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Contents

Guest Editorial

I am thrilled to be the guest editor for this issue of The Reasoner and very glad to introduce to the Reasoners' community the work of David McCarthy, Associate Professor at the University of Hong Kong. His main research interests are in ethics. Currently, he is focusing on a seminal paper published in 1955 by the Nobel laureate in Economics, John Harsanyi, in which utilitarianism is derived from expected utility theory and the Pareto principle. David's work has recently examined how to carry out Harsanyi's project without the expected utility axioms, and consequently, without the disputed views about welfare that Harsanyi's result carries with it. In my first meeting with him in 2014 we discussed this topic, as well as potential applications of formal methods to probability and epistemology. This proved to be a challenging conversation, the conclusion of which led me to move to Hong Kong, one of the most exciting cities in the world, for a PhD under his supervision. That conversation of ours has not yet come to an end, and today we would like the Reasoners to join in.

Mariangela Zoe Cocchiaro
University of Hong Kong

Features

Interview with David McCarthy

Mariangela Zoe Cocchiaro: From a mathematics student in Oxford to a PhD in ethics at USC; how did this journey come about?

David McCarthy: I started out in mathematics, but Oxford had the foolish notion that computers were becoming important, so they made things like numerical analysis compulsory. By switching to mathematics and philosophy, I managed to avoid such courses and find out what philosophy was all about. I had no plans to take it further, but Simon Blackburn was an inspiring tutor and I fell in love with the subject. Going to USC was a bit random, but it worked out well. I loved LA, and it was intellectually healthy. Back then, quoting from *The Philosophical Investigations* impressed people in Oxford, but in LA people just looked at you funny. I gravitated to formal logic and ethics, and ended up doing my PhD on the latter with Barbara Herman, and a lot of help from Frank Arntzenius; I owe them both a great deal.

MZC: After a postdoc at Johns Hopkins, you spent some time in Melbourne and Bristol before you became a Reader at the University of Edinburgh. Then, in 2011, you took up the position of Associate Professor at the University of Hong Kong (HKU). Isn't that an unusual career move?

DM: Yes, but a very good one. The conditions at HKU are excellent, I have the smartest undergrads I have ever taught, and Hong Kong is a fabulous place to live. But most of all, I had an ambitious research project that I knew would take me years to develop. The encroachment of short-termism made this a challenge in the UK, and HKU gave me the time I needed.

MZC: What was that ambitious project about? Is it related to your current work?

DM: Indeed it is. Let me start with a general remark. Following Rawls, many moral philosophers have presented their views in terms of what they see as the shortcomings of utilitarianism. So even for those who think it is hopeless, utilitarianism still functions as a baseline theory: the alternatives are articulated in opposition to it.

For this approach to work well, it had better start off with the best conception of utilitarianism. But that stems from a result proved by John Harsanyi in 1955, which aside from notable exceptions like John Broome, moral philosophers have studiously avoided acknowledging.

It turns out, though, that some of Rawls' objections to classical utilitarianism can be redeployed against Harsanyi's version. So the project I've been working on for the last decade has been to immunize Harsanyi's utilitarianism against such objections, and to use the result to provide a contrastive account of the alternatives to utilitarianism. I've been looking at things like equality, fairness, priority to the worse off, personal and impersonal value, incomparability, and whether contractualism is a real alternative.

This project is neutral in the sense that my goal is to display all the competing theories at their best, and to say what the choices between them amount to. That said, I believe that when properly understood, utilitarianism turns out to be extremely plausible.

MZC: What are the difficulties with Harsanyi's theorem, and how do you avoid them?

DM: Harsanyi presents his theorem as a story about expected utility theory (EUT). However, that makes his assumptions about welfare comparisons extremely demanding. But my coauthors, Kalle Mikkola and Teru Thomas, and I have shown that EUT is inessential to Harsanyi's approach, allowing for vastly more flexible welfare comparisons. Our main aggregation theorem allows all three EUT axioms (completeness, continuity, and independence) to fail. But by using axioms that are in the spirit of Harsanyi's approach, though much weaker than his, we are still able to show that social welfare comparisons are uniquely determined by individual welfare comparisons. Incidentally, 'welfare' can be interpreted any way you like, so we could understand it in terms of Rawlsian primary goods if we wanted.

MZC: In many of your theorems, you present utilities as vectors rather than as real numbers. Do you think that this comes at some cost or is it a technical detail that has no impact on the big picture?

DM: A representation theorem is basically just a nice description of a class of objects that you happen to be interested in. There's no law that says that this description has to be couched in terms of the real numbers. It's true that the representation theorems of standard expected utility theory use utility functions whose values are real numbers. What makes the real numbers nice in this context is that their natural ordering behaves well with respect to the operations of addition and multiplication. But many more general spaces behave just as well. We focus on so-called preordered vector spaces, of which the real numbers are a special case. By allowing utilities to be values in such spaces, we find that when we add just the independence axiom of EUT to our basic axioms for aggregation, allowing for continuity and completeness to fail, it follows that social welfare is governed by expected total utility. So even if that sounds a bit technical, it actually simplifies the big picture. In Harsanyi's result, social welfare is governed by expected total utility, but to get this he had to assume continuity and completeness. Our result shows that these assumptions are not necessary, so they are sort of cluttering up the big picture, and they are not very plausible anyway.

MZC: Do you assume that uncertainty is representable by a single probability measure (as philosophers usually do), or are you able to accommodate other representations of uncertainty that can be drawn from computer science, economics, and physics?

DM: In the main paper, we do assume that, just for simplicity. But it's inessential. We explain how our basic aggregation theorems work for a much, much wider range ways of representing uncertainty.

MZC: Now let's shift our focus from the philosophical content of your work to the methodology. Did you find any resistance in the community of moral philosophers against the use of mathematical methods into ethics?

DM: Yes, there's a huge amount of hostility, all kinds of attempts to marginalize and dismiss. But those people will eventually give up and go away, and I'm more focussed on communicating with people who are interested in the work but perhaps don't have the training to read the mathematics. I'm starting a blog that aims to make this kind of work accessible. I'll discuss my own work a bit, but mainly I want to share standard tools and results that are used over and over, especially in economics.

MZC: Can you explain why mathematics is useful to ethics?

DM: It would be very surprising if it wasn't useful. Ethics has to deal with often quite complex versions of problems found in decision theory, game theory, formal epistemology, and philosophy of probability, and no one seriously doubts the usefulness of mathematics in those areas. But I'll give a couple of more concrete examples. First, whether they do this formally or not, nearly everyone tries to articulate their views by laying down a few basic principles, sort of proto axioms. But it is extremely difficult to work out the consequences of even simple sets of axioms without some mathematics. Second, when you are comparing different views about ethics, you're often really comparing different structures. So you need a language that's well suited to describing structure, and that's the language of mathematics.

MZC: Can you give an example of what can go wrong with-

out mathematics?

DM: There are a lot of examples, and I don't really want to name names, so I'll just mention something that will soon be attracting attention anyway. There's a very influential and well received paper that John Broome has recently pointed out accepts Harsanyi's premises and denies his conclusion. The authors – and reviewers and editors and many commentators – don't seem to have noticed that there's a problem with this. It's a bit of an own goal for the discipline. There's a lot that is known out there, and it's hubris for moral philosophers to pretend otherwise.

MZC: You've published in philosophy journals like *Mind* and economics journals like *Mathematical Social Sciences*. Your coauthors, Kalle Mikkola and Teru Thomas, are top-class mathematicians. What is the main challenge of such an interdisciplinary project?

DM: The main difficulty is the sheer volume of information. You can't just ignore the fact that other disciplines often have very sophisticated discussions of things that are important for your own discipline, but as soon as you dip your toes into them, you are confronted with a vast body of material. Fortunately, the disciplines we look at tend to be better than philosophy at producing good literature reviews and survey articles. A less obvious difficulty is something that even survey articles often don't solve. Every subdiscipline has its processes of inculturation, and that leads to folk knowledge that no one bothers putting into print. But that means that as an outsider, you can be mystified by why people are thinking a certain way, or spend a long time reinventing the wheel. We could all do more to really go back to basics when we explain what we're up to.

MZC: What's it like working with two mathematicians? Do you have a clear-cut division of labour?

DM: No, it's not like they do the numbers and I do the words (he smiles). We all do everything. Kalle and Teru are excellent philosophers, and I'm up to speed on the mathematics. That's something that should be better known: mathematics is such a vast landscape, but it's often not so hard to get to know the bits that are relevant to your needs. It's a damaging myth that you need to be some kind of whizz to do mathematics. It's mostly a matter of hard work, and if you don't want to do the work, you shouldn't work in areas that need the mathematics.

MZC: Do you have any research projects outside ethics?

DM: One great thing about doing ethics is that it touches on so many other topics. For example, Branden Fitelson had been arguing for something in confirmation theory that I had been arguing for in ethics, and that lead to a collaborative project on comparative likelihood. Years later, some of the theorems related to Harsanyi turned out to be relevant, and that's now leading to further work in epistemology.

MZC: And now the last, more personal question. You have worked as a yoga instructor and now you are a rock climber. Apparently you like to exercise! What are your main hobbies nowadays?

DM: Powerlifting and bouldering. Bouldering is a type of rock climbing where the climbs are short, maybe 2 or 3 meters, but hard, like a jigsaw puzzle. With a lot of the problems in Hong Kong it's just you, the rock, the sun and the sea, and the frenetic city feels a million miles away.

News

Virtue Epistemology of Mathematical Practices, Brussels, 13–14 July

The workshop *Virtue Epistemology of Mathematical Practices* was held at Vrije Universiteit Brussel, Belgium, on 13th to 14th July 2018 with support from the Center for Logic and Philosophy of Science (CLWF). The organisers were Andrew Aberdein (Florida Institute of Technology), Colin Rittberg (VUB), and Fenner Tanswell (St Andrews).

Until recently, discussion of virtues in the philosophy of mathematics has been fleeting and fragmentary at best. But in the last few years this has begun to change. Epistemic virtues have attracted attention in the philosophy of science as components of an account of theory choice; this application readily extends to mathematics. Within the philosophy of mathematics, and mathematics itself, attention to virtues has emerged from a variety of disparate sources. Theoretical virtues have been put forward both to analyse the practice of proof and to justify axioms; an account of aprioricity in terms of reliabilist epistemic virtue has been proposed; and ethical virtues have been offered as a basis for understanding the social utility of mathematical practice. Indeed, some authors have advocated virtue epistemology as the correct epistemology for mathematics (and perhaps even as the basis for progress in the metaphysics of mathematics). The workshop brought together several of the researchers who have begun to study mathematical practice from a virtue perspective with the intention of consolidating and encouraging this trend.

There were three invited talks at the workshop. Line Edslev Andersen (Aarhus), in joint work with Henrik Kragh Sørensen and Hanne Andersen (both Copenhagen), spoke on 'The high bar for relying on testimony in mathematics'. In work derived from her interviews with research mathematicians, she presented and analysed empirical data on mathematicians' attitudes towards relying on others. Mathematicians appear to have quite high standards for when they will rely on the results of others without checking their proofs. She offered an explanation for this, arguing that it is relatively easy for a mathematician to have a high bar for relying on testimony, and that the mathematician can thereby protect her own work and the work of her community from errors. Maurice Chiodo (Cambridge) gave an impassioned talk on the title 'Mathematicians acting amorally – how they harm society, and why they don't notice'. As a research mathematician, Chiodo has become increasingly concerned with the ethical dimension of mathematical work and the impact it can have on society as a whole. His paper forms a part of the newly-formed Cambridge University Ethics in Mathematics Project, with support from the Cambridge University Ethics in Mathematics Society. Alessandra Tanesini (Cardiff) spoke on 'Arrogance, anger and assertion'. She explained why anger is a common manifestation of arrogance, arguing that one kind of arrogance is a vice of superiority characterised by an overwhelming desire to diminish other people in order to excel and by a tendency to arrogate special entitlements for oneself, including the privilege of not having to justify one's claims. Although her paper was not primarily focussed on mathematics, it proved readily applicable to mathematical practice and provided a firm connection to the wider field of virtue (or, more specifically, vice) epistemology.

Other talks included Andrew Aberdein, 'Virtues, arguments,

and mathematical practice'; Reuben Hersh (New Mexico), in remarks read on his behalf, 'Examples of virtue'; Laura Kotevska (Sydney), presenting via skype, 'Arnauld on mathematical virtue'; Colin Rittberg and Fenner Tanswell, in joint work with Jean Paul Van Bendegem (VUB), 'Epistemic injustice in mathematics'; Frank Scheppe (VUB), 'Meaningfulness/meaninglessness and epistemic authenticity/fakeness in Wittgenstein's philosophy of mathematical practice'; and Fenner Tanswell, 'Proof, rigour and mathematical virtues'. Between them, these talks reflected on a diverse range of examples of mathematical practice, both contemporary and historical, from perspectives informed by different aspects of virtue theory.

The workshop was the first of its kind. As organisers, we hope it will not be the last. We encourage others interested in its topic to get in touch with us.

Andrew Aberdein
Florida Institute of Technology
Colin Rittberg
Vrije Universiteit Brussel
Fenner Tanswell
University of St Andrews

Calls for Papers

Scientific Disagreement: special issue of *Synthese*, deadline 15 October.

Knowing the Unknown: Philosophical Perspectives on Ignorance: special issue of *Synthese*, deadline 20 February.

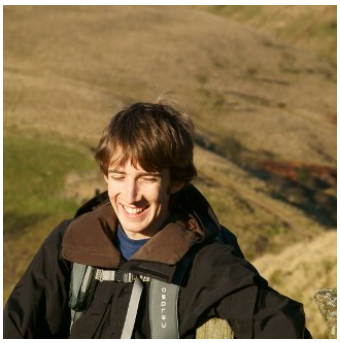
What's Hot in ...

Medieval Reasoning

Anyone who has opened a history of logic handbook will be familiar with the idea that, in traditional logic, affirmative sentences have existential import: they can be true iff the subject term is not empty, i.e. it refers to something – or, in medieval terms, supposits for a *suppositum*. This seems a fairly natural analysis of the way in which such sentences work in ordinary language: "The goat is jumping" is true iff there is a goat and that goat is jumping; "Some goats are black" is true iff there are goats and some of them are black, and so on. If goats go extinct, "All goats are herbivores" would be false; but from a contemporary point of view the same sentence would be vacuously true, since it would be equivalent to a true conditional ("For every x, if x is a goat, x is a herbivore") with a false apodosis. However, identity statements with an empty subject – such as "A square circle is a square circle" or "All unicorns are unicorns" – will always be false. Something that would probably be even more puzzling for most contemporary readers' linguistic intuitions is medieval logic's lack of existential import for particular negatives: e.g. "Some goats are not black" is true if some goats are not black or if there are no goats at all. Overall, though, intuitions can be subjective, but this treatment of existential import has the advantage of preserving (or following naturally from) the logical relations within the Aristotelian Square (https://plato.stanford.edu/entries/square/). All things considered, would it be worth paying the price of not being able to make any true statements about stuff that's not actually there? Not quite, of course; but that's not a price that medieval logicians have to pay. Supposition theory has some spinoffs that get around issues of this kind. Ampliation represents a powerful and flexible way to address tensed and modal contexts, where not all the *supposita* categorematic terms pick out entities actually existing in the world. Some versions of alienation theory and some 14th century iterations of the theory of natural supposition also do the trick. For example Buridan uses natural supposition to treat true general statements, like the ones we make in the natural sciences, and make sure that they stay true even if their subject terms are actually empty. Thunder and roses (standard medieval examples for this sort of thing) should still truly be sounds made in the clouds and pretty flowers, even if it's a clear day in the middle of winter! These are not, by far, all the strategies employed by medievals to eat their cake and have it too. For example, some might expand the domain to include purely imaginable entities (*imaginabilia*), while others would intervene on the required reading of the copula. From the 14th century onward, well into Early modernity, the particular approaches to these issues are varied, complex and heavily discussed by their proponents. If at the end of this introductory snippet you are curious about empty terms, the (medieval) Aristotelian Square of Oppositions, and about supposition and its related theories, you might start by taking a look at Terry Parson's "Supposition Theory in the Later 12th through 14th Centuries" in the second volume of *The Handbook of the History of Logic*: as an introduction to these very intricate but fascinating topics, it's as accessible and interesting as it gets.

Graziana Ciola
UCLA

Uncertain Reasoning



Routledge have recently published a new textbook called *Recipes for Science: An Introduction to Scientific Models and Reasoning* (Potochnik, Colombo and Wright, 2016). The textbook is aimed at providing an "accessible introduction to the nature of science and scientific methods". It is, in essence, and undergraduate philosophy of science textbook (although the authors say they hope the book reaches a wider audience). The reason I am bringing this up in my column that is ostensibly about "uncertain reasoning" is because the book contains markedly more discussion of uncertain reasoning that is typical of a philosophy of science textbook. Alongside standard phil sci topics like demarcation, experimentation, modelling, explanation and values in science, there are in depth but non-technical discussions of deductive, inductive and abductive reasoning, probability theory, statis-

tical inference and causal inference. Fully half the book is taken up with topics of reasoning and inference. This seemed strikingly high a proportion to me, and indeed that intuition is borne out by a quick look at other philosophy of science textbooks I had to hand. Samir Okasha's *Philosophy of Science: A Very Short Introduction* (OUP, 2002) has one chapter on scientific reasoning out of seven total. Gillian Barker and Philip Kitcher's *Philosophy of Science: A New Introduction* (OUP, 2014) doesn't really discuss scientific reasoning in much depth at all; there is a short section on confirmation and probabilities, but that's it. Even broadly construed, only two of the nine sections of the classic Curd and Cover *Philosophy of Science: The Central Issues* (W.W. Norton, 1998) deal with scientific reasoning in the sense I mean. That's not to suggest these books are faulty, they are all excellent in their own way, and not every book needs to cover every topic, but given how important probability and statistics are to the sciences, it's surprising how little discussion of these topics is standardly devoted to them in introductory philosophy of science texts.

One explanation for this discrepancy might be that philosophy of probability and philosophy of statistics are their own topics, and thus fall outside the remit of philosophy of science properly understood. This subdisciplinary parochialism seems to be mistaken at best. I've written before (November 2017) about how I think the level of the general public's understanding of uncertainty is worryingly low, so perhaps it would be a public service to introduce more discussion of the topic of uncertainty in science to the philosphy of science curriculum. *Recipes for Science* seems to be a good step along the path to a better informed public.

Mathematical Philosophy

Mathematical philosophy has increasingly trained its sights on social phenomena. In epistemology, for example, this trend is exemplified by work on the division of cognitive labor, computational models of social networks, and peer disagreement. Ignoring contemporary disciplinary boundaries, insightful and rigorous studies of the social dimensions of epistemology are not new. The Condorcet jury theorem can be seen as the theoretical basis for the wisdom of the crowds [Condorcet (1785). *Essai sur l'application de l'analyse à la probabilité des décisions rendues à la pluralité des voix.* The Royal Printing Office]. DeGroot and Aumann both propose formal models for theorizing about disagreement and consensus [DeGroot (1974). Reaching a consensus. *Journal of the American Statistical Association*, 69(345), 118–121; Aumann (1976). Agreeing to disagree. *The Annals of Statistics*, 4(6), 1236–1239].

We have collaborated on extensions and applications of some important results that establish conditions under which increasing information resolves disagreement between Bayesian agents [Blackwell and Dubins (1962). Merging of opinions with increasing information. *The Annals of Mathematical Statistics*, 33(3), 882–886; Gaifman and Snir (1982). Probabilities over rich languages, testing and randomness. *The Journal of Symbolic Logic*, 47(03), 495–548]. Since these results show that differences in priors "wash out," many Bayesians have appealed to them to rebut charges of excessive subjectivity, imparting to the results a prominent foundational role in Bayesian philosophy. We summarize three of our recent paper projects that generalize and critically assess these merging of opinions theorems.

The first paper reflects on the significance of these theorems [Nielsen and Stewart (Forthcoming). Persistent disagreement and polarization in a Bayesian setting. *The British Journal for the Philosophy of Science*]. Say that P is *absolutely continuous* with respect to Q if $Q(A) = 0$ implies $P(A) = 0$ for all events A in the algebra. While absolute continuity is a crucial assumption for merging of opinions, we argue that it admits neither normative nor descriptive justification. Furthermore, if it is relaxed, even in a very mild way, not only can merging of opinions fail, but opinions can *polarize* despite being updated on an *infinite stream of shared evidence*. We use our polarization result to argue against views according to which rational agents can be sure to resolve disagreements if they have access to sufficient evidence.

While absolute continuity with respect to some other probability is not mandatory, principles of subjectivism certainly allow for it. And when the assumption holds, its consequences are both interesting and important. The next two projects exploit merging of opinions results to draw connections between social epistemology and the theory of imprecise probabilities (IP).

The first of these clarifies an alleged connection between dilation for IP and merging of opinions results. Authors interested in this connection point out that long-run merging results may be of less importance than what happens in the short run. Disagreements can persist, or even increase, over finite time horizons even though they vanish in the limit. *Dilation* is one sense in which this could happen, leading some to call it the "opposite" of merging of opinions in the short run. Dilation occurs when uncertainty about a particular event increases no matter which cell of a partition is observed. The metric of uncertainty relevant for dilation, however, is not the same as the total variation metric with respect to which merging of opinions is defined. As with dilation, it is possible that the total variation between two probabilities increases conditional on every cell of a partition. We call this phenomenon *distention* and show that it is logically independent of dilation: distention does not imply dilation, nor does dilation imply distention. So distention, not dilation, is more appropriately considered the opposite of merging of opinions in the short run.

In the second project connecting IP and merging of opinions, we study a setting that generalizes the classical framework in two ways. Not only do we allow for a more general representation of probabilistic opinions by appealing to IP, we also study a form of updating that is more general than Bayesian conditioning, namely, Jeffrey conditioning. This work builds on two extant generalizations of the Blackwell-Dubins theorem. On the one hand, Schervish and Seidenfeld show that the elements of certain convex sets of mutually absolutely continuous probabilities merge as they are updated on a shared, infinite data stream [Schervish and Seidenfeld (1990). An approach to consensus and certainty with increasing evidence. *Journal of Statistical Planning and Inference*, 25(3), 401–414]. On the other hand, Huttegger extends the Blackwell-Dubins result to Jeffrey conditioning [Huttegger (2015). Merging of opinions and probability kinematics. *The Review of Symbolic Logic*, 8(04), 611–648].

Under a few additional assumptions, consensus can be achieved even when updating on uncertain evidence. We bring these extensions together, proving that Huttegger's merging result for Jeffrey conditioning can be generalized to convex polytopes of mutually absolutely continuous priors [Stewart and Nielsen (Forthcoming). Another approach to consensus and maximally informed opinions with increasing evidence. *Philosophy of Science*]. One motivation for our study is to remedy a lacuna in the literature by uniting different formal frameworks for reasoning about uncertainty. One of those frameworks is IP, which makes extensive use of convex sets; the other is Jeffrey conditioning, a method popular among philosophers for handling uncertain evidence. Another motivation is to generalize accounts of group consensus that use convex sets to represent initial consensus "as shared agreement" and prior-by-prior Bayesian conditionalization of the probabilities in the set to strengthen consensus through the acquisition of evidence [Levi (1985). Consensus as shared agreement and outcome of inquiry. *Synthese*, 62(1), p. 10]. We show that views like Levi's are not restricted to Bayesian conditionalization on certain evidence.

We close with one comment on the social practice of mathematical philosophy itself. Anecdotal data suggests coauthoring is relatively common in this branch of philosophy. Whether or not this is so, we have found the practice enormously rewarding both for the improved quality of the resulting work and for the enjoyment of carrying it out. We hope that philosophy joins the ranks of many other disciplines in encouraging such work.

Michael Nielsen and Rush Stewart
Munich Centre for Mathematical Philosophy

Events

October

RiEaS: Relativism in Epistemology and Semantics, University of Vienna, 1–2 October.
FAaAHR: Bridging the Gap Between Formal Argumentation and Actual Human Reasoning, Ruhr University Bochum, 4–5 October.
NMWC: Neural Mechanisms Web Conference, 5–6 October.
PITEaAiA: Philosophical Imagination, Thought Experiments and Arguments in Antiquity, University of Maribor, Slovenia, 9 October.
DwiP: Disagreement within Philosophy, University of Bonn, 10–12 October.
MLaEiCS: Machine learning and explanation in cognitive science, Institute of Philosophy, Czech Academy of Sciences, 15–16 October.
BayComp: Afternoon Meeting on Bayesian Computation, University of Reading, 17 October.
FormCaus: Formal Causation, Rostock, Germany, 22–23 October.
ARiS&M: Analogical Reasoning in Science and Mathematics, Munich, 26–28 October.
HRaL: Hybrid Reasoning and Learning, Tempe, Arizona, USA, 28 October.

November

MIWAI: Multi-disciplinary International Conference on Artificial Intelligence Venue, Hanoi, Vietnam, 18-20 November.

December

W'sBaD: What's so Bad About Dialetheism?, Kyoto University, Japan, 15–17 December.

Courses and Programmes

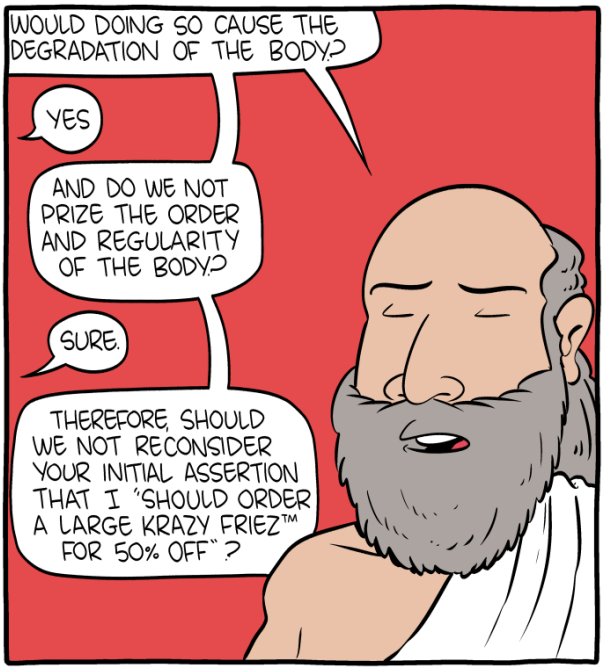
Courses

SSA: Summer School on Argumentation: Computational and Linguistic Perspectives on Argumentation, Warsaw, Poland, 6–10 September.

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.
Doctoral Programme in Philosophy: Department of Philosophy, University of Milan, Italy.
LogiCS: Joint doctoral program on Logical Methods in Computer Science, TU Wien, TU Graz, and JKU Linz, Austria.
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.
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.
Research Master in Philosophy and Economics: Erasmus University Rotterdam, The Netherlands.



It turns out the socratic method is not welcome in drive-thrus.

Jobs and Studentships

Jobs

Postdoc: in Logic for Practical Reasoning, University of Milan, deadline: until filled.
Lecturer: in Philosophy of Social Science, University of Helsinki, deadline 7 October.
Postdoc: in Practices in the Sustainability Sciences, University of Helsinki, deadline 14 October.
Associate Professor: in Data-driven Algorithmic Decision Making, Delft University of Technology, deadline 19 October.
Senior Lecturer: in Mathematical Statistics, Umeå University, deadline 16 November.

Studentships

PhD position: in Theoretical Philosophy, Stockholm University, deadline 15 October.
PhD position: in The Metaphysical Unity of Science, University of Bristol, deadline 22 October.
PhD position: in Theoretical Philosophy, University of Edinburgh, deadline 30 November.