THE REASONER

CONTENTS

§1
EDITORIAL

A group of us philosophers was sitting up late one night (as we're wont to do sometimes), discussing the question: What is the most *difficult* philosophical question?

Almost unanimously, we agreed—something philosophers almost never do—on the fact of *regularity*. The world appears to stay more or less the same from moment to moment. Reality does not suddenly come flying apart at the seams. It *persists*. But *why*?

When he first asked this question, David Hume tapped a deep vein. The necessity of regularity seems matched only by our complete inability to account for it. Sense experience cannot offer any clues here—that would be a completely circular justification. And so the persistence of normality, for those of us who ponder such things, is the most abnormal fact of all.

Ubiquity does not diminish mystery; rather the opposite. The fact that regularity is so pervasive, and yet almost unexplained, *adds* to the mystery. And where there is mystery, there is also doubt. We can imagine: the future does not have to be the same as the past. Why should it be? It is a big surprise when the future *is* the same as the past. Going forward, we expect the unexpected. Going forward, we reason in the face of uncertainty.

Probability is a guide to reasoning under uncertainty; but falling back on the language of credence and chance only *illustrates* the problem. Abduction, degrees of belief, Bayesianism—there are many names for how we draw inferences about the unknown, none completely unproblematic. Karl Popper offered one particularly elegant solution to this conundrum. Our guest this month, Professor Alan Musgrave, was once a student of Popper, and has a unique take on the question himself. In corresponding with Alan, I was pleased to get to learn all about it.

The problem of induction has met with many proposals. I think it is likely that, the more we learn, there will
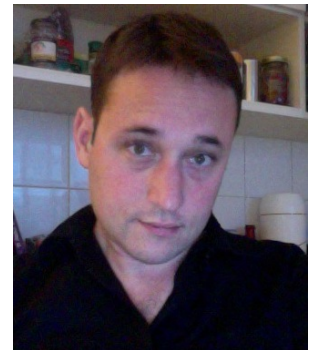
be many more proposals in the future . . .

But I only think that because that is how things have gone in the past.

Zach Weber
Philosophy, Melbourne

§2
Features

Interview with Alan Musgrave

Professor Alan Musgrave recently retired from his long-held post as Head of Department, Philosophy, at the University of Otago in New Zealand. Alan is still an active teacher and contributor to intellectual life—he's been a guiding force there for too long to pause now.

Zach Weber: Hi Alan. It's great to have you joining us this month.

Alan Musgrave: My pleasure. I am glad to be here, and flattered that you invited me.

ZW: Let's jump right in: You've argued that all reasoning is *deductive*—sometimes in disguise, but deduction all the same. Isn't there such a thing as inductive reasoning?

AM: I agree with my teacher Karl Popper than induction is a myth. I think that all so-called 'inductive' or 'ampliative' arguments are better seen as deductive arguments with suppressed premises. We have no need of any special inductive logic to sort deductively invalid arguments into those that are 'cogent' and those that are not.

ZW: That's a striking position. What are the implications?

AM: The first implication has to do with the way we understand science. Science has no need of so-called 'inductive logic'. Those who think otherwise typically think we need induction to get us from observational or experimental data to theory. This is the idea of induction as a 'logic of discovery'. Obviously, they think, discovery involves coming up with something new—but the conclusion of a valid deductive argument is contained in its premises and says nothing new. Hence the old dream of a non-deductive 'logic of discovery', to bridge those gaps somehow.

It is a chimera, of course, an attempt to square the circle.

ZW: If that's right—if there is no logic of discovery—then how do scientists come up with new ideas? Blind guesswork? Mystical intuitions?

AM: Consider a toy example. Suppose I want to know what colour emeralds are. Do I lie on my couch, somehow dream up conjectures on the matter, and then subject them to testing? No. I observe an emerald and perform a trivial deduction: "Emeralds share a colour. This emerald is green. Therefore, all emeralds are green". The major premise here, perhaps left unstated, is a presupposition of the question "What colour are emeralds?" It's really just a trivial valid deduction. And the same goes for other inductive arguments. The premises of these arguments contain general principles of one kind or another, principles that are often left unstated when the arguments are set out.

ZW: You seem to be arguing that induction isn't how we *arrive* at our beliefs and hypothesis. Maybe. But it seems like taking inductive reasoning seriously would at least help *justify* our theories, no?

AM: It would only help to take inductive reasoning seriously if there *were* such a thing. But the hypotheses we are interested in typically transcend the observational evidence or data. Theories are general while the data are specific. Theories are precise while the data are imprecise. Theories deal in unobservables while the data do not. So there can be no valid arguments from observational evidence to theory. The dream of some sort of cogent non-deductive argument that would justify our evidence-transcending hypotheses is, again, a chimera.

ZW: So there is no justification in science—or anywhere else?

AM: That depends. It depends on what it is that we are trying to justify. The term 'belief' is ambiguous between the content of a belief, and the act of believing that content. We seek to justify believings, not beliefs.

ZW: What is the difference?

AM: In a valid deductive argument the premises are a conclusive reason for the conclusion. So, nothing is easier than to produce a conclusive reason for anything that you believe. The argument "P, therefore P" is as rigorously valid as an argument can be. But considered as a justification for P, it is circular and obviously question-begging. Non-circular valid deductive arguments for P simply beg the question in a less obvious way.

ZW: So, to repeat the question, there is no justifying our beliefs?

AM: There is no justifying what we believe—but we may sometimes be able to justify our believings. Popper's general story is that we are justified in believing a hypothesis, if there is one, which has best withstood serious criticism.

ZM: I'm suspicious: doesn't this smuggle induction in?

AM: So Popper's critics think. But these critics smuggle in precisely the assumption that Popper rejects—the assumption that a reason for believing P must be a reason for P.

ZW: So according to Popper, or to you, we have reason to believe things that we have no reason for?

AM: Exactly! Consider abduction and its intellectual descendant, inference to the best explanation. Abduction is generally regarded as the second main type of ampliative reasoning, after induction. Abduction was first set forth by Peirce: "The surprising fact, C, is observed. But if A were true, C would be a matter of course. Hence, A is true". This is invalid. To validate it we need the missing premise "Any explanation of a surprising fact is true". But that premise is obviously false. Nor is any comfort to be derived from weakening it to "Any explanation of a surprising fact is probably true (or approximately true)". Inference to the best explanation is also invalid. To validate it we need the missing premise "The best available explanation of a surprising fact is true". But this premise is also obviously false. Nor, again, will going for probable truth or approximate truth help matters (though philosopher-logicians have cottage industries devoted to both of these).

ZW: So, outside contexts of absolute deductive certainty, we appear to be stuck.

AM: Wait! Peirce's original abduction scheme was "The surprising fact, C, is observed. But if A were true, C would be a matter of course. Hence, *there is reason to suspect that* A is true". This is also invalid. But to validate it the missing premise we need is "*There is reason to suspect that* any explanation of a surprising fact is true". This missing premise is, I suggest, true. If it is true, Peirce's abduction can be reconstructed so as to be both valid and sound.

ZW: If this point is so obvious, why does everybody misread Peirce?

AM: Because everybody assumes that a reason for suspecting that something is true must be a reason for its truth. Not so. The same goes for inference to the best explanation. People object that the best available explanation might be false, or has not been shown to be true, or might be the 'best of a bad lot'. Kyle Stanford is making a name for himself at the moment with the 'problem of the unexplored alternative'. Quite so—and so what?

ZW: So it is reasonable to believe falsehoods.

AM: Of course. Now, if we subsequently find out that the best available explanation is false, it is no longer reasonable for us to believe it. But what we find out is that what we believed was wrong, not that it was wrong or unreasonable for us to have believed it.

ZW: That's a good distinction. Speaking of which, and to move to a more general topic, I've heard it said by some eminent people that, while there was good reason to believe it at the time, Popper's ideas about falsification, and to an extent Popperianism in general, have now been shown to be simply untenable. Where would you say Popperianism is today? How did it get there? Where is it going?

AM: The situation with Popper's philosophy is certainly very peculiar. There are 12 or 20 people, the self-styled 'Popperians', who think it is the bee's-knees. But most philosophers, as you say, think it fatally flawed. The chief intellectual reason why they think this is that they do not understand or appreciate how Popper has solved the problem of induction. But we have said enough about that. As to falsification, there is no denying what Popper called the 'logical asymmetry between verification and falsification'. Theories can be falsified, but they cannot be verified. The problem of falsification, if we can call it that, is whether we can be certain that the prediction is false, and whether we can be certain which bit of the theory is responsible for the false prediction. These two questions mean that falsifications are not conclusive disproofs. Popper was well aware of this, of course. It made room in the second half of the last century for what David Stove called the 'POP-LAK-KUHN-ABEND debates'. That is a big topic and I wrote much about it. But let us not enter into it here.

ZW: Fair enough. Something even more general, then. You describe yourself as a 'mad dog realist' and you have a sign in your office to prove it. You've said that certain idealist programs have simply been disproved—for example, Kantianism has been debunked by the appearance of non-Euclidean geometry.

AM: That's right—alternative geometries threaten the Kantian view that we have *synthetic a priori* certain knowledge of the structure of space. Kant asked how such knowledge is possible, and wrote a big book to answer his question. The correct answer is much shorter—it isn't. The invention of non-Euclidean geometries taught us that scientists must try to figure out *a posteriori* what space is like.

ZW: Nowadays, though, non-Euclidean geometry is only the tip of the iceberg when it comes to alternative deductive theories, and I wonder how mad-dog realism holds up against such a vast plurality. For example, could alternative *logics* be a problem for realists? Where does your deductivism stand if there are alternative deductive logics?

AM: Extensions to classical deductive logic are no threat to my deductivism. They involve supplementing the usual list of logical operators with additional ones—'Necessarily P', 'It is known that P', 'It ought to be the case that P', etc. The aim is not to disagree with classical logic, but rather to extend it. Quineans like me prefer to regard these as first-order theories of one kind or another.

ZW: What about other cases, which actually disagree with classical logic? What are your views on non-classical logics, like intuitionistic logic or paraconsis-

tent logic?

AM: Well, I am no logician, but I am not fond of these deviant logics. Take relevance logic. It was spawned as an attempt to avoid (admittedly) counterintuitive classical results. These were that a logical truth follows from any premises, and that from a logically false premise any conclusion follows. These are counterintuitive 'zero cases', by analogy with how people used to think it odd to take zero to be a number. Well, we got used to zero being a number. But relevance logicians could not get used to "Grass is green" following from 'P & not-P'. So they suggested that truth-preservation is not enough for validity, that we need a stronger notion of validity.

ZW: You disagree?

AM: I suppose that there is a certain technical interest in all that. But it is philosophically misguided. Logic is not a branch of psychology, a description of how people do in fact go about making inferences. People often make invalid inferences as well as valid ones. You do not refute a law of logic by pointing out that people sometimes violate it. But neither do you refute a law of logic by pointing out that people ought not to abide by it. Logic neither describes how people do think nor straightforwardly prescribes how they ought to think.

ZW: So what is logic about? What is the relation between logic and thought?

AM: The most we can say, I think, is that, *if* you make inferences, then you should make valid inferences. But there is much more to thinking than making inferences.

Confusion about the Right to Life

In *The Reasoner* 4.12, John Alexander argues that many politicians and social pundits contradict themselves when they accept that human beings have a right to life but deny that universal health care and liveable income programmes ought to be implemented. Here is an abridgement of his argument:

1. Human beings have a right to life.

2. If human beings have a right to life, then we have the moral obligation to save those lives that can be saved.

3. Universal health care and a liveable wage are necessary in order to save lives that can be saved.

4. Therefore, we have a moral obligation to implement universal health care and a liveable wage.

There are two serious faults in this argument. *First*, many of the politicians and social pundits to whom Alexander refers may interpret the right to life 'negatively,' as the right not to be killed; and they may also distinguish between killing and letting die. On this interpretation, premise 1 entails that we have a moral obligation not to kill people, but premise may be 2 false. Thus, even if they admit 3, they are not inconsistent in rejecting 4. 'Pro-life' activists who oppose abortion and euthanasia, which involve killing, can consistently oppose universal health care and a liveable wage even if this latter opposition amounts to letting people die.

Second, if human beings have a right to life, it seems that premise 2 is false, because its consequent seems absurd. The reason is scarcity. Saving a life just means delaying a death, since we all die. There will always be people whose deaths could be delayed if there were additional resources for health care, to provide greater availability of current treatments and cures, or research into, and development of, new ones. If we had a moral obligation to save every life that could be saved, we would have a moral obligation to devote our whole lives and our whole resources to the aim of saving lives and doing nothing else unless it supported that aim. Over time, increasingly many cases of life-saving would amount only to extending by a few months, or even by weeks or days, the lives of very old people whose quality of life might already be low. At the extreme, all fit and healthy people would have the obligation to devote their lives largely to providing the resources required to fund the life-support systems of an increasing multitude of decrepit near-corpses. Few, if any, people would acknowledge such an obligation.

There is a further fault in Alexander's paper. In his conclusion he says, 'I have not ... relied on controversial normative concepts and theories.' But he has; for he affirms that people who hold inconsistent beliefs, or who endorse an inconsistency, are thereby irrational (third and last paragraphs). But one may discover an inconsistency in one's beliefs without knowing which belief is at fault. If resolving the problem is likely to take considerable time and effort, and one has other pressing concerns, it can be quite rational to live with the inconsistency, at least for the time being. Since the people who are the target of Alexander's criticism are politically active, practical rather than theoretical types, even if their views were self-contradictory and even if they were troubled by this, they might not have the time or even the ability to be able to resolve the problem. Yet they could still feel sure that they were on the right track and that some theoretician would eventually be able to show how the inconsistency can be removed. After all, the calculus developed by Newton and Leibniz was inconsistent, but it was accepted by mathematicians and physicists because it was fruitful, and it took more than a century for the inconsistencies to be eliminated by Cauchy and Weierstrass (see Popper, *Realism and the Aim of Science*, London, Routledge, 1983, pp. 266-71). Furthermore, dialetheic logicians believe that admitting the truth of some self-contradictions gives us a sim-

pler and more coherent logic overall: their endorsement of inconsistency is perfectly rational (even if it is mistaken).

Therefore, the politicians and social pundits who disturb Alexander need not be inconsistent; and even if some of them are, they need not therefore be irrational.

Danny Frederick

§3

News

Thirty Years of Nonmonotonic Reasoning, 22–25 October

The conference "Thirty Years of Nonmonotonic Reasoning" took place October 22-25, 2010 in Lexington, KY. The conference was sponsored by the Association for Logic Programming and the University of Kentucky. The conference was organized by Gerd Brewka, Victor Marek and Mirek Truszczynski.

The goal of the conference was to sum up the research in all areas of nonmonotonic reasoning (NMR) in the past 30 years, since the publication in 1980 of the seminal double issue of *Artificial Intelligence Journal* that is generally accepted as marking the birth of the field of nonmonotonic reasoning.

The program of the conference consisted of 18 55-minute long invited talks, as well as 13 25-minute long contributed papers presenting recent original research results.

The plenary talks gave historical perspective of NMR, surveyed the current state of main subareas of nonmonotonic reasoning, and offered visions of the possible future research directions for the area. Topics such as computational knowledge representation as implemented today based on the so-called answer-set programming paradigm, first-order extensions of nonmonotonic logics, reasoning about defaults, modal nonmonotonic logics, circumscription, nonmonotonic multicontext systems, and nonmonotonic logics based on possibilistic approaches were all well represented.

The invited speakers of one-hour presentations included: Chitta Baral, Alexander Bochman, Jim Delgrande, Marc Denecker, Didier Dubois, Thomas Eiter, Michael Gelfond, Georg Gottlob, Daniel Lehmann, Nicola Leone, Vladimir Lifschitz, Jack Minker, Ilkka Niemela, David Pearce, Jeff Remmel, Torsten Schaub, and Erik Sandewall.

The conference was attended by 45 participants including 11 students. The conference materials (slide presentations, accompanying papers) are available here.

The proceedings of the one-hour plenary talks stream will be published as a book by College Publications. The organizers of the conference also issued a call for submissions to the special issue of *Journal of Artificial Intelligence Research*, which can be found at the conference site.

A one-day conference to commemorate 65th birthday of Michael Gelfond took place immediately after the main conference. That meeting was organized by Marcello Balduccini and Tran Cao Son.

Victor W. Marek
Department of Computer Science,
University of Kentucky, Lexington

Causation, Coherence and Concepts, 11–13 November

The conference *Causation, Coherence and Concepts - Themes from the Philosophy of Wolfgang Spohn* was organized by Wolfgang Freitag, Franz Huber, and Holger Sturm. It took place from 11th to 13th of November at the University of Konstanz. Here is a very brief summary of the eleven invited talks.

Karel Lambert (UC Irvine, California) gave an overview over the motivation for and the consequences of different systems of free logic. Free logic allows for terms that refer to no existent thing. As a consequence *Specification*, the classical rule to eliminate the universal quantifier, becomes invalid. Lambert stressed the advantage of free logic over classical logic for analysing sentences with non-referring terms.

Martine Nida-Rümelin (Fribourg, Switzerland) talked about the theory of action. She introduced her conception of "subject causation", which is an alternative to the classical conception of mental causation. The notion of subject causation was applied to the problem of free will.

Clark Glymour (CMU, Pennsylvania) talked about the theory of explanation. He argued that, given some plausible assumptions for explanation, like the postulate of finite axiomatizability, there is never a unique *best* explanation, because there will always be an explanation that is logically weaker but has the same relevant explanatory power.

Brian Skyrms (UC Irvine, California) gave a talk about learning how to send and receive signals. He analysed signalling games of different complexity and studied which learning strategies converge to the rewarded behaviour. The broader philosophical framework was provided by the question how names can get their meaning.

Ede Zimmermann (Frankfurt, Germany) gave a talk on the interpretation of semantic theories. He argued

5

that interpretation and meaning may fall apart. Two semantic theories can assign the same interpretation but different meaning to terms, and *vice versa*.

Volker Halbach (Oxford, England) confronted predicate and operator analyses of modal terms. Despite several advantages of the operator over the predicate analysis, the former has difficulties in analysing quantified sentences like "All laws of nature are necessary". Halbach showed how this problem can be solved with a suitable interaction of modal operators with the truth predicate.

Godehard Link (LMU Munich, Germany) talked about Russell's notion of a propositional function in the *Principia Mathematica* and in Russell's earlier works. The starting point was the question whether propositional functions or propositions are ontologically fundamental. Among other things, Link showed that Russell already used a notation that allows distinguishing between the function value and the function itself, and that Russell had anticipated the idea of abstraction.

Felix Mühlhölzer (Göttingen, Germany) talked about the interpretation, reference, and application of mathematical terms. He stressed that the (model-theoretic) interpretation of the terms has to be distinguished from the reference of the mathematical terms. The terms of the object-language are merely mathematical objects themselves and their formal interpretation is irrelevant for their reference. Also, he claimed, the application of the mathematical terms in e.g. physical theories should not be confused with the interpretation of the terms.

Hans Rott (Regensburg, Germany) gave a talk about belief revision. He introduced several refinements of the AGM theory as a reaction to the problem that the AGM-model of the belief state after revision does not have enough structure in order to model further updating. Rott also argued against the triviality results from Peter Gärdenfors by questioning the plausibility of the preservation condition, which is assumed in Gärdenfors' proof.

The last two talks concerned the prisoner's dilemma. *Julian Nida-Rümelin* (LMU Munich, Germany) argued that a rational subject need not always act solely with the aim of maximizing expected utility. It can be rational to also take moral judgement into account. Then it can be argued that it is rational to cooperate in the prisoner's dilemma. *Wolfgang Spohn* (Konstanz, Germany) presented a different solution to the prisoner's dilemma. He introduced the notion of a *Dependency Equilibrium* as an improvement of the well-known *Nash Equilibrium*. It rests upon the idea that A's expected probability that player B makes a certain move can depend on the move that player A makes (and *vice versa*). While the Nash Equilibrium does not allow a rational subject to cooperate in the prisoner's dilemma, the Dependency

Equilibrium does allow for this.

ALEXANDRA ZINKE
Department of Philosophy, University of Konstanz

Philosophy of Information, 18–19 November

The Third Workshop in the Philosophy of Information (18-19/11/2010, Brussels) followed previous editions (Oxford, 2007 and Ankara, May 2010) of focused workshops organized by members of the IEG Research Group in Oxford. The main aim of this workshop was to bring together researchers with an explicit interest in the notion of information and researchers from related areas. The program was structured around lectures with replies from a commentator. A considerable number of interested visitors attended the event as well.

Tony Belpaeme (Artificial Intelligence, University of Plymouth) opened on the first day with a lecture on the cultural origins of mental representation, maintaining that language is a catalyst in category acquisition and information is a product of cultural interaction. In his comment, Matteo Turilli (IEG and OeRC, Oxford) focused on the importance of meaning in artificial agents, the primitive understanding of the notion of concept (as opposed to its empirical satisfaction), and the value of simulations in validating theories.

Werner Callebaut (KLI, Altenberg) gave us an overview of the change in meaning of the notion of information in the biological sciences. He questioned the relevance of this scientific progress in relation to the philosophical debate. Max Cresswell (FLAC & Victoria University of Wellington) replied, and questioned the scientific understanding of the notion of truth in its theoretical and empirical uses.

Opening the afternoon session, Luciano Floridi (Oxford & Hertfordshire) added a new component to his formulation of an information-based epistemology and metaphysics. He started with the accounting-notion as the epistemic operation that upgrades information to knowledge, then dealt with a potential problem related to knowledge acquired by perception and testimony. The replies were delivered by Adriane Rini (FLAC & Massey University), who solicited further explanations on the role of modalities and modal expressions in informational theories.

Gabriella Pigozzi (Paris-Dauphine) connected epistemology with logic by presenting an argumentation-based method of aggregating information in MAS as a means to solve conflicts between individual and collective choices. In his comments, Jonas de Vuyst (Vrije Universiteit Brussel) focused on the informal meaning of the presented operators, and their applicability to context-dependent argumentation frameworks.

The final lecture of the first day was delivered by Darrell Rowbottom (Oxford), who talked about the role of information and knowledge in the philosophy of science. Starting from the old definition of knowledge as justified true belief, Rowbottom defended the thesis that scientific progress is about useful information, rather than about knowledge.

On the second day Benedikt Löwe (FLAC & UvAmsterdam) opened with a talk on formal and informal ways of understanding the equivalence of narratives. Lorenz Demey (KU Leuven), in his comment, first described some problems with the formal definition of equivalence, and then focused on connections between structure, content, the range of states compatible with a certain piece of information, and accuracy.

Liesbeth de Mol (UGent) presented a number of historical case studies from the history of computing, and used these to describe shifting roles in man-machine interactions. This led Bart van Kerkhove (Vrije Universiteit Brussel) to question the relevance and reliability of artificial agents in delivering mathematical knowledge.

Erik Myin (UAntwerpen) opened the afternoon session. In his talk, he defended an externalist picture of information processing, following which the processing of world-involving information is the default condition. Commentaries by Filip Buekens (Tilburg University) criticized the thesis that no internal processes occur in the mind by drawing an analogy with how we analyse machines that miscalculate.

The final talk was delivered by Francesca Poggiolesi (Vrije Universiteit Brussel). She defended the view that analyticity is a valuable property for proof-theoretical systems, and illustrated her point by describing such a calculus for the logic of proofs. Giuseppe Primiero (UGent) questioned the relevance of such a property for knowledge representation, and emphasized the necessity of an appropriate logical counterpart to the notion of refutable assumption.

This workshop was a great occasion for interaction among different research areas, with the notion of information on the background. We are looking forward for its next edition.

PATRICK ALLO
VU Brussel & IEG, Oxford
GIUSEPPE PRIMIERO
UGent & IEG, Oxford

Epistemology and Extended Cognition, 24 November

The Department of Philosophy at the University of Edinburgh hosted a workshop on 'Epistemology and Extended Cognition' on November 24th 2010 (see website). This event was for the most part held in the highly appropriate setting of the new award-winning Informatics Forum, which is home to some of the world's leading cognitive scientists. It was organized by the Department's *Epistemology Research Group*, in collaboration with the *Mind and Cognition Research Group*. Funding for this event came from the Leverhulme Trust.

Very roughly, *extended cognition* is that idea that cognitive processes can genuinely be extended beyond the skin of the agent. So, for example, in the right kind of conditions, an artefact such as an iPhone might genuinely form part of one's cognitive processes (as opposed to being used as a mere instrument). This proposal has received a great deal of discussion in the literature, both within the philosophy of mind and cognitive science, but also outside of philosophy within the cognitive science literature more generally. Until very recently, however, there has been little attempt to explore the epistemological ramifications of this idea, even though the implications on this score are clearly very significant. The aim of this workshop was to build on this nascent research and identify key themes for future inquiry. Funding-permitting, this workshop is envisaged as being the first of a programme of research events on this general topic at the University of Edinburgh which will be jointly run by the Epistemology and Mind and Cognition Research Groups.

The workshop opened with a paper by Krist Vaesen (Eindhoven) on 'The Epistemic Significance of Cognitive Artifacts'. Vaesen argued that a weak version of the extended cognition thesis could downplay the epistemic significance of agents who deploy epistemic artifacts. Moreover, given that artifacts cannot have propositional attitudes but can nevertheless produce knowledge, it appears we need to move away from a belief-centred conceptualization of knowledge. A pragmatic epistemological approach was thereby offered according to which information, not belief, is the focus of epistemic theorizing.

Next came Tom Roberts (Exeter), who spoke on 'Varieties of Integration'. The extended cognition thesis is usually understood as the claim that epistemic artifacts become integrated within one's overall cognitive system. Roberts suggested that the notion of integration should therefore be clearly delineated such that extended cognition theorists won't end up with a 'cognitive bloat' whereby almost anything could potentially become part of one's cognitive system. In particular, he argued for an historical account of integration which focuses on the agent's responsibility for extending his/her cognitive loops.

The third talk was from Evan Butts (Edinburgh) on 'Is Mentalism Internalism?' Very roughly, *mentalism* is a variety of epistemic internalism which argues that justification supervenes on the agent's mental states. Butts argued, however, that mentalism is in fact entirely compatible with extended cognition, and that this creates some problems for the view as it commits it to claims

which epistemic internalists characteristically wish to deny.

Next came Orestis Palermos (Edinburgh) who spoke on 'Belief-Forming Processes, Extended'. *Virtue reliabilism* holds that one knows that *p* only if one's believing the truth that *p* is the product of one's reliable cognitive abilities. Palermos argued that such a view struggles to explain how agents might employ cognitive artifacts in order to gain knowledge, and suggested that the solution to this problem could lie in allying virtue reliabilism to the extended cognition thesis.

Chris Kelp (Leuven) also considered the relationship between extended cognition and (a form of) virtue epistemology in his paper, 'Extended Cognition and Robust Virtue Epistemology'. Roughly, *robust virtue epistemology* holds that knowledge is true belief which is primarily creditable to the agent's appropriate employment of her reliable cognitive abilities. Krist Vaesen and Duncan Pritchard have recently argued that such a view is not compatible with extended cognition, and that at best only a weaker formulation of virtue epistemology can be allied to this proposal. Kelp critically examined their arguments with a view to showing that robust virtue epistemology is compatible with extended cognition after all.

The final talk of the workshop was from Richard Menary (Wollongong) on 'Cognitive Practices and Cognitive Character'. Drawing on his previous work, Menary took sides with the view that knowledge can be the product of cognitive processes which are not bound by an agent's skin. An agent can acquire knowledge on the basis of information, which may be stored internally as well as externally (i.e., outside the agent's skin), by diligently performing learned or acquired cognitive practices. Accordingly, the manipulation of the information that gives rise to knowledge spans the boundaries of brain, body and world, thereby generating an extended understanding of an agent's epistemic cognitive character.

ORESTIS PALERMOS
DUNCAN PRITCHARD
Department of Philosophy, University of Edinburgh

Dutch-Flemish Graduate Conference on Philosophy of Science and/or Technology, 25–26 November

In cooperation with Ghent University, the NFWT organised its first graduate conference for advanced master students, PhD-students, and recent PhD's, working on philosophy of science and/or technology.

A total of six sessions and two plenary lectures were held on November 25th and 26th.

The first day began with two sessions on 'trust and expertise'. Laszlo Kosolosky formulated a satisfactory account of consensus in scientific practice, referring to the National Institute of Health Consensus Development Conferences. Carlo Martini used the discussion of the role of experts and expert judgment in economics to claim that (at least) a more thorough approach to its epistemological problems is needed. Tom Simpson analysed a case study of technology building, at Microsoft Research Cambridge, to defend the thesis that trust is not a performative; but that it invariably has significant perlocutionary effects. Sven Diekman argued that, in order to hold a model valid for a certain use, a modeller has to form optimistic attitudes based on the relevance of each represented property, on professional, moral, and scientific feasibility, and on representational adequacy of the model. These personal attitudes of the modeller determine the epistemic features of the model. In the first plenary lecture, Jon Williamson argued that the Recursive Bayesian Net formalism can be applied to modelling the hierarchical structure of mechanisms. The last session of the day dealt with 'levels of explanation'. Wouter D'Hooghe investigated whether dual inheritance theory might provide a framework that unifies the social sciences as regards to cultural change. François Claveau drew on a case of triangulation for causal inference to address the question: 'What are the conditions to be fulfilled such that using multiple means of determination leads to warranted inference?' The first day ended with a talk on career opportunities in the United Kingdom, Belgium and the Netherlands.

The second day commenced with a plenary lecture by Gertrudis Van De Vijver who talked about the epistemological relevance of a transcendental viewpoint in critically analyzing the reflexive space within which most discussions on teleology and function in philosophy of biology take place. The fourth session dealt with 'nature and the natural'. Delene Engelbrecht answered the question of what exactly is meant by the concept of naturalness in patent law by examining two recent patent disputes. Yoni Van Den Eede undertook a preliminary attempt at a philosophical reflection on technological mediation as such, by using the concepts of 'transparency' and 'opacity' as heuristic instruments. Session 5 concerned 'criteria for model-selection'. Raoul Gervais argued—by referring to the case study of face recognition—against proponents of mechanistic explanations who defend that explanatory strength is merely a function of the model's accuracy. Stefan Mendritzki's talk aimed at developing an appropriate concept of mechanism validity based on consistency with knowledge of the target system processes and thus clarifying the validation of agent-based models in evolutionary economics. In the final session on 'understanding and explanation', Sara Voute defended the thesis that by using the tools earth scientists use to develop explanations and achieve understanding, also laymen could achieve understanding without rigorous

theoretical training. Merel Lefevere presented an array of arguments that made the difference between unification and integration explicit. On a personal note, I would like to express my gratitude to the organisers, i.e., Maarten Van Dyck and Jan Willem Wieland, for making all of this possible.

LASZLO KOSOLOSKY
Centre for Logic and Philosophy of Science, UGent

From Cognitive Science and Psychology to an Empirically-informed Philosophy of Logic, 7–9 December

On December 7th-9th 2010, the workshop 'From Cognitive Science and Psychology to an Empirically-informed Philosophy of Logic' took place in Amsterdam. The goal was to bring together logicians, philosophers, psychologists and cognitive scientists to discuss the interface between cognitive science and psychology, on the one hand, and the philosophy of logic on the other hand.

Johan van Benthem opened the workshop presenting his thoughts on the very idea of a philosophy of logic where 'facts matter' (to gloss the title of one of his papers). The workshop then continued with Keith Stenning on the emergence of classical logic in human reasoning. He contrasted a social-constructivist account of classical logic as a societal discovery/invention to a naturalistic account, and proposed a synthesis of these two views illustrated with evidence from empirical studies of students' logic learning. Shira Elqayam talked about the purported normative status of formal systems for psychological research and for the concept of human rationality.

The afternoon started with a double feature of Michiel van Lambalgen and Alexandra Varga. Michiel introduced the event calculus, and argued that it can be used to model some of the experimental data on infants' reasoning. Alexandra investigated the psychological findings of selective reenactment in infants from the point of view of the event calculus. The first day ended with a thought-provoking presentation by Fred Sommers, on what he described as a 'logibraic' approach to basic inferential patterns.

The second day began with Helen de Cruz on animal logic; she presented an overview of the research on deductive reasoning in non-human animals, and discussed implications of these findings for the debate on animal rationality. We then had Maria José Frápolli and Stavros Assimakopoulos on the concept of logical constanthood; they argued for the bold view that the conjunction is not a logical constant. The morning ended with Catarina Dutilh Novaes on formal languages as external devices. She argued that, more than just extend-ing the mind, formal languages 'alter' the mind in that they may counter some of our reasoning biases.

The afternoon of the second day had three UCSD talks. The first talk, by Ben Sheredos and Tyler Marghetis, took Frege as its starting point to evaluate the prospects of a psychologistic approach to logic. Some of Frege's claims can be countered by recent empirical findings, but some others are in fact corroborated by these findings. We then had Adam Streed on expressivism as an attractive middle course between Platonism and psychologism in logic. Finally, Rafael Nuñez closed the day with a talk on the prospects for an embodied grounding of logic. He drew on empirical data to argue that some of the essential ingredients of what we call logic today are already present in everyday informal conceptual systems.

The last session kicked off with Jeff Pelletier, presenting a combination of different topics he has worked on: psychologism in logic, the semantics of generic terms and default reasoning. Mark Zelcer was next, on a cognitive neuroscience approach to the sorites paradox. He argued that it appears paradoxical to us because of the conflicting interactions of neurologically distinct systems. The very final talk was by David Over, on a new paradigm psychology of conditionals: a probabilistic, Bayesian paradigm, which is greatly supported by experimental results.

CATARINA DUTILH NOVAES
Institute for Logic, Language, & Computation,
Universiteit van Amsterdam

Rational Trust, 9–10 December

The workshop "Rational Trust" took place at the University of Copenhagen on the 9th and 10th of December. It was hosted by the Social Epistemology Research Group and funded by the Velux Foundation as part of the research project *The Epistemology of Liberal Democracy*.

The workshop consisted of seven talks which addressed the epistemology of trust and related philosophical issues. The following summarizes these talks: Paul Faulkner (Sheffield) discussed what can be called a "thick" notion of trust. It is characterized by putting strong normative demands on both the truster and the trustee which cannot be explained (he argued) in Humean teleological terms.

Nikolaj Jang Lee Linding Pedersen (Copenhagen) started from the argument (following Wright) that we cannot have evidential support for such anti-skeptical hypotheses that there is an external world. He suggested that if rational belief requires having evidence, the proper attitude towards such hypotheses might better be characterized as trust. He also considered whether

decision-theoretic considerations may give sufficient non-evidential reasons for trusting that there is an external world.

Erik Olsson (Lund) examined how trust can be modeled with the fewest possible modifications to standard Bayesianism. When an agent A conditionalizes on the probability that another agent B would report p given that p is true, this is naturally understood as A's trust in B, in the sense of A's credence in the reliability of B. Combined with various assumptions, this understanding of trust allows for the derivation of a Bayesian model of trust.

Krisoffer Ahlstrom (Copenhagen) examined when we are required rather than merely permitted to trust some agent or source. Relying on reliabilist considerations he argued for the following two necessary and jointly sufficient conditions: (1) The alternative to trusting should be unpalatable from an epistemic point of view; (2) the trusting subject has to have evidence that the trusted source is reliable.

Gloria Origgi (Jean Nicod) presented a research project that she termed second-order epistemology. Empirical research in trust shows that we often trust sources on the basis of their reputation. This suggest a project for examining which cues of reputation are good indicators of reliable sources and which cues are misleading.

David Owens (Reading) took as his basic data that making an insincere assertion is both wrong in an epistemic and a deontic sense. He then examined what he calls the perlocutionary and performative accounts of testimony and argued that neither succeeds in capturing both aspects in a satisfactory way.

Klemens Kappel (Copenhagen) examined the notion of trust operative when our reasoning for believing a proposition p relies on premises which we only have access to through trusting others. He presented an account according to which trust is a disposition to believe what the trusted reports. He then examined whether this notion of trust is sufficient to rationally believe on trust.

A theme emerging from these different perspectives on trust was that trust is not a simple phenomenon and that the word 'trust' is probably used in many different ways. It remains a topic of further investigation.

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RUNE NYRUP
University of Copenhagen

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Calls for Papers

FORMAL MODELS OF AWARENESS AND LIMITED REASONING: special volume of Springer's Synthese Library, deadline 31 January.

CLASSICAL LOGIC AND COMPUTATION: special issue of *Annals of Pure and Applied Logic*, deadline 15 February.

FROM PRACTICE TO RESULTS IN LOGIC AND MATHEMATICS: special issue of *Philosophia Scientiae*, deadline 1 March.

CUSHING MEMORIAL PRIZE: to the best paper in the History and Philosophy of Physics, deadline 15 March.

HILARY PUTNAM INTERNATIONAL YOUNG SCHOLARS CONTEST: to the best two essays on any aspect of of Hilary Putnam's latest views, deadline 15 April.

EXPERIMENTAL PHILOSOPHY: special issue of *The Monist*, deadline 30 April.

C. L. HAMBLIN AND ARGUMENTATION THEORY: special issue of *Informal Logic*, deadline 30 June.

THE PROBLEM OF THE CRITERION: special issue of *Philosophical Papers*, deadline 30 June.

MODALITIES: SEMANTICS & EPISTEMOLOGY: special issue of *Philosophia Scientiae*, deadline 1 July.

FORMAL AND INTENTIONAL SEMANTICS: special issue of *The Monist*, deadline 30 April 2012.

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§4
WHAT'S HOT IN . . .

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We are looking for columnists willing to write pieces of 100-1000 words on what's hot in particular areas of research related to reasoning, inference or method, broadly construed (e.g., Bayesian statistical inference, legal reasoning, scientific methodology). Columns should alert readers to one or two topics in the particular area that are hot that month (featuring in blog discussion, new publications, conferences etc.). If you wish to write a "What's hot in . . . ?" column, either on a monthly or a one-off basis, just send an email to features@thereasoner.org with a sample first column.

. . . Logic and Rational Interaction

A number of recent publications in the area of Logic and Rational Interaction were announced last month on *LORIWEB*. The book *Belief Revision meets Philosophy of Science*, edited by Erik J. Olsson and Sebastian Enqvist, appeared with Springer. The paper *Completeness of a Branching-Time Logic with Possible Choices* by Roberto Ciuni and Alberto Zanardo appeared in Studia Logica. Guillaume Aucher published the paper *Private announcement and belief expansion: an internal perspective* in the Journal of Logic and Computation. And *A modal framework for abductive reasoning*, by Fernando Soler-Toscano, David Fernandez-Duque and Angel Nepomuceno-Fernandez appeared in the Logic Journal of the IGPL.

Please submit information on topics relevant to the area of Logic and Rational Interaction—including announcements about new publications and recent or upcoming events—to Rasmus Rendsvig, our web manager

or to the loriweb address. We will be happy to publish your news on LORIWEB.

BEN RODENHÄUSER
Philosophy, Groningen

INTRODUCING . . .

If you would like to write one or more short introductions to concepts, topics, authors or books connected with reasoning, inference or method, or if you have an editorial project to collate such pieces and would like to print some of them here, please email features@thereasoner.org with your proposal.

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§5
EVENTS

JANUARY

LogICCC MEETS INDIA: Delhi University, India, 7–8 January.

ICCMS: 3rd International Conference on Computer Modeling and Simulation, Mumbai, India, 7–9 January.

ICLA: 4th Indian Conference on logic and its Applications, New Delhi, India, 9–11 January.

GRADUATE CONFERENCE IN EPISTEMOLOGY: Miami, FL, 13–15 January.

TIM BAYNE'S *The Unity of Consciousness*: St. Catherine's College, Oxford, 14 January.

PHILOSOPHY OF SCIENCE COLLOQUIUM: Durban, SA, 18 January.

THE NOTION OF FORM IN 19TH AND EARLY 20TH CENTURY LOGIC AND MATHEMATICS: International graduate workshop, Vrije Universiteit Amsterdam, 20–21 January.

THE NATURE OF INDETERMINACY: University of Leeds, 21–22 January.

GRADUATE CONFERENCE ON THE PHILOSOPHY OF LOGIC AND MATHEMATICS: Cambridge, 22–23 January.

SODA: ACM-SIAM Symposium on Discrete Algorithms, San Francisco, California, USA, 23–25 January.

ICISD: International Conference on Intellingent Systems & Data Processing, Vallabh Vidyanagar, Gujarat, India, 24–25 January.

ICICN: International Conference on Information and Computer Networks, Guiyang, China, 26–28 January.

ICAART: 3rd International Conference on Agents and Artificial Intelligence, Rome, Italy, 28–30 January.

CCA: Computability and Complexity in Analysis, Cape Town, South Africa, 31 January–4 February.

FEBRUARY

SOCIAL NORMS IN SOCIAL SCIENCES: Department of Philosophy, University of Bristol, 14 February.

AIA: 11th International Conference on Artificial Intelligence and Applications, Innsbruck, Austria, 14–16 February.

PHDS IN LOGIC: Graduate Conference and Winter School, Brussels, 17–18 February.

CICLING: 12th International Conference on Intelligent Text Processing and Computational Linguistics, Tokyo, Japan, 20–26 February.

MORE TOO FUNKY CAUSATION: Department of Philosophy and Moral Sciences, Ghent University, Belgium, 23–24 February.

ICLICC: International Conference on Logic, Information, Control and Computation, Gandhigram, Tamil Nadu, India, 25–26 February.

NOVEL PPREDICTIONS: Heinrich-Heine Universität Düsseldorf, Germany, 25–26 February.

ICMLC: 3rd International Conference on Machine Learning and Computing, Singapore, 26–28 February.

MARCH

ISHPS: Israeli Society for History & Philosophy of Science, Bloomfield Science Museum, Jerusalem, 6 March.

THEORY-LADENNESS OF EXPERIENCE: Heinrich-Heine Universität Düsseldorf, Germany, 10–11 March.

SOUTHERN SOCIETY FOR PHILOSOPHY AND PSYCHOLOGY: New Orleans, Louisiana, 10–12 March.

STACS: 28th International Symposium on Theoretical Aspects of Computer Science, Dortmund, Germany, 10–12 March.

MODEL UNCERTAINTY AND SELECTION IN COMPLEX MODELS: University of Groningen, The Netherlands, 14–16 March.

THINKING ABOUT ANIMAL COGNITION: Institut für Philosophie, Ruhr-Universität Bochum, Germany, 17–18 March.

EUROPEAN EPISTEMOLOGY NETWORK: Lund, Sweden, 17–19 March.

EDINBURGH GRADUATE CONFERENCE IN EPISTEMOLOGY: University of Edinburgh, 18–19 March.

NAFIPS: 30th North American Fuzzy Information Processing Society Annual Conference, El Paso, Texas, USA, 18–20 March.

AI AND HEALTH COMMUNICATION: Stanford University, California, 21–23 March.

DISCOVERY IN THE SOCIAL SCIENCES: TOWARDS AN EMPIRICALLY-INFORMED PHILOSOPHY OF SOCIAL SCIENCE: University of Leuven, Belgium, 22–23 March.

THE PROBLEM OF RELATIVISM IN THE SOCIOLOGY OF (SCIENTIFIC) KNOWLEDGE: University of Siegen, 22–23 March.

TRUTH TO BE TOLD: WORKSHOP ON PHILOSOPHICAL AND FORMAL THEORIES OF TRUTH: Department of Philosophy, Institute for Logic, Language and Computation, Universiteit van Amsterdam, 23–25 March.

ICDDM: International Conference on Database and Data Mining, Sanya, China, 25–27 March.

Lexical Resources in Psycholinguistic Research: Berlin, 28 March.

Rethinking Reason: Philosophy Department, Saarland University, Saarbrücken, 28–31 March.

Social Computing, Behavioral-Cultural Modeling, & Prediction: College Park, Maryland, United States, 29–31 March.

Hacking's Styles of Thinking: University of Cape Town, 30–31 March.

April

Epistemology of Modeling & Simulation: Building Research Bridges Between the Philosophical and Modeling Communities: University of Pittsburgh, 1–3 April.

Paradox and Logical Revision Workshop: Arché Research Centre, St Andrews, Scotland, 2–3 April.

AISB: UK Society for the Study of Artificial Intelligence and Simulation of Behaviour, University of York, York, 4–7 April.

Computing and Philosophy: University of York, UK, 4–7 April.

Research Student Conference in Probability and Statistics: Cambridge, 4–7 April.

SpringSim: Spring Simulation Multi-conference, Boston, MA, USA, 4–9 April.

Biology and Subjectivity: University of Navarra, Pamplona, Spain, 6–8 April.

ICNCS: International Conference on Network and Computer Science, Kanyakumari, India, 8–10 April.

The Authority of Science: University of Sydney, Australia, 8–10 April.

AIML: ICGST International Conference on Artificial Intelligence and Machine Learning, Dubai United Arab Emirates, 11–14 April.

ICANNGA: International Conference on Adaptive and Natural Computing Algorithms, Ljubljana, Slovenia, 14–16 April.

MAICS: 22nd Midwest Artificial Intelligence and Cognitive Science Conference, Cincinnati, Ohio, USA, 16–17 April.

NFM: 3rd NASA Formal Methods Symposium, Pasadena, California, USA, 18–20 April.

May

AAMAS: 10th International Conference on Autonomous Agents and Multiagent Systems, Taipei, Taiwan, 2–6 May.

EBL: 16th Brazilian Logic Conference, Laboratório Nacional de Computação Científica, Petrópolis (RJ), Brazil, 9–13 May.

ICCS: 4th International Conference of Cognitive Science, Tehran, Iran, 10–12 May.

PhiLang: 2nd International Conference on Philosophy of Language and Linguistics, University of Lodz, Poland, 12–14 May.

Metaphysics & the Philosophy of Science: University of Toronto, 13–15 May.

LPNMR: 11th International Conference on Logic Programming and Nonmonotonic Reasoning, Vancouver, BC, Canada, 16–19 May.

Argumentation: Cognition & Community: Ontario Society for the Study of Argumentation (OSSA), University of Windsor, 18–21 May.

WoLLIC: 18th Workshop on Logic, Language, Information and Computation, University of Pennsylvania, Philadelphia, USA, 18–21 May.

Philosophy and Ordinary Language: Louvain, 19–20 May.

Recent Advances in Statistics and Probability: Hasselt University, Diepenbeek, Belgium, 19–20 May.

Systematicity and the Post-connectionist Era: Taking Stock of the Architecture of Cognition: San Jose, Andalucia, Spain, 19–21 May.

European Conference on Cognitive Science: Sophia, Bulgaria, 21–24 May.

SLACRR: St. Louis Annual Conference on Reasons and Rationality, St. Louis, MO, 22–24 May.

TAMC: 8th Annual Conference on Theory and Applications of Models of Computation, Tokyo, Japan, 23–25 May.

PAKDD: 15th Pacific-Asia Conference on Knowledge Discovery and Data Mining, Shenzhen, China, 24–27 May.

AI: 24th Canadian Conference on Artificial Intelligence, Saint John's, Newfoundland and Labrador, Canada, 25–27 May.

Normativity of Meaning: Sellersian Perspectives: Department of Logic, Institute of Philosophy, Prague, Czech Republic, 25–27 May.

LATA: 5th International Conference on Language and Automata Theory and Applications, Tarragona, Spain, 30 May–3 June.

June

TICTTL: 3rd International Congress on Tools for Teaching Logic, Salamanca, Spain, 1–4 June.

Church's Thesis: Logic, Mind and Nature: Krakow, Poland, 3–5 June.

WSOM: 8th Workshop on Self-organizing Maps, Espoo, Finland, 13–15 June.

The Epistemology of Philosophy: University of Cologne, 13–17 June.

BW7: 7th Barcelona Workshop on Issues in the Theory of Reference, Special Topic: Paradoxes of Truth and Denotation, 14–16 June.

ICANN: International Conference on Artificial Neural Networks, Espoo, Finland, 14–17 June.

Logicism Today: Besse-en-Chandesse, France, 14–17 June.

CSR: 6th International Computer Science Symposium in Russia, St. Petersburg, 14–18 June.

PNSE: International Workshop on Petri Nets and Software Engineering, Kanazawa, Japan, 20–21 June.

LOGICA: Institute of Philosophy, Academy of Sciences of the Czech Republic, Hejnice, Northern Bohemia, 20-24 June.

LICS: Logic in Computer Science, Toronto, Canada, 21–24 June.

SPSP: Society for Philosophy of Science in Practice, University of Exeter, Exeter, UK, 22–24 June.

EPISTEME: Social Epistemology Meets Formal Epistemology: Recent Developments and New Trends, Center for Formal Epistemology, Department of Philosophy, Carnegie Mellon University, 24–26 June.

Evolution, Cooperation and Rationality: Philosophical Perspectives: University of Bristol, 27–29 June.

Ershov Informatics Conference: Novosibirsk, Akademgorodok, Russia, 27 June–1 July.

Models of Computation in Context: Sofia, Bulgaria, 27 June–2 July.

ICML: 28th International Conference on Machine Learning, Bellevue, WA, USA, 28–29 June.

Models and Mechanisms in Cognitive Science: School of Philosophy, Psychology, and Language Sciences, University of Edinburgh, 29 June.

ECSQARU: 11th European Conference on Symbolic and Quantitative Approaches to Reasoning with Uncertainty, Belfast, Northern Ireland, UK, 29 June–1 July.

July

The Computational Turn: Past, Presents, Futures?: International Association for Computing and Philosophy, Aarhus University, 3–5 July.

ICMC: 2nd International Choice Modelling Conference, Leeds, UK, 4–6 July.

TABLEAUX: Automated Reasoning with Analytic Tableaux and Related Methods, Bern, Switzerland, 4–8 July.

LGS7: 7th International Conference on "Logic, Games Theory and Social Choice", National School of Political Studies and Administration, Bucharest, Romania, 6–9 July.

ICLP: 27th International Conference on Logic Programming, Lexington, Kentucky, USA, 6–10 July.

IWSM: 26th International Workshop on Statistical Modelling, Valencia, 11–15 July.

TARK: Theoretical Aspects of Rationality and Knowledge, Groningen, the Netherlands, 11–15 July.

Australasian Applied Statistics Conference: Palm Cove, Tropical North Queensland, Australia, 12-15 July.

ICIAM: 7th International Congress on Industrial and Applied Mathematics, Vancouver, British Columbia, Canada, 18–22 July.

IJCAI: 22nd International Joint Conference on Artificial Intelligence, Barcelona, Spain, 19–22 July.

CLMPS: 14th Congress of Logic, Methodology, and Philosophy of Science, Nancy, France, 19–26 July.

SING: 7th Spain-Italy-Netherlands Meeting on Game Theory, Paris, 18–20 July.

ICMSA: 7th IMT-GT International Conference on Mathematics, Statistics and its Applications, Bangkok, Thailand, 21–23 July.

ISIPTA: 7th International Symposium on Imprecise Probability: Theories and Applications, University of Innsbruck, Austria, 25–28 July.

ICCS: 19th International Conference on Conceptual Structures, Derby, England, UK, 25–29 July.

CADE: 23nd International Conference on Automated Deduction, Wroclaw, Poland, July 31–August 5.

§6
Courses and Programmes

Courses

ICLA: 4th Indian Conference on Logic and its Applitions, Delhi University, India, 9–11 January.

Spring School on Belief Functions Theory and Applications: Autrans, France, 4–8 April.

COST-ADT: Doctoral School on Computational Social Choice, Estoril, Portugal, 9-14 April.

Logic School: Instituto de Matemática/UFF, Niterói (RJ), Brazil, 7–8 May.

Reasoning and Argument: Computer and Cognitive Science Perspectives: 2nd Summer Institute on Argumentation, Centre for Research on Reasoning, Argumentation and Rhetoric, University of Windsor, Ontario, Canada, 9–27 May.

ESSLLI: European Summer School in Logic, Language and Information, Ljubljana, Slovenia, 1–12 August.

Network Dynamics: Groningen, the Netherlands, 29 August–6 September.

Analysis Methods for Cross-national Comparisons: Leuven, Belgium, 28 August–4 September.

Programmes

Doctoral Programme in Philosophy: Language, Mind and Practice, Department of Philosophy, University of Zurich, Switzerland.

HPSM: MA in the History and Philosophy of Science and Medicine, Durham University.

Master Programme: Philosophy of Science, Technology and Society, Enschede, the Netherlands.

MA in Cognitive Science: School of Politics, International Studies and Philosophy, Queen's University Belfast.

MA in Logic and the Philosophy of Mathematics: Department of Philosophy, University of Bristol.

MA in Metaphysics, Language, and Mind: Department of Philosophy, University of Liverpool.

MA in Mind, Brain and Learning: Westminster Institute of Education, Oxford Brookes University.

MA in Philosophy: by research, Tilburg University.

MA in Philosophy of Biological and Cognitive Sciences: Department of Philosophy, University of Bristol.

MA in Rhetoric: School of Journalism, Media and Communication, University of Central Lancashire.

MA programmes: in Philosophy of Language and Linguistics, and Philosophy of Mind and Psychology, University of Birmingham.

MRes in Methods and Practices of Philosophical Research: Northern Institute of Philosophy, University of Aberdeen.

MSc in Applied Statistics and Datamining: School of Mathematics and Statistics, University of St Andrews.

MSc in Artificial Intelligence: Faculty of Engineering, University of Leeds.

MA in Reasoning

An interdisciplinary programme at the
University of Kent, Canterbury, UK.
Core modules provided by Philosophy and further
modules from Psychology, Computing, Statistics,
Social Policy, Law, Biosciences and History.

MSc in Cognitive & Decision Sciences: Psychology, University College London.

MSc in Cognitive Science: University of Osnabrück, Germany.

MSc in Cognitive Psychology/Neuropsychology: School of Psychology, University of Kent.

MSc in Logic: Institute for Logic, Language and Computation, University of Amsterdam.

MSc in Mathematical Logic and the Theory of Computation: Mathematics, University of Manchester.

MSc in Mind, Language & Embodied Cognition: School of Philosophy, Psychology and Language Sciences, University of Edinburgh.

MSc in Philosophy of Science, Technology and Society: University of Twente, The Netherlands.

MRes in Cognitive Science and Humanities: Language, Communication and Organization: Institute for Logic, Cognition, Language, and Information, University of the Basque Country (Donostia San Sebastian).

§7
Jobs and Studentships

Jobs

One-year position: in Philosophy of Science, San Francisco State University, review of applications begins in January.

2 Post-doc positions: Practical Self-understanding Programme, NWO, The Netherlands, deadline 1 January.

Lecturer: in Multi-Agent Systems, Department of Computer Science, University of Liverpool, deadline 4 January.

tenure-track Assistant Professor: AOS: philosophy of science, Ripon College, Wisconsin, review of applications begins January 10 until filled.

Post-doc positions: within the Programme on the Impacts of Future Technology, Future of Humanity Institute, Oxford, deadline 12 January.

Post-Doctoral Research Fellow: to work on the project "An Adaptive Learning System for Reasoning about Stories with Poor Comprehenders and their Educators", School of Psychology, University of Sussex, deadline 14 January.

Research Fellow: in the Centre for Research in Statistical Methodology (CRiSM), Department of Statistics, University of Warwick, deadline 17 January.

Postdoctoral Research Fellow: The Emmy Noether Research Group, "Understanding and the A Priori", Philosophy Department, University of Cologne, Germany, deadline 28 January.

Lecturer/ Research Fellow: in Cognitive Science, Department of Philosophy and ARC Centre for Excellence in Cognition and its Disorders, Macquarie University, deadline 30 January.

Professor: of Applied Stochastics, Institute of Mathematical Statistics and Actuarial Science, University of Bern, deadline 1 February.

Studentships

10 PhD student positions: within the doctoral program "Mathematical Logic in Computer Science", Vienna University of Technology (TU Wien), until filled.

PhD Studentship: "Hyper-heuristics for Grouping Problems", School of Computer Science, University of Nottingham, until filled.

7 PhD positions: Practical Self-understanding Programme, NWO, The Netherlands, deadline 1 January.

PhD positions: Gatsby Computational Neuroscience Unit, UCL, London, deadline 7 January.

LSE Philosophy Scholarship: Department of Philosophy, Logic and Scientific Method, London School of Economics, deadline 15 January.

LAKATOS SCHOLARSHIP: MSc in Philosophy of Science, Department of Philosophy, Logic and Scientific Method, LSE, deadline 15 February.

DOCTORAL RESEARCH FELLOW: The Emmy Noether Research Group, "Understanding and the A Priori", Philosophy Department, University of Cologne, Germany, deadline 28 January.

PhD POSITION: within the project "Partial least squares for serially dependent data", Institute for Mathematical Stochastic at the Georg-August-University Göttingen, deadline 20 February.

3 PhD POSITIONS: Institute for Logic, Language and Computation, University of Amsterdam, deadline 15 March.

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