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# THE REASONER

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- The tenth anniversary is an appropriate moment for some fresh input. I'm delighted that [Hykel Hosni](#) has agreed to take over from me as editor of *The Reasoner*, from the next issue.
- 15 Hykel is Associate Professor of Logic in the Department of Philosophy at the University of Milan. He has a background in mathematics and philosophy and has research interests in uncertain reasoning, probability logic, philosophy of probability and rationality. Readers will be familiar with Hykel as our columnist on uncertain reasoning.
- 17
- 19 Hykel has several great ideas to develop this gazette. Read about these plans below, and also in the next issue. We'll also find out about Hykel's research and his perspective on the field of reasoning in the interview below.
- 20
- 20 I'd like to thank all those who have helped make setting up and editing the first ten years of *The Reasoner* a great experience: all those involved in the production team, the editorial board, all the guest editors, the University of Kent for supporting this enterprise, and everyone who has contributed a piece or who has been interviewed. It has made me appreciate the number of constructive and enthusiastic people in this field. Thanks a lot!
- 21

JON WILLIAMSON  
Philosophy, Kent

## EDITORIAL

*The Reasoner* has now been running for 10 years. When setting it up, the aim was to provide a forum for all those who are interested in research on reasoning, inference and methodology. I think we've succeeded in several respects. *The Reasoner* has built up a substantial readership from around the world and from a variety of academic disciplines and walks of life outside academia. On the other hand, we have relatively few submissions from non-philosophers and not as many submissions from early-career researchers as we would like. Do get involved, to help build a vibrant community!



## FEATURES

### Interview with Hykel Hosni

**Jon Williamson:** Can you please tell us something about your background? How did you get into reasoning-related research?

**Hykel Hosni:** Completely by chance. I have no recollection as to why I decided to study philosophy as an undergraduate student, and I guess it was pretty much a random choice. Be it as it may, the University of Pisa offered a number of courses covering classical logic, including fairly advanced topics like incompleteness and computability. I fell in love with the subject in-

stantly. Half way through the second year one of my professors suggested that I should really move either to the Netherlands or the UK to pursue my interests. I applied for an Erasmus scholarship both to Amsterdam and Manchester, and got both. That was a hard choice indeed: two of the best places in Europe (the UK was part of it back then) to do logic. I tossed a coin and it landed Manchester. As I'm saying this I can't help feeling extremely sorry about Brexit and what this could mean for future generations of people like me. Anyway, on week one I climbed the Maths Tower (sadly that's been demolished a decade ago, not by the referendum) and knocked at Jeff Paris's door. I was really nervous and I could hardly speak English, but I guess other channels communicated my enthusiasm for doing logic. Jeff made a few phone calls which allowed me to take part to the MSc in Mathematical Logic that Manchester was running at the time. It was the most amazing experience. Along with Jeff, a very fine bunch of logicians taught there, including Peter Aczel, Mike Prest and George Wilmers. Retrospectively I am really puzzled by how much I could learn in just two semesters!

Towards the end of the year Jeff gave me a project on Walley's approach to imprecise probabilities. He apparently liked it and suggested that I should continue there for a PhD. In his feedback he said that my paper reminded him in style and spirit of a former student of his, Jon Williamson, who had moved down to London to do a PhD in AI.

**JW:** It must have been a wonderful environment in which to do a PhD. It's a pity that the activities of the Manchester uncertain reasoning group are gradually winding down, now that Jeff Paris is semi-retired and George Wilmers has left. There's nowhere else quite like it in the UK, certainly.

**HH:** It was indeed. What I liked the most about the Manchester group was the logic-based view. Uncertain reasoning, individual and collective, was understood there as a branch of mathematical logic.

**JW:** How's the uncertain reasoning scene in Italy?

**HH:** I'd say that the many-valued logic community is rather active in the mathematics of uncertain reasoning, with many groups working on the various aspects of the topic. Over the past couple of decades, very interesting results have been obtained linking MV-algebras to de Finetti's theory of probability. Daniele Mundici and the late Franco Montagna made a strong impact in the field, which is definitely there to stay. On the psychology of reasoning under uncertainty Vincenzo Crupi and Katya Tentori lead a number of very interesting research projects, as the readers of *The Reasoner* know very well.

**JW:** What's the general academic situation like in Italy at the moment? There seemed to be a bit of a freeze in new jobs a while back. Have things improved?

**HH:** It's not rosy, not rosy at all. Italy's expenditure for research is about 1.3% of GDP, well below the EU average (28 countries). Commenting on yet another cut, Silvio Berlusconi replied in 2010 "why should we pay for scientists when we make the most beautiful shoes in the world?". Four prime ministers on, the attitude hasn't changed much. It doesn't help that academics have a terrible press in Italy. We are portrayed as self-referential, privileged when not outright

corrupt. It's amazing what Italian research manages to achieve in this climate. Which explains why Italians perform very well abroad. You can see evidence of this in major European grants, as well as in the numbers of thriving postgraduate students and postdocs at European universities. Indeed the Italian university system is being very generous with the rest of the world, especially the UK, Europe, and the US. But it is so myopic not to be willing to make the investments required to be reciprocated. It is very hard to attract people to come and work here. And when we do, the Ministry makes our lives so difficult with ridiculous regulations. I should stop here, really.

**JW:** Can you tell the readers about an aspect of your own research that you find exciting at the moment?

**HH:** Well, I'm excited about many things, but here's a selection. Tommaso Flaminio and I have recently submitted a paper which took us over three years to write, mostly in collaboration with the late Franco Montagna. In it, we characterise the condition of known as "strict coherence" for many-valued events. It turns out, very interestingly, that in this general setting certain nice results can be obtained also for Boolean events, a case initially investigated by Kemeny and Shimony in a memorable 1955 number of the *Journal of Symbolic Logic*. One of the early formulations of the problem is due to Carnap, who was rather keen on "regular" probability functions. I'm quite proud of this paper as it provides a clear picture of what's going on in a rather slippery field.



Over the past year or so I got very enthusiastic about "logic and economics". I think the potential of logic in economic theory is vastly under appreciated. So far people have been looking mostly at how modal logics fit in (very nicely!) with the game theory agenda. More recently fruitful synergies emerged in the field of computational social choice. However, I think much more can be done. I'll give you two examples. First, logic is central to probability, though the standard measure-theoretic presentation certainly doesn't make this explicit. An appreciation of the role of logic in probability could lead to a much sharper analysis of the limitations of probabilistic forecasting in economics and finance. Second, logic can be analysed in terms of its computational complexity. This could be used to provide logic-based formalisations of "realistic" or "practical" forecasters, that is to say, agents whose rationality is defined relative to their inferential abilities. I guess many in the social sciences stick to unrealistic definitions of rationality because there is currently no serious normative alternative. A logic-based definition of practical rationality could achieve exactly this.

Let me emphasise the importance of the attitude with which the "logic and economics" agenda should be pursued. The point is definitely not that of convincing our colleagues in economics that they're not doing things right. That, I think, would clearly achieve the opposite result (I personally think

that this attitude is the reason why most, say mathematical analysts, don't think very highly of logic and logicians). Rather I think we can learn much from the pioneers of "logic in computer science" who did fantastic things in the 1970s and 1980s. They dared doing ground-breaking work in a field which purists looked at with suspicion, and yet they managed to create a culture, in addition to nice results, not to mention brand new departments, i.e. jobs.

But there is one thing which I find super exciting and somewhat frightening, becoming the editor of this gazette, which so many of us read and love. Indeed I would like to ask *you* a question now.

How did you come up with the idea in the first place?

**JW:** The community of researchers interested in reasoning, inference and method is split over various disciplines, including philosophy, computing, psychology, law, statistics and mathematics. The plan was to create a forum for this community. The idea of a monthly gazette with relatively short pieces, rather than a more formal academic journal, was to encourage readers to invest the time to read about topics outside their immediate area, and to provide an opportunity for PhD students and early career researchers to get their research known.

Would you like to tell readers about your vision for the gazette—where would you like to take it?

**HH:** Well I think it should do precisely what's been designed for!

My ambition is to get to the point where the multi-disciplinary reasoning community sees *The Reasoner* as the place to submit interesting, novel, unconventional or otherwise daring ideas; we'll have a new section for all that. I'd also like reasoners who manage high profile projects to use the gazette to communicate the project's activities and results. This will have a dedicated section too, which will keep us all up to date on cutting edge research and great project ideas. Recent PhD students will also be encouraged to sum up their theses in a new section, and let the wider community of reasoners know about their results. And finally, columns. What's hot in ... is perhaps the most recognisable feature of *The Reasoner* and I hope that many readers will contribute to it too.

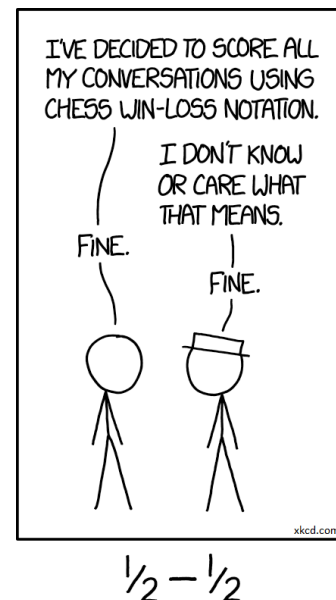
**JW:** Thanks a lot, Hykel!

## NEWS

### E.W. Beth Dissertation Prize

Since 2002, FoLLI (the Association for Logic, Language, and Information) has awarded the E.W. Beth Dissertation Prize to outstanding dissertations in the fields of Logic, Language, and Information. We invite submissions for the best dissertation which resulted in a Ph.D. degree awarded in 2016.

*Who qualifies.* Nominations of candidates are admitted who were awarded a Ph.D. degree in the areas of Logic, Language, or Information between January 1st, 2016 and December 31st, 2016. Theses must be written in English; however, the Committee accepts submissions of English translations of theses originally written in other languages, and for which a PhD was awarded in the preceding two years (i.e. between January 1st, 2014 and December 31st, 2015). There is no restriction on the



nationality of the candidate or on the university where the Ph.D. was granted.

*Prize.* The prize consists of: a certificate; a donation of 2500 euros provided by the E.W. Beth Foundation; an invitation to submit the thesis (or a revised version of it) to the FoLLI Publications on Logic, Language and Information (Springer).

*How to submit.* Only electronic submissions are accepted. The following documents are required: the thesis in pdf format (ps/doc/rtf not accepted); a ten-page abstract of the dissertation in pdf format; a letter of nomination from the thesis supervisor (see below); two additional letters of support, including at least one from a referee not affiliated with the academic institution that awarded the Ph.D. degree.

Self-nominations are not admitted: each nomination must be sponsored by the thesis supervisor. The letter of nomination should concisely describe the scope and significance of the dissertation and state when the degree was officially awarded. Nominations should contain the email contact details of the nominator.

All documents must be submitted electronically (preferably as a zip file) to Ian Pratt-Hartmann ([ipratt@cs.man.ac.uk](mailto:ipratt@cs.man.ac.uk)). Hard copy submissions are not allowed. In case of any problems with the email submission or a lack of notification within three working days, nominators should write to Ian Pratt-Hartmann.

The prize will be awarded at the ESSLLI summer school in Toulouse. The current (tentative) date for the presentation ceremony is July 26th, 2017.

*Queries.* Ian Pratt-Hartmann ([ipratt@cs.man.ac.uk](mailto:ipratt@cs.man.ac.uk))

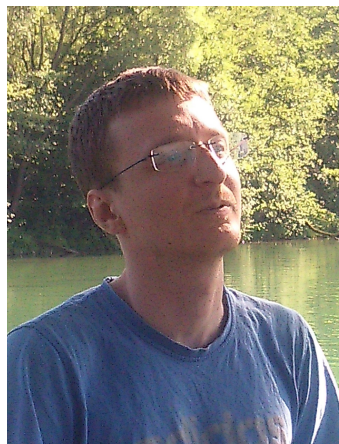
*Important dates.* Deadline for Submissions: April 21st, 2017. Notification of Decision: June 19th, 2017. ESSLLI summer school: July 17th–28th, 2017.

IAN PRATT-HARTMANN  
Manchester University

### Does the principal principle imply the principle of indifference? 24 March

We spent a whole day on discussing this very challenging question at Kent with Richard Pettigrew. Richard joined our bi-

weekly reading group on the Principal Principle, in the afternoon we had a symposium and in the evening we went out for a nice Moroccan meal. The symposium was organised by Veli-Pekka Parkkinen and myself on behalf of the Centre for Reasoning at the University of Kent and the EBM+ consortium. It is part of the weekly evidence seminar series at the University of Kent and an activity of the project Evaluating evidence in medicine, funded by the UK Arts and Humanities Research Council. It consisted of three short talks, by Jon Williamson, Richard Pettigrew and myself. However, much of the symposium was already pre-empted by our earlier discussions in the reading group. I think, I can speak for all three of us when I am saying that during this very productive day we came to a better understanding of our own positions and the grounds for our disagreements. In this short report, I will try to explain some of these disagreements.



Let me quickly introduce the relevant background information. Lewis put forward the following principle to calibrate credence with objective chances.

**PRINCIPAL PRINCIPLE.**  $P(A|ch_t(A) = x \wedge E) = x$ , where  $P$  is the initial credence function,  $ch_t(A) = x$  says that the chance at time  $t$  of proposition  $A$  is  $x$  and  $E$  is any proposition that is compatible with  $ch_t(A) = x$  and admissible at time  $t$ .

The Principal Principle (PP) states that, if we know that the chance at  $t$  of  $A$  is  $x$  then we should assign credence  $x$  to  $A$ . The PP contains an admissibility clause. It can only be applied as long as one's other evidence  $E$  does not provide direct enough information about  $A$  that would override the chance information.

The symposium focused on the claim that the PP implies the Principle of Indifference (POI), put forward by Jim Hawthorne, Juergen Landes, Jon Williamson and myself, and which appears in the [current issue of BJPS](#). Of key importance in our argument is the following core intuition concerning admissibility.

**CONDITION 2.** Suppose that  $F$  is an atomic proposition. If  $E$  is admissible and  $ch_t(A) = x \wedge E$  contains no information relevant to  $F$ , then  $P(A|ch_t(A) = x \wedge E \wedge (A \leftrightarrow F)) = x$ .

Basically, Condition 2 states that if  $F$  is an atomic proposition and there is no evidence for  $F$  available, then  $A \leftrightarrow F$  is admissible. Learning that  $A$  is equivalent with a proposition, for which we have no evidence, should not provide any evidence for or against  $A$  that overrides the chance of  $A$ . Jon started the symposium by introducing and illustrating our argument and the central claims.

Richard objected to Condition 2 in two ways. Firstly, he argued that our argument does not apply to Levi's Principal Principle (preferred by him over Lewis' version).

**LEVI'S PRINCIPAL PRINCIPLE.**  $P(A|ch_t(A|E) = x \wedge E) = x$ , where  $P$  is the initial credence function,  $ch_t(A|E)$  says that the

chance at time  $t$  of proposition  $A$  given  $E$  is  $x$  and  $E$  is the total body of evidence.

Levi's principle does not contain any admissibility clause; it is always applicable. We had a hard time to figure out what the heart of the disagreement between the three of us is. I think it is this. On the one hand, Jon and I believe that we should start with reasonable constraints on the basic concept of admissibility and that our credences should be forced to satisfy these constraints (a top-down or admissibility-first approach). Richard, on the other hand, believes that one should start with a credence function on a whole algebra and these credences then determine admissibility as a derived concept (a bottom-up or credence-first approach). It seems that, prior to further investigation, we are in a state of stalemate here.

Secondly and related, Richard argued that no proper justification for Condition 2 was given by us. He argued that the extension of Condition 2 from atomic propositions to logically complex propositions is inconsistent. According to Richard, this shows that justifying Condition 2, or more generally, claims about admissibility by intuition is unreliable. Only epistemic accuracy arguments may justify epistemic norms for credences and hence for (the derived concept of) admissibility. While there was consent that the extension of Condition 2 to logically complex propositions is inconsistent, there was a lively discussion on what role intuition can play in the justification of claims about admissibility. Jon as a top-downer argued that Condition 2 can be justified on its own by pointing out that most people should and would in fact endorse it because it is a 'normal informal standard of what is reasonable'. The impossibility of the extension of Condition 2 to atomic propositions would then not provide any evidence against Condition 2.

I myself, think that the discussion whether the PP implies the POI is of purely academic nature, because I think that the PP itself is not viable. I argued that the PP contradicts the intuition that better evidence should get more weight than worse evidence when determining credences. If my argument goes through then even if the PP implies the POI, this would not yield additional support for the POI. What follows from false principles does not get any additional support from the fact that it follows from false principles. To reject the PP one does not need to turn to subjectivism and apply Modus Tollens to 'The PP implies the POI'. I think that there is a more direct way to reject the PP.

CHRISTIAN WALLMANN  
University of Kent

## Calls for Papers

**INFINITE IDEALIZATIONS IN SCIENCE:** special issue of *Synthese*, deadline 15 April.

**FORMAL AND TRADITIONAL EPISTEMOLOGY:** special issue of *MANUSCRITO*, deadline 1 July 2017.

**LOGIC, INFERENCE, PROBABILITY AND PARADOX:** special issue of *Philosophies*, deadline 20 July 2017.

**NEW TRENDS IN RATIONAL CHOICE THEORY:** special issue of *Topoi*, deadline 27 August.

**FOUNDATIONS OF CLINICAL REASONING: AN EPISTEMOLOGICAL STANCE:** special issue of *Topoi*, deadline 31 August.

**REASON & RHETORIC IN THE TIME OF ALTERNATIVE FACTS:** special issue of *Informal Logic*, deadline 1 September.

## WHAT'S HOT IN . . .

### Evidence-Based Medicine

Almost a decade ago, *JAMA* published an article on “Progress in evidence-based medicine” by Victor M. Montori and Gordon H. Guyatt. Now, a recent issue of *The Lancet* has included a similar updated review article titled “Progress in evidence-based medicine: A quarter century on” by Benjamin Djulbegovic and Gordon H. Guyatt. This article intends to go beyond the previous review article by, among other things, reviewing the philosophical underpinnings of EBM. It also discusses how EBM developed in response to a number of objections, and how it might develop further.

In order to say something about the philosophical underpinnings, the authors appeal to a number of *epistemological principles*:

The basis for the first EBM epistemological principle is that not all evidence is created equal, and that the practice of medicine should be based on the best available evidence. The second principle endorses the philosophical view that the pursuit of truth is best accomplished by evaluating the totality of the evidence, and not selecting evidence that favours a particular claim. . . . [T]he third epistemological principle of EBM is that clinical decision making requires consideration of patients' values and preferences.

The authors say that the first epistemological principle was reflected in the various initial hierarchies of evidence, which rank randomized controlled trials (RCTs) as higher quality evidence than observational studies, at least in the case of therapy. And the second epistemological principle was later reflected by the idea that ‘health claims should be based on systematic reviews that summarise the best available evidence’.

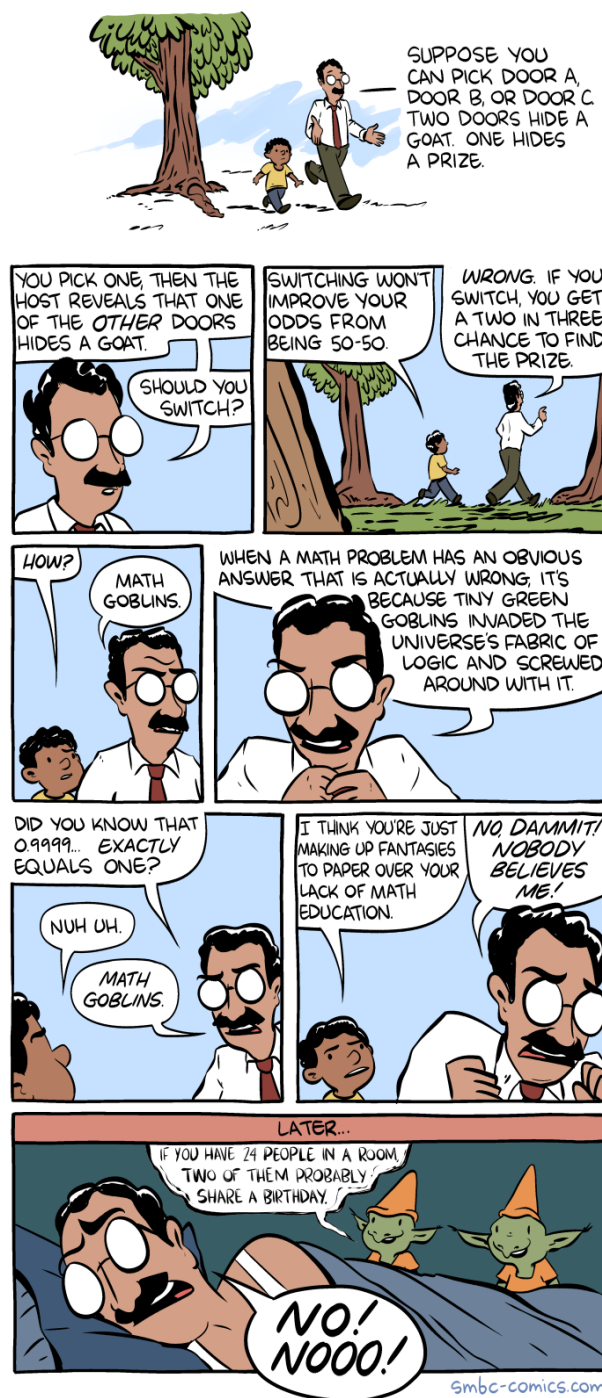
The authors also point out that ‘[a]lmost immediately, observers objected, noting that RCTs can also be biased, and hence should not automatically be equated with high-quality evidence’. And they say that this objection is part of a more general concern, which they take to be the worry that ‘EBM relies on reductionism of the scientific method’. In particular, they say that ‘critics have been particularly vocal regarding overly strict adherence to the evidence hierarchy pyramid . . . , which they viewed as narrow and simplistic’. As an instance of this line of criticism, they refer to the paper “What evidence in evidence-based medicine” by John Worrall. A similar point has also been made by Michael Rawlins: ‘Hierarchies attempt to replace judgement with an oversimplistic, pseudo-quantitative, assessment of the quality of the available evidence’.

However, the authors argue that EBM has now responded fully to this line of criticism by moving to the more sophisticated hierarchy of evidence put forward by GRADE. This hierarchy allows that observational studies may provide high quality evidence, and that RCTs may provide lower quality evidence. Given this, the authors say that ‘GRADE protects against both superficial assessment and unwarranted confidence in RCTs, as well as dogmatic decisions’. In other words,

the GRADE approach does better justice to the first epistemological principle underpinning EBM. In addition, the GRADE approach also does better justice to the second epistemological principle, because, among other things, ‘the rapidly increasing use of GRADE has resulted, and will increasingly result, in marked improvement in the quality of systematic reviews’.

I wonder if the critics of evidence hierarchies would agree that EBM has now fully responded to this line of criticism.

MICHAEL WILDE  
Philosophy, Kent



## EVENTS

### APRIL

**UK-CIM:** UK Causal Inference Meeting: Causal Inference in the Health, Economic and Social Sciences, University of Essex, 5–8 April.

**GD-MiSEC:** Group Decision-Making in Scientific Expert Committees, Tilburg University, 12–13 April.

**RGiL:** Reason-Giving in Law, European University Institute, Florence, 24–25 April.

**SATEA:** Shared and Temporally Extended Agency, University of Copenhagen, 28–29 April.

### MAY

**FM&SiP2:** Formal Methods and Science in Philosophy 2, Inter-University Center Dubrovnik, 4–6 May.

**M-ODM:** Workshop on Multi-Objective Decision Making, Brazil, 8–9 May.

**ADVERSE:** Adversarial Reasoning in Multi-agent Systems, Brazil, 8–9 May.

**BRAZILIAN LOGIC MEETING:** Pirenópolis, GO, Brazil, 8–12 May.

**RUACS:** Risk, Uncertainty and Catastrophe Scenarios, University of Cambridge, 9–10 May.

**RCC:** Reasoning Club Conference, University of Turin, 18–19 May.

**ARiS:** Ampliative Reasoning in the Sciences, Ghent University, 18–19 May.

**E&EK:** Expertise and Expert Knowledge. What is it? Where do we find it?, University College Dublin, 29–30 May.

**CiG:** Cognition in Groups, Milan, Italy, 31 May.

**BE&SA:** Beliefs and Subdoxastic Attitudes, University of Antwerp, 31 May.

**R&AiS:** Reasoning and Argumentation in Science, Center for Advanced Studies, LMU Munich, 31 May–2 June.

### JUNE

**P&JB:** Perception and Justified Belief, Ruhr-University Bochum, Germany, 1–2 June.

**ISW:** Imagination in Science Workshop, University of Leeds, 6 June.

**TACiTS:** Time and Causality in the Sciences, Stevens Institute of Technology, 7–9 June.

**PiS&S:** Progress in Science and Society, Workshop with Philip Kitcher, Leibniz University Hannover, 14 June.

**E&DMiL:** Evidence and Decision Making in the Law, King's College London, 16 June.

**LEARNAUT:** Learning and Automata, Reykjavik, Iceland, 19 June.

**CEC:** Causation, Explanation, Conditionals, LMU Munich, 21–23 June.

**SoML:** 17th Latin American Symposium on Mathematical Logic, The Benemérita Universidad Autónoma de Puebla, 26–30 June.

**LCiCT:** London Conference in Critical Thought, London South Bank University, 30 June–1 July.

## COURSES AND PROGRAMMES

### Programmes

**APHIL:** MA/PhD in Analytic Philosophy, University of Barcelona.

**MASTER PROGRAMME:** MA in Pure and Applied Logic, University of Barcelona.

**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:** in Statistics, University College Dublin.

**LoPHiSC:** Master in Logic, Philosophy of Science and Epistemology, Pantheon-Sorbonne University (Paris 1) and Paris-Sorbonne University (Paris 4).

**MASTER PROGRAMME:** in Artificial Intelligence, Radboud University Nijmegen, the Netherlands.

**MASTER PROGRAMME:** Philosophy and Economics, Institute of Philosophy, University of Bayreuth.

**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 PROGRAMMES:** in Philosophy of Science, University of Leeds.

**MA IN LOGIC AND PHILOSOPHY OF SCIENCE:** Faculty of Philosophy, Philosophy of Science and Study of Religion, LMU Munich.

**MA IN LOGIC AND THEORY OF SCIENCE:** Department of Logic of the Eotvos Lorand University, Budapest, Hungary.

**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, SCIENCE AND SOCIETY:** TiLPS, 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:** Department of Economics, Mathematics and Statistics, Birkbeck, University of London.

**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

A programme at the University of Kent, Canterbury, UK. Gain the philosophical background required for a PhD in this area.

Optional modules available from Psychology, Computing, Statistics, Social Policy, Law, Biosciences and History.

**MSC IN COGNITIVE & DECISION SCIENCES:** Psychology, University College London.

**MSc IN COGNITIVE SYSTEMS:** Language, Learning, and Reasoning, University of Potsdam.

**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 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 Sebastián).

**OPEN MIND:** International School of Advanced Studies in Cognitive Sciences, University of Bucharest.

## JOBS AND STUDENTSHIPS

### Jobs

**POST-DOC:** in Statistical Analyses/Theory of Causality Detection, Stockholm University, deadline 3 April.

**POST-DOC:** in Statistics and Applied probability, National University of Singapore, deadline 7 April.

**FELLOW:** in Philosophy of the Social Sciences, London School of Economics, deadline 17 April.

**FELLOW:** in Logic, London School of Economics, deadline 17 April.

**POST-DOC:** in Psychology of Reasoning, University of Amsterdam, deadline 7 May.

**ASSISTANT PROFESSOR:** in Statistics, Pontificia Universidad Católica de Chile, deadline 15 May.

### Studentships

**PHD:** in Data Analysis, University of Leicester, deadline 10 April.

**PHD:** in Minds in Skilled Performance, University of Wollongong, deadline 15 April.

**PHD:** in Causal Inference with Incomplete Data, University of Copenhagen, deadline 17 April.

**PHD:** in Statistics, University of Oslo, deadline 18 April.

**PHD:** in Combining RCTs with Real-World Evidence, University of Leicester, deadline 20 April.

**PHD:** in Engineering and Ontology at the Politecnica University of Marche, Ancona, and the Laboratory for Applied Ontology of the CNR Institute for Cognitive Science and Technology, Trento, deadline 15 May.

**FOUR PHD:** positions in the project “Integrating Ethics and Epistemology of Scientific Research”, at Leibniz Universität Hannover and Bielefeld University, deadline 28 May.