know, I have for some years been attempting to integrate ideas in AI, other areas of computing, and cognitive science. In the main, this has been an individual effort but, now that the main *planks* of the theory are in place, several areas of investigation are opening up and there is more to do than I can possibly tackle by myself. Research by other people would be very welcome, including critical evaluation of the ideas or attempts to 'break' the theory.

The descriptive title of the theory is *information compression by multiple alignment, unification and search*, which yields the rather ugly acronym 'ICMAUS'. For reasons described elsewhere, the alternative name 'SP' has also been adopted. Information about this research may be found at www.sees.bangor.ac.uk/~gerry/sp_summary.html, including journal articles, conference papers and technical reports. There is a short, informal introduction to the theory published in the Autumn 2001 issue of *Expert Update* and a longer overview of the research, due to be published in *Artificial Intelligence Review*. Also available is the source code and executable code of the SP61 computer model, released under the terms of the GNU General Public License.

Given that it takes a certain amount of effort to get into a new area and most academics are not over-endowed with spare time, what incentive is there to work on these ideas? In general terms, the theory provides a novel and unified approach to several areas of research in AI, cognitive science and *mainstream* computing. It has already yielded novel solutions to some problems and it seems likely that further insights will follow. By integrating concepts across several areas, the theory should help to break down barriers between disciplines and sub-disciplines.

Areas that are ripe for further investigation include:

◆ *Probabilistic reasoning*. The framework supports several kinds of probabilistic reasoning including probabilistic 'deduction', abduction, chains of reasoning, nonmonotonic reasoning, 'explaining away', inheritance of attributes in class hierarchies and inferences in part-whole hierarchies. I believe the

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framework compares well with alternative approaches—such as Bayesian networks—but a comparative evaluation is needed.

◆ *Natural language processing.* The ICMAUS framework provides a novel means of representing the syntax of natural language including syntactic 'agreements' that bridge intervening structures. Within the framework, it is also possible to represent non-syntactic 'semantic' structures such as class-inclusion hierarchies and part-whole hierarchies (and their integration). The framework was designed to facilitate the integration of different kinds of knowledge but I have not yet had time to look carefully at the integration of NL syntax and semantics.

The framework already supports NL parsing and the production of language from 'codes'. If syntax and semantics can be integrated, then the framework should support NL understanding and the production of language from meanings. This needs investigation.

◆ *Planning and problem solving.* Given information about direct flights between pairs of cities, SP61 can work out routes between cities involving two or more direct flights. Given a geometric analogy problem expressed in textual form, SP61 can solve it quite easily. Further work is needed to explore the strengths and weaknesses of the framework in these kinds of application.

◆ *Fuzzy pattern recognition.* For pattern recognition, SP61 has two useful features: (1) It can recognise patterns despite errors of omission, addition or substitution, and (2) it can recognise patterns at multiple levels in a class hierarchy, with multiple levels in a part-whole hierarchy.

Medical diagnosis is one of several possible applications. I have an example showing how SP61 may be used in that area but more work is needed to develop the database of

diseases, to evaluate the system against the requirements of medical practitioners and evaluate it against alternative approaches to diagnosis.

◆ A related area of application is *information retrieval*. SP61 supports best-match information retrieval and 'semantic' forms of information retrieval. Given its capabilities for various forms of probabilistic reasoning, it could be developed into a versatile, 'intelligent' DBMS.

◆ The framework has potential applications in the *semantic web*. It allows ontologies to be represented in a simple, intuitive manner and it provides a unified treatment of probabilistic reasoning, pattern recognition and information retrieval. I have described some of the possibilities in a draft article but further exploration is needed.

The theory is also relevant to other areas including the foundations of mathematics and logic, unsupervised learning, and cognitive neuroscience.

I will be happy to discuss any aspect of the research and will try to answer any questions that arise.

Yours sincerely,
Gerry Wolff
gerry@informatics.bangor.ac.uk.

Dear Sir,

I must draw your attention to the review of 'Thinks' in a recent issue of AISBQ (AISBQ 107 p.14). David Lodge is quoted as saying that "(Turing) eventually killed himself in a dreary flat in Manchester..." I don't know whether this is a deliberate error by Lodge, but it is factually incorrect.

In fact Alan Turing died in 'Holymeade' - a rather grand semi detached house in the middle-class suburb, Wilmslow.

A Turing anorak

*If you want to write to the editor please write to: The Editor, AISBQ,
School of Cognitive and Computing Sciences, University of Sussex, Brighton,
East Sussex BN1 9QH Or email editor@aisb.org.uk*

Conference Report

AI and Creativity in Arts and Science Imperial College, London, UK 3-4 April 2002

The symposium *AI and Creativity in Arts and Science* was held from 3-4 April, as part of AISB'02, the 2002 Convention of the Society for the Study of Artificial Intelligence and the Simulation of Behaviour, Imperial College, United Kingdom. It was organised by Dr. Geraint Wiggins, from City University, London, UK and Dr. Amílcar Cardoso, from the Creative Systems Group, AILab, University of Coimbra, Portugal. Ten papers were presented from a geographically wide spectrum of researchers: UK(2), Italy (2), Portugal(2), Spain(1), France (1) and International joint collaborations - although one entirely from UK-based researchers). This fact is rather interesting having in mind that the AISB is a UK-based convention, showing that the encouraging foreign researchers to become part of AISB may be a way of promoting not only SSAISB but also related events.

AISB and Creativity in AI

It is hard to mention when exactly the word Creativity appeared in AI research, but its references to the theme can be found since the early foundation of AI. However, it is difficult to find conferences and publications dedicated to the subject up till 1999, when AISB dedicated the yearly convention to the theme of Creativity. In those days, we found people working in areas directly or indirectly associated to Creativity or involving creative aspects, yet rarely focussing their research in this perspective. Then, as now, philosophical discussions around the concepts of Creativity, Aesthetics, Creative Processes or Evaluation brought and inspired ideas to AI. Fertile in exchange of ideas and raising important questions, these issues stimulate the search for models and implementation, which, not giving definitive answers, certainly push forward AI, Cognitive Science and Philosophy.

In 2000, the AISB convention, then dedicated to *Time for AI and Society*, brought the Symposium on *Creative and Cultural Aspects and Applications of AI & Cognitive Science*, where we could see a consistent research community, now facing creativity as a main research subject, bringing essentially practical

proposals, such as HR (Colton et al, 2000), WASP (Gervás, 2000), Jape (Ritchie, 2000), NEvAr (Machado et al, 2000) or MetaMuse(Cook, 2000). Then, a major discussion around Boden's (1990) two types of Creativity (*exploratory* and *transformational*) emerged within the prolific plenary sessions.

This research community felt the need for establishing the field with consensual or at least clear accounts for those major questions, an effort that led to important foundational work such as that presented in 2001, in theoretical frameworks for assessment (Ritchie, 2001), aesthetic evaluation (Saunders and Gero, 2001), evaluation of machine compositions (Pearce and Wiggins, 2001), and to regarding practical applications from the different points of view of Creativity in AI, in Creativity and Surprise (Macedo and Cardoso, 2001), Poetry Generation (Gervás, 2001), Music (Ribeiro et al, 2001), art and aesthetics (Machado, 2002) and theory formation (Colton, 2001).

The growth of the research community and motivation, which began in AISB'99, had finally made an international jump, when ICCBR'2001 (Vancouver) included a workshop on the subject, this one reinforcing the existing tendency of focussing on formalization and clarification of Creativity issues and proposing applications and processes for computational creative systems. The formalizations of Boden's descriptive hierarchy of creativity (Wiggins, 2001), evaluation of machine creativity (Pease et al, 2001), effects of input knowledge (Colton et al, 2001), serendipity (Figueiredo and Campos, 2001) and the study of the relationships between memory and surprise (Macedo and Cardoso, 2001) contributed immensely for the current growing consistency of the field.

Imperial College, London, 2002

This year's workshop brought probably the most varied set of papers and participants, testifying the current growth of the field in general terms. However, this heterogeneity doesn't mean unrelated work. In particular, there were papers discussing or applying previous work that was brought within the past AISB and ICCBR workshops. Pablo Gervás (Gervás, 2002) presented a very

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interesting approach to linguistic creativity, using the formal models presented in (Wiggins, 2001) and (Ritchie, 2001) and also analysing previous approaches to metaphor (Leite et al, 2000) and humour (Ritchie, 2000).

The issues of Language and Creativity were raised recurrently in plenary sessions, from the natural perspectives considering the powers of creative reasoning from and to *human* language (poetry, narratives, humour, metaphor) to meta-levels of transfer of domain to domain (poetry to music, music to visual arts, visual arts to architecture) in a generic creative machine. Such a machine must be able to reason with the language itself (i.e., make meta-level reasoning).

Fertile discussions were also kept around the relationships between Scientific and Artistic creativity, Rationality and Beauty, which was a natural consequence of the distribution of the present researchers or works, some more towards science (abduction and scientific discovery, the role of agent societies in scientific discovery and automated software design with analogy and case-based reasoning), others directed to artistic issues (automatic colouring of images, music analysis, twist-centred story generation and evolution of aesthetic patterns). From the view that beauty is sought in science as rationality is in arts, and arguments about evaluation or motivations among these domains, the discussion went on to more philosophical points of view, constantly bridged with AI perspectives, giving relevance to intention, awareness and aesthetics.

The plenary discussions were full of exchange of ideas between people from different areas, issues that become fundamental for AI, Philosophy or Cognitive Science. Now in a different world, Creativity demands different perspectives than those of Aristotle, Guilford, Kekulé or Lady Lovelace. This age of information, rationality and language defies fossilised views that attach Creativity to Humanity.

The most important conclusion that can be drawn from the plenary talks is that the study of creativity can no longer be considered a marginal research effort, and the researchers studying it are no longer

view as *weird people* with esoteric ideas, in fact it is clear that the study of creativity is now regarded as an important, perhaps crucial, part of AI. Moreover, it is also clear that the scope of application of creativity research is not restricted to areas related with the arts and that it may give a significant contribution in other fields like scientific discovery or bio-informatics.

And the story will continue...

Research in Creativity seems to focus mainly on art related fields like music, poetry and image generation and evaluation. Additionally, the study and proposal of computational models of creativity, surprise, conceptual blending and metaphor are also central research subjects. It's important to notice recent research efforts towards formalization and development of systems with real world application.

The near future seems also to promise advances in scientific discovery and areas of research leaning more to rationality than arts. In July, another workshop in Creativity and AI will be held in Lyon, as part of the ECAI 2002 conference. Surely, the story will continue...

*Francisco Câmara Pereira
Creative Systems Group
AILAB, University of Coimbra*

AISB Travel Grants

AISB operates a travel awards scheme to help fund a small number of researchers — generally research students and post-doctoral researchers early on in their careers — to attend conferences on topics within areas of artificial intelligence and cognitive science.

Awards are generally limited to £100.

If your choice seems to be between missing a wonderful conference or starving in a garret to pay for it, and you are willing to write a report within 3 months of the event for the AISB Quarterly on the conference you attend, apply for a travel award by contacting:

paul.chung@aisb.org.uk

<http://www.aisb.org.uk/awards.html>

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Mind, Language and Metaphor: Euroconference on Consciousness and the Imagination

Kerkrade, The Netherlands, 20-24 April 2002

Mind, Language and Metaphor is a new conference series that explores the role of metaphor and metonymy in language and thought. This first conference considered points of convergence between three major fields of contemporary research: figurative language, imagination and consciousness. The series is within the EURESCO Conference Programme of the European Science Foundation (ESF), funded ultimately by the High-Level Scientific Conferences arm of the European Commission. Funding through the ESF has been secured for the first two conferences in the series (the second will be in 2004). The series was originated by Zazie Todd in the School of Psychology at the University of Leeds and Brigitte Nerlich of the Institute for the Study of Genetics, Biorisks and Society at the University of Nottingham. It was chaired academically by Zazie Todd and vice-chaired by me (John Barnden, School of Computer Science, University of Birmingham). I will be chair of the second conference.

By the way, I'm looking for a vice-chair for the second conference, who would become chair of the planned third conference in 2006. The second conference is currently sub-titled *Computational and Neuropsychological Approaches to Metaphor and Metonymy*. This will merely be a focus rather than a firm limitation on the topics in papers. In any case, many delegates at the conference just passed have asked for its theme to carry forward to the next one, so it is possible that the focus will be re-defined. However, I still aim to have a strong representation of computational work on metaphor and metonymy.

Although European in concept the conference had some prominent invited speakers from outside Europe: Wallace Chafe, Ray Gibbs, Rachel Giora, Mark Johnson and George Lakoff. The UK was represented in papers (oral or poster) by Kathryn Allan, Biljana Scott, Ann Dowker, Craig Hamilton, Randal Holme, Mark Lee, Katja Markert, Steven Mithen,

Brigitte Nerlich, Malvina Nissim, Ray Paton, Yanna Popova, Elena Semino, Zazie Todd, Rosa Vega-Moreno, and me.

The conference was notable for the degree of extended and intensive discussion. This was due partly to the restricted size (about 100 participants) and the enlightened attitude of EURESCO. They impose several measures to optimize discussion: for instance, parallel sessions are discouraged; the talk slots are an hour long and include a substantial period for questions and discussion (20 minutes in our case); and young scientists giving posters are introduced by other participants in brief oral presentations. It also helped that almost everyone at our conference was working on metaphor or closely related topics such as metonymy and counterfactuals.

The conference was highly interdisciplinary, ranging from computational considerations through corpus study and psychological experiment to philosophical ramifications and societal issues. Although there were some fascinating papers about metaphor in poetry, and the focus of the conference was consciousness and the imagination, much of the conference was nevertheless within the contemporary emphasis on the importance of metaphor as a pervasive problem in the understanding of mundane forms of discourse.

The interdisciplinarity was real, in that participants gained new appreciations of the nature and extent of work going on in other disciplines on the topic of metaphor. My own hobby-horse in this domain is impressing on people outside AI that there are AI people who are interested in things like metaphor and that doing computational work on metaphor can give rise to insights that are of central importance for work on the topic in other disciplines. This is often a hard sort of message to get over, in that the reason insights arise from AI work is often linked to subtle matters that computational people are experienced in but seem almost unknown to others: the deep trade-offs and synergy between representation and process; the notion of abstract data structure; the idea of multiple layers of virtual machine lying between high-level and low-level behavior, preventing any simple minded equation between the structure of the two; the intricate ways in which different styles of representation

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can be mixed; the relative computational complexity of different algorithms; the need to do a thorough job on specifying mechanisms; and so forth.

One particular point that came up at the conference was that theories that can look very different when presented at a sketchy abstract level can become much more similar—or at least much more evidently just particular points on a dense spectrum of possible approaches—when one thinks seriously about realizing them in detailed mechanisms. Computational treatment of an issue can also reveal opportunities for hybridization between approaches that may escape the advocates of the approaches.

If you're looking for a research topic, try figurative language. If you're looking for some professional service, try being my vice-chair for 2004!

John Barnden

**Being Clever Makes You Sexy!
A Review of "The Mating Mind" by
Geoffrey Miller
William Heinemann, London
ISBN 0 434 00741 2**

I am not an evolutionary psychologist. I therefore approached the task of reading and reviewing this book with some trepidation. Accordingly, this review is written from an "intelligent layman" point of view, rather than as an expert in the field. My overall opinion is that, despite some reservations about some of the arguments, this book is so well-written and stimulating that I found it an enormously enjoyable and thought-provoking read, and would highly recommend it to others.

As anyone who has ever worked in AI must have wondered at some time or another: Why have humans evolved abilities at such things as art, music, story telling etc. or indeed everything that adds to our quality of life without conferring any obvious survival benefits? I have always found the common explanation that all these aspects of our mental and artistic life are somehow mere epiphenomena - mere by-products of our general intelligence - somewhat unconvincing. It has never seemed clear to

me why the simple fact of being intelligent should produce a love of music, or a wish to sing, or write novels, as by-products, or, if they are mere by-products, why we should attach so much importance to them. Even arguing that these things add to "group cohesion" is a stance that I have always found less than compelling for why we should possess these abilities.

This book aims to provide an answer to these big questions - how and why did we evolve such large brains, and how and why did we evolve all our incredible artistic, aesthetic, and moral abilities? Its main point is that the process of sexual selection (mate choice) has been almost completely neglected in theories of human evolution, despite its role in the rest of the animal kingdom now being very well acknowledged. Miller's aim is to bring this aspect of evolutionary theory to our attention in explaining various aspects of our humanity.

Miller's main thesis is this: the human brain, and its accompanying mental abilities, evolved primarily as sexual ornaments, functioning as a fitness indicator. If this is true, it perhaps explains why things such as sense of humour, intelligence, and kindness, seem always to top the lists of things women (and often men) claim to find most attractive in potential partners. In this review I will concentrate mostly on the large brain aspect of Miller's argument, but the book as a whole has very similar (and intertwined) arguments about the role of mate choice in producing our love of story telling, art, music, altruistic behaviours etc. The key point to nearly all of these is that they function as some kind of fitness indicators, while being costly to produce.

His argument (for having large brains) goes roughly as follows: the "survival of the fittest" does not seem adequate to explain the evolution of large brains. Very briefly, the survival advantages of having large brains, in the short term, in stone age or pre stone age conditions, seem slender, compared to say having greater strength, or an ability to run fast. Additionally, having a large brain is very costly - some 30% of our energy requirements are purely to service the brain, as well as necessitating a rather lengthy period as a baby (vulnerable to predators

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and disease) since we have to be born so early simply to keep head-size down at birth, and this costliness seems likely to make having a large brain a survival disadvantage rather than an advantage.

Since this mechanism doesn't seem adequate to explain our large brains, Miller turns to one of the other planks of Darwin's theory of evolution — sexual selection. Darwin suggested sexual selection is extremely important in evolution especially for sexual ornaments. Rather nicely, the very thing that makes the *survival of the fittest* explanation so unconvincing (the costliness of having a large brain) now becomes a crucial factor in how and why they may have evolved.

Miller examines three main aspects of the process by which sexual selection can explain the evolution of certain traits, and discusses ways in which these aspects could have interacted to produce our brains. The first aspect is the process of *runaway sexual selection*, of which the peacock's tail is the best known example. Once (for whatever reason, even chance) females have evolved a preference for some feature, and in particular a preference that is stronger the more the feature is present, then a runaway positive feedback process ensues which leads to males having astonishingly extreme versions of the feature. The traditional version (female choice) of this process is dismissed by Miller as an explanation for our brains in that it basically predicts a large difference between males and females in so far as the specific feature is concerned. However, given a situation of mutual mate choice, this process could indeed lead to the rapid evolution of very large brains equally sexually distributed between the sexes.

However, this leaves open the reason why such a preference might have evolved in the first place. This is addressed by a combination of the other two aspects of the sexual selection process discussed by Miller. The first of these is the idea of sexual ornaments as *reliable indicators of fitness*. The idea is that sexual ornaments should function to signal the fitness of the individual possessing them. However, they can only function as fitness indicators if they are honest (i.e. fairly reliably indicate fitness), since otherwise evolutionary pressures will

mean that they get ignored in the mate selection process. So there needs to be some mechanism to keep such signals honest i.e. to prevent low fitness individuals possessing the ornament in order to misleadingly increase their chances of reproduction. Zahavi's handicap principle essentially states that the only reliable (i.e. honest) fitness indicators are those which are very costly to produce, and hence only highly fit individuals can afford the survival costs of producing the signal. Peacock tails are again an example of this - only very fit individuals can afford to carry around the extra weight, and spare enough nutritional resources to keeping their tails looking fine. It is here that the costliness (mentioned earlier) of possessing large brains comes in.

To what extent can intelligence (i.e. brain quality) be interpreted as a fitness indicator. Miller's main argument here is his claim that something like 50% of our genes are involved in producing our brains. Therefore, any individual with an above average share of deleterious (to survival) mutations, is quite likely to manifest this fact in some aspect of their mental behaviour, in addition to any more obviously physical way such mutations might manifest themselves. Additionally, illness often affects our mental functioning (e.g. our degree of wittiness, our moods), and so again mental functioning can therefore be taken as an indicator of an individual's general health. In other words, our minds function as an extra signal of general health. The final aspect of sexual selection as an evolutionary mechanism that Miller discusses is that of "sensory bias theory". This maintains that sexual ornaments will often evolve simply because the particular feature involved just happens to stimulate (often by chance) some aspect of the perceptual apparatus of the choosing sex. Note that Miller includes cognitive and/or psychological biases in this. Together with the two aspects discussed above, this can lead to the runaway evolution of particular sexual ornaments. In particular Miller argues that primates at least seem to have some sort of cognitive preference for novel behaviours, and this bias may have been enough, coupled with the mechanism of runaway sexual selection, and the brain as an honest fitness indicator, to get the overall process started. Thus Miller takes the view that all of these aspects have

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played some part in the evolution of the human mind, but it is the fitness indicator aspect which he clearly finds particularly important.

As stated above Miller applies similar arguments to other aspects of human behaviour. For instance, altruistic behaviour is a problem for more survival oriented evolutionary theories, since it is, by definition, costly. However, sexual selection theory allows costly behaviours if they function as reliable fitness indicators, and the argument here is that only really fit individuals can afford to be altruistic.

The main criticism that I have of this book is essentially due to its very nature - how can a book tackling this sort of issue at the current time be anything other than highly speculative? This manifests itself particularly in places such as Chapter 6 (*Courtship in the Pleistocene*), which although plausibly argued, is unlikely ever to be proven in any real sense. It also manifests itself more fundamentally, as in the assumption (again highly plausible, in that I cannot think of an alternative) that the same mechanisms are needed for intelligence detection as are needed to produce it, and this is fairly crucial to explaining the lack of sexual dimorphism in human mental abilities.

However, despite the above criticism, this is still an extremely interesting well-written book which is very carefully argued all the way through, and tries hard (and pretty well succeeds) in avoiding the pitfall of genetic determinism that evolutionary psychology can so easily fall into. It is absolutely packed with fascinating observations on human and other animal behaviour (especially related to courtship and mating), and is so well argued, that I have found myself looking at myself, and the behaviour of those around me from a new and different angle. Miller may well not be correct in everything he says, and he admits himself that he is of course male and comes to these issues with his own set of prejudices etc., but I am sure there are likely to be large elements of truth in his theorising which will be further refined and elaborated as time goes on. This is an interesting and important book, which I thoroughly recommend to anyone interested in human evolution.

Rudi Lutz

*School of Cognitive and Computing
Sciences, University of Sussex*

Interaction Design: beyond human-computer interaction

Jennifer Preece, Yvonne Rogers & Helen Sharp

John Wiley & Sons, 2002

Pp 519, £27.50

ISBN 0-471-49278-7

When I'm having dinner with non-technical people, and they ask what I do, I summarize Cognitive Science as *how brains work*. If they ask about my specialism, I describe the aims of Human Computer Interaction as *why you can't work your video recorder - and how it should be designed*. That is a good layman's summary of 1980's HCI work, but doesn't address the developments which have taken place in the last ten years or so. HCI can very easily become fragmented into a series of war stories about poor interfaces on one hand, and a heavy focus on the nuts and bolts of interaction elements on the other. This is to a degree understandable, not least because windowing interfaces are pretty daunting to program; but what is needed is a book which examines the process of designing a good interface from initial conception through to a finished product: this is what this book provides. In teaching HCI principles to students, I often find problems in bridging the gap between the theory that we present in lectures, and the actual practical steps that students need to take to produce a design. So, for example, you present the different types of diagrams in the User Modelling Language, and the students go ahead and do their own on-the-fly design, producing a set of Use Case diagrams and Class diagrams as an afterthought to put into their final report. This is missing the point of the design process. Interaction Design avoids this trap by putting great emphasis on the actual design processes - what one actually does when building use cases, for example, or in doing a user survey.

Theoretical topics and case studies are inserted in side boxes where relevant so the students absorb the theory while staying focussed on the point of the exercise: designing a product from a user-centred perspective. Each chapter ends with an interview with an authority from the HCI world with experience relevant to the subject of the chapter, so students can see how the concepts they have just covered are applied in practice. The authors place great emphasis

From the Archives

on the need for frequent and early prototyping: paper prototypes and Wizard-of-Oz protocols are advocated to bring testing the interface as far forward into the design process as possible. Each chapter has assignments and activities which guide the students through the process. Of course the provision of these assignments makes building a course around the book much easier than it would otherwise be. The authors take great pains to extend the design process away from just the interface itself. In German, *User Interface* is *Benutzungsoberfleisch*: literally *User skin* (it's interesting, by the way to note that *skin* is *that which is over the flesh*). It's very easy for HCI to view an interface as just that: a layer sitting on top of the application as a whole. This book's emphasis on the whole design process tends to prevent that from happening. A very useful feature of the book is that it elaborates on the physical activities involved in each stage of the process: for example, the chapter on user testing goes into great length about what an evaluator actually does in performing an experiment: recording results, producing scripts for the session (and an ethical audit and consent forms), and looking at what to do with the data acquired. This is very helpful in letting students apply the theoretical knowledge they have been taught. Finally, the book has a useful and accessible web site at www.id-book.com which provides interactive design and evaluation activities, useful links, and discussion forums for examining case studies.

It should be mentioned that the authors explicitly state that in writing the book they have attempted to make the whole book speak with one voice: in that goal they have succeeded admirably. Multi-author books can often seem bitty and disjointed, but in this case it is genuinely difficult to discern that more than one person was involved. The case studies presented cover a wide range of interesting subjects, including the voicemail system for the Los Angeles Olympics, children's interactive learning environments, and the Nokia 9210 communicator. In summary, this book provides an excellent foundation for teaching interaction design, and a good text for self-study in the skills involved. I cannot recommend it too highly.

Andy Holyer
School of Cognitive and Computing
Sciences, University of Sussex

What AI Speakers do

If AI researchers do not, in fact, state and solve information processing problems, what do they do when they give a talk? I offer three observations:

AI speakers talk about the *activities* they are engaged in, rather than about concepts. ("My pals and I have been hacking away at the WIZARD system these past few years...") They tell about the origins of the project, and about how it meanders along.

AI speakers expound on their *hopes* for their projects, both in terms of what they would like their system to be able to achieve ultimately, but also in terms of what other systems cannot do. ("Systems A and B could not do X, therefore we want our WIZARD system to do just that.")

AI speakers talk about the *difficulties* they have encountered. (The *n*th version of WIZARD could not do X, so now we have...")

The last point is particularly important. I believe that most AI researchers experience their task as one of overcoming the difficulties encountered in constructing whatever system they happen to be working on. But difficulties are not problems. A problem is a question about how a mechanism of a certain type performs on some task. A difficulty is an obstacle to the construction of a mechanism of the specified type. The two should not be confused.

Obviously, a technology of system implementation, as a prescription for how to generate a system with particular properties, is not unimportant. (Witness the importance of laboratory technology, eg CERN, for physics.) But such a technology should not be confused with a science of information processing.

Stellan Ohlsson
Department of Computer Science/UPMAIL
and Department of Psychology
University of Uppsala
Sweden

AISB Quarterly Issue No. 46 from an
article entitled Tell me your problems: A
psychologist visits AAAI82
Thanks to Rudi Lutz for selection of archive
material.

Father Hacker's Guide for the Young AI Researcher

Cognitive Divinity Programme Institute of Applied Epistemology



About the Society

The Society for the Study of Artificial Intelligence and Simulation of Behaviour (AISB) is the UK's largest and foremost Artificial Intelligence society. It is one of the oldest established such organisations in the world. The Society has an international membership of 500 drawn from academia and industry.

Membership of AISB is open to anyone with interests in artificial intelligence and cognitive and computing sciences.

AISB membership includes the following benefits:

- ★ Quarterly newsletter
 - ★ Biannual Journal
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 - ★ Travel grants to attend conferences
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We continue our widely acclaimed guide series, advising young researchers how to succeed in the modern world of AI research, by tackling the vital topic of...

3. How to Get Your Research Published

For advancement in the tough world of research, it is essential to get your work published. Appointments, promotions and your reputation as a researcher, depend on a healthy publication list. Publication is also a necessary precursor to citation (see the next Hacker's Guide, for the importance of citation).

How can you ensure publication success?

- ◆ 1. Spread each of your research advances over the maximum number of papers. The contribution of each paper should not exceed the least publishable quantum. In addition, multi-disciplinary work should be reported to each of the parent disciplines. *Daunted by the task of writing so many papers? You need 'One2Many', from Hacker Enterprises. Input one paper and it will output as many papers as it can extract.*
- ◆ Require your subordinates routinely to include you as a co-author; you merit recognition for creating the environment in which their creativity has flourished.
- ◆ Invent and name a new subfield. Let's call it *Computational Theology*, but insert your own name below. Ensure you are acclaimed as the founder of Computational Theology and campaign to have it mentioned in calls for papers for any conferences or journals that are even remotely relevant. If your campaign encounters any resistance then complain loudly that Computational Theology is being unfairly overlooked and excluded by blinkered editors, programme chairs and referees.

◆ Volunteer to edit a special edition of a prestigious journal devoted to Computational Theology. The harassed, regular editors will be overjoyed to off-load some of their burden. Since you are in control of the topic, the publicity and the referees, you should have no difficulty ensuring that you and your close collaborators get several papers published.

◆ Run a new workshop in Computational Theology and rapidly develop it into a regular conference series. Appoint first yourself, and then your most trusted colleagues, as successive programme chairs. Find a publisher for the proceedings to ensure that all the conference papers get into print. Reject misplaced criticism that work in progress should not be published in archival sources; exciting new developments in rapidly advancing fields deserve urgent promulgation.

◆ Start your own Computational Theology journal. As editor in chief, you should have no difficulty in ensuring a high success rate for your submissions. If you have trouble recruiting a publisher, then demonstrate your modern credentials and dedication by publishing it yourself electronically.

◆ Computational Theology will, of course, draw on many long standing techniques and ideas from AI. But be sure to give them all new names. Many classic results from AI must now be rewritten and republished using the new terminology and applied to the new domain. You are the natural choice as the author. *Plagiarise ' (Papers Lent And Given A Reworking Into a Simulation of Expertise), from Hacker Enterprises, can automate this rewriting process for you. Input the original classic and the jargon correspondences and Plagiarise ' will output an apparently totally different paper under your by-line.*

Do you want to reach AISB members with information on your publications or events?

This is an ideal target market for AI related publications and events which are relevant to both industry and academia. If you would like us to organise a direct mailing to our members, or have an enclosure mailed out with our quarterly newsletter or journal, please contact:

admin@aisb.org.uk