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EDITORIAL

Hi everyone, my name is Laszlo Kosolosky and I'm a PhD researcher at Ghent University (Ghent, Belgium). Some of you

might have seen my name pop up in previous issues of *The Reasoner*, as a regular contributor to the conference reports and the paper sections. I am therefore very honored that Jon Williamson, Bert Leuridan and others have decided to put me in charge of the editorial and interview for this issue.

Let me tell you a bit about myself first: My research focuses on the social organisation of science, covering topics like consensus formation, peer review, trust, integrity and values in science. I am currently rounding up my PhD, entitled *Optimizing social epistemic decision making processes: covering consensus formation and peer review at the science-society interface*. When tackling all these different topics, I consider myself to be a social epistemologist, addressing the traditional questions in epistemology while being responsive to the social dimension of science. For those who are unfamiliar with this subdiscipline, let me introduce two characteristics that, according to myself, nicely summarize what this field is all about:



First, social epistemologists emphasize the social or collective aspect of science and knowledge in general, as opposed to an individualistic approach in the traditional philosophy of science and epistemology; scientists accept claims as a result of interaction with, and mutual dependence on, others (and society in general). Methodological rules always comprise rules on what the social interaction between scientists should look like and how institutions should be shaped accordingly. Second, social epistemologists do not conclude that the social character of knowledge gaining is necessarily a source of bias or irrationality that would undermine or negatively influence the acceptance of true (or truth conforming) statements. This in contrast to much of sociology of science. Trying to find out the characteristics of these irrational interactions (cascades, pluralistic ignorance, group think, et cetera) such that they could ideally be identified and addressed, is often the aim. Social epistemologists regard the social dimension as constitutive of good knowledge and see it as their duty to sort out how the quest for knowledge should be organised—including its social (and institutional) dimensions. Social epistemologists do normative research, without thereby losing grip on the social dimension of knowledge.

(Forthcoming in a special issue of *Foundations of Science*, entitled ‘Social epistemology meets the philosophy of the humanities’.)

So, as a strong believer in the value of studying the social dimension of science, I decided to interview someone who dedicates his philosophical time and interest to spelling out the intricate relation between science and society, i.e., [Justin Biddle](#). Justin is currently assistant professor in the School of Public Policy at the Georgia Institute of Technology (Atlanta, Georgia, USA). Among other topics, Justin has written about the role of values in science, the epistemic significance of the social organisation of research, ethical implications of intellectual property rights, licensing policies in biomedical research, dissent (in climate science), et cetera. I hope you, as a reader, will enjoy

the lovely conversation we had.

LASZLO KOSOLOSKY
CLPS, Ghent

FEATURES

Interview with Justin Biddle

Laszlo Kosolosky: Could you say a bit about your intellectual history—what you’ve worked on and why, and what directions your studies and career have taken?

Justin Biddle: I studied both philosophy and physics as an undergraduate, and immediately after receiving my bachelor’s degrees, I went to Bangalore, India to do volunteer work in a slum. I didn’t know it at the time, but those two experiences have shaped my intellectual life profoundly. I’ve always been intellectually curious and interested in traditional philosophical and scientific problems, including the relationship between philosophy and science. But at the same time, I care deeply about practical problems like poverty, inequality, and injustice, and these concerns have come to inform my philosophical work.

When I began my graduate studies in history and philosophy of science at the University of Notre Dame, I planned to study philosophy of physics. But after spending a couple of years wading through the problems of quantum entanglement, I decided to change course. I had taken a number of courses in physics and philosophy of physics and found them all very interesting, but I noticed that, when it came time to read for fun, I read philosophy of science that was more intimately engaged with societal issues. I was particularly interested in, and impressed by, the work of Helen Longino, and I decided to switch my dissertation topic. I was fortunate to have an advisor (Don Howard) who was not only on board with my decision, but who is an expert in both philosophy of physics and socially-engaged philosophy of science. I benefited tremendously from his example, as well as the examples of people like Janet Kourany and Kristin Shrader-Frechette—all excellent philosophers of science who incorporate pressing social, moral, and political issues into their work.

My dissertation concerns two main topics: the role of values and interests in science and the epistemic significance of the social organisation of research. For me, these issues are connected. I think that values and interests play an ineliminable role in the ‘internal workings’ of science (e.g., the epistemic appraisal of hypotheses), and I think that different ways of organising research encode different values and interests into the research process. The result is that different ways of organising research will not only lead to different research projects; they will in many cases yield different answers to the same questions. Take the much-discussed example of pharmaceutical research. There are values and interests that are inextricably intertwined with this research. For example, clinical trials require that investigators make all sorts of value-laden judgments that



are not dictated by purely evidential considerations—such as decisions about which patients to enroll, which endpoints to investigate, how long to run a trial, and which statistical packages to use—and how researchers make these judgment calls will affect the likelihood of achieving a particular outcome. This is a philosophically significant insight, and it helps to illuminate the importance of the social organisation of research. Different ways of organising research can encode different values and interests into the research process, which in turn can affect the outcomes of research. Many (including myself) have argued that pharmaceutical research is increasingly organised in a way that encodes a particular set of values and interests (particularly near-term profitability) into the research process, and that this is epistemically detrimental. Given this, it is important for both epistemic and ethical reasons to investigate how this area of research can be better organised. Toward the end of the dissertation (and in later publications), I began to address the question of how this might be done.

After receiving my doctorate, I did a postdoctoral fellowship at Bielefeld University. While there, I worked closely with a number of excellent philosophers of science—particularly Martin Carrier and Torsten Wilholt—as well as with natural and social scientists. I was a fellow at Bielefeld’s Center for Interdisciplinary Research, and I began to think about my own work in more explicitly interdisciplinary terms.

LK: You’re now based at the [Georgia Institute of Technology](#) (and currently connected to the [Notre Dame Institute for Advanced Study](#) as a fellow)—could you say a bit more about how your research connects to these institutions?

JB: I’m an assistant professor in the School of Public Policy at the Georgia Institute of Technology, and during the Spring of 2014, I have had the privilege of being a fellow at the Notre Dame Institute for Advanced Study. Since arriving at Georgia Tech, I have continued to work on the issues that were central to my dissertation; in addition, I am working extensively on the epistemic and ethical implications of intellectual property rights (IPRs) in science and technology. In particular, I’ve examined the effects of IPRs in biomedical research and in agricultural biotechnology (specifically genetically modified seeds), and I’ve begun to work on the effects of IPRs in climate change technologies, which has taken some of my work in the direction of environmental ethics and policy.

Philosophers of science and technology, as well as environmental philosophers, have unfortunately had rather little to say about the effects of IPRs. As noted earlier, the organisation of many areas of scientific and technological research has changed significantly, and one of the effects of this has been to incorporate market values more extensively into the research process. In this system, IPRs (especially patents) are one of the most important mechanisms for incentivizing research. There are important implications of this, both epistemic and ethical. While the original intention of patents is to encourage research, they are in many cases used to inhibit, and in some cases to prohibit, research. In a paper entitled “Can Patents Prohibit Research? On the Social Epistemology of Patenting and Licensing in Science” (*Studies in History and Philosophy of Science* 45: 14–23), I have argued that patents and patent licenses can be, and are in fact being, used to prohibit many types of research on genetically modified seeds. Epistemically speaking, this is very dangerous, and it calls for interdisciplinary inquiry (including social epistemology) into how this problem can be solved. In addition to

these epistemic issues, there are also ethical problems resulting from the use of patents to obstruct access. As is well known, millions of people die every year from preventable and/or curable diseases, and many die because they cannot afford the price of patent-protected medicines. This is a particularly significant problem in the global south, and some philosophers (notably Thomas Pogge) have done important work that seeks to address it. A less recognized, but increasingly important, problem concerns access to climate change technologies. In order to respond effectively to climate change, we not only need to incentivize the development of new technologies; we also need to ensure that everyone, including those in the developing world, have access to those technologies. Patents might effectively incentivize the development of new climate change technologies, but they are not an effective mechanism for transferring these technologies to poor countries. These are problems that require interdisciplinary treatment that includes experts in ethics and social epistemology, and they are ones that I've been trying to address.

LK: Would this particular research be in line with what you consider to be your long-term research goals?

JB: I'm sure that my research will evolve in ways that I don't yet anticipate, but one of my goals is to articulate a way of revising the patent system so that it can fulfil its intended function of incentivizing research and, at the same time, facilitate access to the very poor. This is an extremely important problem—for example, it is at the root of some entrenched disagreements between representatives of developed countries and representatives of developing countries in climate change negotiations—and it is one that deserves more attention from the philosophical community. In addition to articulating and defending such a system, I would also like to be involved, in some way, in helping to bring it about. This would involve interdisciplinary collaboration that included scientists, experts in law and policy, and others, and it could benefit from the analytic skills and the sensitivity to ethical concerns that philosophers ideally bring.

LK: Above you mentioned 'social epistemology': Would you count yourself as a social epistemologist? And if so, what would that entail?

JB: I would not call myself a social epistemologist, because to do so would tend to pigeonhole me as someone who works primarily within the confines of a narrow subfield of philosophy—or, more precisely, a narrow subfield of a narrow subfield of philosophy. I work on issues that have a social epistemology dimension, but I would not call myself a social epistemologist. Interdisciplinarity is important, and it is crucial that philosophers talk not just to one another, but also to scholars in other areas who work on related problems. The more that one identifies oneself as a practitioner of a narrow subfield of philosophy, the more difficult it is to engage in fruitful dialogue with scholars outside of philosophy.

LK: I do agree with you on this, but only if that identification with a particular discipline would automatically imply restricting one's scope of mind. Let me explain this further: I, personally, consider myself to be a social epistemologist, someone who contributes to philosophical debates from this particular angle while still stressing the value of interdisciplinarity. In a forthcoming special issue of *Foundations of Science*, called 'Social epistemology meets the philosophy of the humanities', which I am co-editing with Anton Froeyman and Jeroen van Bouwel, we define social epistemology in

a certain way (see editorial above) that allows us to connect researchers from different disciplines and have them share their insights and beliefs on similar matters of interest. What would your thoughts on this be?

JB: I like your characterization of social epistemology very much. Moreover, I do not think that identifying oneself as a social epistemologist automatically *implies* restricting one's scope. However, I do think that identifying oneself in terms of what many consider to be a narrow subfield of philosophy will have an impact on the ways in which one is, in fact, perceived. Suppose, for example, that you are in a conversation with a scientist whom you've just met, and she asks you what you do. Responding with "I am a social epistemologist" will get you a very different response (probably a blank stare) than responding with "I work on interdisciplinary questions concerning the effects of the social organisation of scientific research." In responding with the latter, you've immediately established common ground between yourself and the scientist and opened up a space for fruitful dialogue.

LK: In your view, and given your interdisciplinary stance, what are the most exciting and important research directions in the area of social epistemology?

JB: Social epistemology covers a variety of different topics—including trust in experts and testimony, reasonable disagreement, and systems design—and there are a variety of different approaches to each of these. I've articulated an approach that I call 'non-ideal systems design.' The idea is that, instead of attempting to articulate and defend an ideal form of social organisation (on the basis of, say, conceptual analysis and/or pre-theoretic intuitions), one examines the way in which a particular area of inquiry is actually organised, ascertains the epistemic consequences of this form of organisation, proposes (and hopefully institutes) organisational reforms, and then begins the processes anew. This approach is empirically based, piecemeal, iterative, and interdisciplinary. It is empirically based, in that it requires a thorough understanding of the ways in which particular areas of inquiry—in all their messiness—are actually organised, including the epistemic consequences of these forms of organisation. It is piecemeal in that one makes gradual recommendations for organisational reform (as opposed to proposing an entirely new system) and specifies the ways in which such reform can be achieved. At this point, one begins the iterative process again. In most (if not all) cases, understanding organisational arrangements and their actual consequences, as well as proposing organisational reforms, will require interdisciplinary investigation.

In the paper mentioned above, I've attempted to put this approach into practice by examining the epistemic implications of patenting and licensing in genetically modified seeds. Many other philosophers who work on the commercialization of science have employed a similar approach. This research is exciting for a number of reasons, but for me, two of the most important are the opportunities for interdisciplinary collaboration and the potential to have an impact on real problems facing scientific communities and society at large.

LK: Hearing you explain your concept of 'non-ideal systems design' sounds to me like a plea for a kind of philosophy that is much in line with the ideal of the [Society for Philosophy of Science in Practice](#) (SPSP). Would you agree? And if so, does your own work in any way demand that you cooperate with (actual) scientists?

JB: I do agree. The movement in philosophy of science to engage much more closely

with the way in which science is actually practised is a really important one, and SPSP has done a great job of encouraging philosophers to move in this direction, in part by providing spaces in which philosophers can present this sort of work. As is evident from the variety of topics and approaches that one finds at an SPSP conference, there are many different ways to do ‘philosophy of science in practice.’ Most of these require that philosophers work with scholars from other science-related fields, but which fields these are will vary. In my case, while I have worked with a few natural scientists, I have worked more closely with experts in science and technology policy and in intellectual property law, especially patent law. This has been important for me, not only in learning the nuances of intellectual property law and how it affects scientific research, but also in understanding the space of possible reforms and realities on the ground that affect which of these reforms are likely to succeed.

LK: Could you perhaps spell out some of the major challenges you see for the discipline in the upcoming years?

JB: It’s interesting that you’ve posed the question in this way. One of the most pressing challenges for the discipline of philosophy of science is to increase its relevance to both science and society, and as is probably evident from my answers to previous questions, I think that one of the best ways to do this is to become more interdisciplinary. For much of the latter half of the twentieth century, philosophy of science was highly insular; it engaged with a narrow set of questions that were relevant to few outside of philosophy, and it ignored questions regarding the role of science in society. This began to change in the latter part of the twentieth century—in part thanks to Thomas Kuhn, who incorporated a historical dimension to the philosophy of science, and thanks to feminist philosophers of science, who argued persuasively that the social context in which research is done can have a profound effect on research outcomes. More recently, Philip Kitcher has rightly emphasized questions about the proper role of science in a democratic society. Some of the world’s most pressing challenges—such as responding to global climate change, eliminating global poverty, and eradicating preventable disease—have scientific and technological components, but as should be obvious from recent history, we will not overcome these challenges by doing science and technology in the usual manner. We need to incorporate ethical considerations into both the research process and into the ways in which we organise research, and philosophers of science have the skills required to help with this. If we don’t continue to push the boundaries of the field in order to address these issues, we will not only fail in our ethical obligations to address questions of social concern, but we will drift into irrelevance.

LK: Connected to this, and as a round-up question of this interview, do you think philosophers themselves can play an important part in society?

JB: Let’s hope so! If we are to avoid drifting into irrelevance, we not only need to encourage philosophers of science to tackle problems that are socially important, but we need to create institutional structures that facilitate interactions between philosophers, scientists, experts in law and policy, and the public. There are institutions that already do this, and I’ve been privileged to be a part of some of them, including the [Reilly Center for Science, Technology, and Values](#) at the University of Notre Dame, the Center for Interdisciplinary Research at Bielefeld University, and a number of centers at Georgia Tech, including the Center for Ethics & Technology. The Rock Institute of Ethics at

Penn State University is another good example, which has facilitated collaborations between philosophers and scientists on what Nancy Tuana has called “coupled ethical-epistemic issues” in the sciences. But there need to be many more such institutions, and philosophers of science need to be more active both in participating in existing institutions and promoting the creation of new ones. Doing this will benefit philosophers of science—not only in terms of increasing the relevance of the field, but also by opening up exciting new possibilities for research.

LK: On this note, I would like to thank you Justin for this inspiring interview!

JB: You’re welcome, and thank you for the opportunity.

Deflationism about Sets

Deflationism about sets is the view that there is no substantial metaphysical nature to sets in roughly the same way that deflationism about truth is the view that there is no substantial metaphysical nature to truth. In particular, like the deflationist about truth holds that there is nothing over and above the instances of the T-schema that characterizes the notion of truth, the deflationist about sets holds that there is nothing over and above a particular conception of set that characterizes the notion of set. This view has recently been articulated by Luca Incurvati (2012: How to be a minimalist about sets, *Philosophical Studies* 159, p. 69–87) with respect to sets according to the iterative conception. In this note, I provide a brief overview of deflationism about sets on the iterative conception and suggest that deflationism might also be adopted with respect to sets on the graph conception.

The iterative conception of set takes sets to be the levels of the familiar cumulative hierarchy, where ‘level’ picks out the V_α of the standard picture, here, for pure sets: $V_0 = \emptyset$; $V_{\alpha+1} = \mathcal{P}(V_\alpha)$; $V_\lambda = \bigcup_{\alpha < \lambda} V_\alpha$, where λ is a limit ordinal. If pressed for an explanation of the notion of set, the deflationist about (iterative) sets can simply appeal to the various levels of the cumulative hierarchy; moreover, for the deflationist, such an appeal constitutes a complete or, as it is often put, *exhaustive* account of the nature of sets. (See Incurvati 2012: p. 84.)

Building on an idea first mentioned by George Boolos (1989: Iteration again, *Philosophical Topics* 17, p. 5–21, reprinted in Boolos 1998: *Logic, Logic, and Logic*, Cambridge: Harvard University Press p. 88–104), Incurvati argues that, although it is common to talk in ways which might suggest a substantial metaphysics of sets, we need not adopt such a perspective. In particular, while the metaphor of set ‘formation’—frequently used in informally articulating the iterative conception—might be taken as indication of a relation of metaphysical dependence between the levels of the cumulative hierarchy, we need no such substantive metaphysical notion. Following Boolos, we can simply say:

“there are the null set and the set containing just the null set, sets of all those, sets of all *those*, sets of all *Those*, ... There are also sets of all *THOSE*. Let us now refer to these sets as ‘those’. Then there are sets of those, sets of *those*, ... Notice that the dots ‘...’ of ellipsis, like ‘etc.’, are a demonstrative;

both mean: *and so forth*, i.e., in this manner forth.”
(Boolos 1998: p. 91. See also Incurvati 2012: p. 82.)

In this way, we could (on *some* sense of ‘could’) fully explain the notion of set using Boolos’s demonstrative thought on the objects that arise via repeated applications of the powerset and generalized union operations begun on the empty set. What is it to be a set? Thanks to our formal picture we can answer—just to be one of *those* things.

Is there reason to think that one could be a deflationist about sets generally? Better, given that substantive discussion of sets must assume some precise conception thereof, is there reason to think that deflationism about sets is tenable for a variety of conceptions of set? The way to go about answering this question is to address conceptions of set one at a time; let us look at another.

The graph conception of set (Incurvati 2014: The graph conception of set, *Journal of Philosophical Logic* 43, p. 181–208) takes sets to be the accessible, pointed, directed graphs—i.e., a collection of points, beginning with a unique first point, connected in a single direction, where each point of the graph can be reached from the unique first point. As Incurvati explains it, according to the graph conception of set, “sets are what is depicted by an *arbitrary* [accessible, pointed, directed] graph.” (Incurvati 2014: p. 190)

Given this precise account of sets—the accessible pointed (directed) graphs, or *APGs*—we can make sense of a deflationist perspective on sets according to the graph conception. The crucial bit is the structure supplied by taking sets to be the APGs. The collection of the APGs plays the role, for the graph conception, that the cumulative hierarchy plays for the iterative conception. In both cases, we can appeal to these collections in order to explain all we need to about sets. What is it to be a set? Once we’ve got the general definition of an APG, the deflationist about sets on the graph conception can answer—just to be one of *those* things.

Of course, these brief remarks are not sufficient to fully motivate the case for deflationism about sets on the graph conception. However, it does seem that the same style of argument that can be made for sets on the iterative conception could be made for sets on the graph conception. Let me close by attempting to head off a pair of potential objections.

First, while as compared to the deflationist account of iterative sets there is no directly analogous ‘and so forth’ aspect in the deflationist account of sets on the graph conception here given, this should not be seen as a problem for the view. The substantial analogy for the deflationist about sets is with the T-schema (see Incurvati 2012: p. 84); and while the T-schema doesn’t give us a picture like *V*, we can use it to explain deflationism about truth. We ought to be able to make use of the definition of an APG in a similar way to make sense of deflationism about sets on the graph conception.

In this context, it is important to notice that the Boolos description of the iterative conception relies on more than just our intuitive grasp of the ‘set of’ notion—we need the full mathematical description of the cumulative hierarchy, for this is the only way that we get sets at limit levels, where we need the notion of generalized union. Boolos signals this beginning with “There are also sets of all *THOSE*”.

Second, while there is an important difference between the iterative and graph conceptions in terms of what set theories they sanction (well-founded vs. non-well-

founded), this difference should not be a reason to think that the deflationist perspective cannot be applied in both cases. Just as deflationism about truth is independent of a particular view on the logic that governs the truth predicate, deflationism about sets is independent of the set theories the relevant conceptions sanction.

MATTHEW CLEMENS

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Deduction and Novelty again

It is a commonplace claim that the conclusion of a valid deductive argument is contained in its premises and says nothing new. In Frederick (2011: Deduction and Novelty, *The Reasoner*, 5.4, p. 56–57), I show how Karl Popper refuted the claim. In McBride (2014: Deduction, Novelty, Popper *The Reasoner*, 8.3, p. 24–25), David McBride argues that I am mistaken. I show that McBride's arguments are unsound.

The Popperian refutation runs as follows. Let '*N*' stand for Newton's theory of gravitation. Let '*E*' stand for Einstein's theory of gravitation. Since *N* is incompatible with *E*, the following argument is deductively valid:

(A) *N*

Therefore, not-*E*.

But the conclusion of this argument would certainly have said something new in Newton's time.

McBride objects that (A) is not a valid argument but can be made valid if we supply a missing premise:

(B) *N*

If *N*, then not-*E*

Therefore, not-*E*

That objection is confused. '*N*' and '*E*' in (A) are not arbitrary propositional schematic letters: each is an abbreviation for a theory of gravity. Those theories, when sufficiently spelled out, are formally inconsistent in predicate logic (Einstein's theory entails a modification of Newton's inverse-square law, for instance).

A further point. McBride says: "We are taught that deductive validity is a property of the form of an argument" (p. 24). That is unfortunate because not all validity is formal validity. Formal logics are only more or less successful attempts at a *systematic* account of validity (P.F. Strawson 1952: *Introduction to Logical Theory*, Methuen, p. 26–63); and, while modern predicate logic is more successful than its predecessors, there are various types of valid argument which it does not represent as formally valid, and types of invalid arguments which it represents as formally valid. So even if (A) *were not* an abbreviated representation of a formally valid argument, it might still represent a valid argument, depending on the meanings of the theories abbreviated by '*N*' and '*E*'. However, this point is an aside which cannot be developed here.

McBride formulates two versions of the principle that the conclusion of a valid deductive argument is contained in its premises:

- (Pa) The conclusion of a valid argument expresses no proposition not expressed before this time;
- (Pb) The conclusion of a valid argument expresses no proposition not expressed before in the deduction.

He concedes that (Pa) may be false because the argument (B) would be valid if uttered in Newton's time even though its conclusion's denial of Einstein's theory would say something new then. But he affirms (Pb). He says that the reason that (B) is valid while (A), supposedly, is not, is that in (B) the conclusion 'not-*E*' occurs in the conditional premise and thus says nothing new *in the deduction*.

Why did it not occur to him to stand the argument on its head? Thus:

(C) *E*

Therefore, not-(*N* and If *N*, then not-*E*).

In (C) the conclusion does not occur in the premise; in particular, it contains '*N*', which appears nowhere in the premise. Therefore the conclusion says something new in the deduction. Yet (C) is formally valid, even if '*N*' and '*E*' are interpreted as schematic propositional letters. To preserve Frederick's point that the premise but not the conclusion was known in Newton's time, we can swap '*E*' and '*N*':

(D) *N*

Therefore, not-(*E* and If *E*, then not-*N*).

McBride's containment principle, (Pb), is demonstrably false.

McBride says that Popper is committed to the principle that the conclusion of a valid deductive argument is contained in its premises because Popper "identifies what a statement entails with what it contains ... and ... in a valid deduction the conclusion is entailed by, and hence contained in, the premises," (p. 25). However, that is mistaken. Popper (1976: *Unended Quest*, Fontana, p. 26) identifies the 'logical content' of a statement with the class of its *non-tautological logical consequences*. Since every statement entails an infinity of tautologies, there is an infinity of valid deductive arguments such that the conclusion is not part of the logical content of the premises. Popper's notion of logical content is doing a different job to the notion of containment used in the principle that the conclusion of a valid deductive argument is contained in its premises. Indeed, that principle would be empty if the notion of containment it employed were simply defined so that all the logical consequences of a proposition were contained in it.

As I pointed out in my earlier piece, the principle that the conclusion of a valid deductive argument is contained in its premises is associated with a traditional conception of analysis as mentally peering into a concept or proposition to see what is in it, and which portrays deduction as a matter of drawing out the propositions one finds contained in other propositions. McBride's mistaken principle (Pb) is a product of such a

conception. What Popper showed was that the logical consequences of a proposition are not contained in the proposition in anything like that traditional sense. Our understanding of a proposition—indeed, the total state of our current knowledge—gives us access only to some of the logical consequences of the proposition. Some of the proposition's logical consequences become available to us only after they have been discovered via a process of imaginative problem-solving.

DANNY FREDERICK
Independent scholar

NEWS

How Reason Almost Lost Its Mind: The Strange Career of Cold War Rationality

How Reason Almost Lost Its Mind: The Strange Career of Cold War Rationality, by Paul Erickson, Judy L. Klein, Lorraine Daston, Rebecca Lemov, Thomas Sturm & Michael D. Gordin. Chicago: Chicago University Press 2013.

This book sheds a new light on theories about the nature of rationality: how they influenced judgment and decision-making in the Cold War, and how they were in turn influenced by the political and social contexts of that era.

Spanning the fields of game theory, microeconomics, military strategy, Bayesian decision theory, systems analysis, and cognitive psychology, the debate over what it means to be rational, especially in a world that seemed to be on the brink of thermonuclear destruction, engaged the sharpest minds, such as John von Neumann, Herbert Simon, Thomas Schelling, Herman Kahn, Joseph Weizenbaum, Daniel Kahneman and Amos Tversky. *How Reason Almost Lost Its Mind: The Strange Career of Cold War Rationality* shows how they debated pressing questions such as: what were the best rules of judgment and decision makers for actors who wished to be rational? Which theories of rationality could be invoked to *explain* human behavior, especially in the domains of international relations, war, and military strategy? And could one apply these theories also for the *resolution* of political problems? Could the rules be given an axiomatic structure and applied to various domains in a strictly determinate fashion? Economists, political scientists, psychologists, anthropologists, military strategists, mathematicians, and computer scientists sought ever more reliable rational safeguards to tame the arsenals of bombs and missiles ordered by the politicians, built by the physicists and engineers, and tended by the generals. Oftentimes, rules of rationality were supposed to be formal, algorithmic, optimising, and mechanical. Yet consensus eluded the participants in the debates: every new formulation of what rationality was met with critique, empirical results countered axioms, paradoxes proliferated. What brought thinkers together were neither shared disciplinary assumptions nor unified political agendas nor methodological agreement, but rather a common challenge and the debate over the nature of rationality itself. This book follows these debates as they unfolded in diverse human sciences and ultimately dissipated.

Among other topics, the volume recounts how Simon's engagement with operations

research in the Berlin Air lift of 1948/49 helped him to see the limits of optimization models, engendering his famous concept of bounded rationality. Other chapters analyze how Bertrand Russell, Herman Kahn, and Charles Osgood diverged over what to think of the rationality of escalation in the Cuba Crisis of 1962, or how the prisoner's dilemma was not only a point of reference in discussions of arms races and international conflict, but also became applied to broader studies of teamwork, cooperation, and even to reciprocal altruism. The concluding chapter explains how Kahneman and Tversky's work on biases and fallacies of reasoning came to be applied to the Polish crisis of the early 1980s and to Ronald Reagan's mindset concerning arms negotiations, but was also confronted with fundamental objections concerning the naiveté of its normative assumptions. This led to the current fragmentation in the study of rationality, undermining the Cold War hope for a unified concept of rationality providing the tools for perfectly understanding, predicting, and dealing with political conflict.

The book also reveals the broader scientific and social context that engendered ideas that still shape discussions in philosophy and science. In particular, it shows the emergence of various attempts to distinguish between reason and rationality: Does reason demand a mindful deliberation over when and how to apply a norm, while rules of rationality can be mechanically executed by machines (perhaps even better than by human minds)? Alternatively, is it only reason that involves considerations of morality, while rationality excludes them?

THOMAS STURM
Philosophy, UAB

Logic and Language, 21–22 March

The [Second Logic and Language Conference](#) took place on March 21–22 2014 at the Institute of Philosophy, School of Advanced Study. It was hosted by [CeLL](#)—The Centre for Logic and Language, of which I am the director.

The title “Second logic and language conference” needs qualification. As organized in turn by the Institute of Philosophy and the Northern Institute of Philosophy, this conference was the second of its kind. However, this sort of conference on logic and language has many ancestors, and in some shape or other it has been taking place in the UK, in various universities, for many decades. Although there have been periods when the conference has gone quiet, it has always been revived with much success, and this year's edition was no exception—it was an outstanding contribution to UK's long, collegiate, and vibrant tradition in the philosophy of logic and language.

The aim of the conference was to showcase cutting edge research in the philosophy of logic and language, to foster exchange between academics working in these areas, and in particular to give an opportunity to junior philosophers to interact with more senior colleagues working in the same field.

I was also keen to highlight the diversity of the work that is currently done in these areas. Thus, there were very exciting talks in philosophical logic: James Studd (Oxford) made an interesting contribution to the debate amongst neologicists concerning how to understand Hume's Principle, in terms of a dynamic account of the size of the domain of

the quantifiers; and Rosanna Keefe (Sheffield) raised some serious challenges to Hartry Field's expressivist account of logical validity.

In the philosophy of language, another excellent contribution to debates over expressivism came from Alex Silk (Birmingham), concerning how to fine tune an expressivist semantics for epistemic modals. Some classic issues were also given fresh insights: Ephraim Glick (St Andrew's) offered an account of what it is to be a singular proposition, and Stephen Neale (CUNY/Birmingham) showed how key issues in the theory of reference, such as that of rigidity, can benefit from considerations about aphonics. There were also two talks whose aim was to extend considerations in the philosophy of language to other areas of philosophy: Sarah Sawyer (Sussex) connected debates over semantic internalism and externalism to those over moral cognitivism; and Anna Mahtani (LSE) used considerations about intensionality to address some problems in the theory of probability.

As this was the first Logic and Language since he passed away in December 2011, I thought it would be apt to have a Lecture in Honour of Michael Dummett—to have a tribute to his immense influence on philosophers working in these areas. Ian Rumfitt (Birmingham) kindly agreed to do this, and his talk was on the justification for classical logic in set theory in response to some concerns of Dummett's. Crispin Wright (NYU/NIP)'s contribution was also, of his own admission, witness to Dummett's influence, as it used the resource of intuitionistic logic to address debates over faultless disagreement.

The conference was greatly enhanced by having some outstanding philosophers chairing the talks; and most of all, it was wonderful to have so many delegates, who contributed a great deal—through their keen interest and insightful interventions—to the success of the conference.

CORINE BESSON

Philosophy, University of Sussex

Calls for Papers

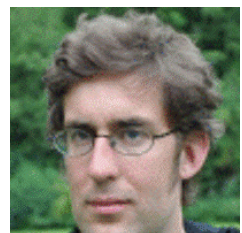
PRESUPPOSITIONS: special issue of *Topoi*, deadline 15 May 2014.

VIRTUES & ARGUMENTS: special issue of *Topoi*, deadline 1 September 2014.

WHAT'S HOT IN . . .

Logic and Rational Interaction

A famous metaphor about the meaning of life, usually culminating in a joke about the value of [drinking beer](#), goes along the following lines. A professor arrives at a class of undergrads, puts an empty glass jar on the table and fills it with stones. Having all the students agree that the jar is full, she pulls out a bag of sand and starts pouring it into the jar. Falling into the gaps between the stones, quite some sand fits before the jar is full again.



The professor goes on explaining that the jar is a metaphor for life. The stones stand for the important things in life while the sand symbolizes all the nice little enjoyments, reading a good book or going to a party. Of course the sand could easily fill the jar all by itself leaving no space for anything else.

Sometimes greed about the little nice things prevents us from reaching the important goals. But what if it's not entirely up to us to balance between crucial things and the little enjoyments? Umberto Grandi, Davide Grossi and Paolo Turrini analyze this problem in an interactive setting. Take a group of people that is voting about a certain agenda, a list of things that are of interest to all of them. Each member of the group has her own goal, a certain property she wants to see reflected in the group outcome. People are different, so different members of the group aim at different goals. But our members are also open to the small joys of life. Each member of the group has a payoff function denoting how much pleasure she derives from the different electoral outcomes.

Exactly as in the story of the sand and the stones, the little enjoyments might be in the way of the big goals. Even if all the individual goals happen to be jointly satisfiable, the fact that voters are maximizing their own enjoyment might impede a state of universal satisfaction.

In the paper “Pre-voting negotiation and aggregation with constraints”, Grandi, Grossi and Turrini show that this undesired outcome can be avoided if agents are allowed to make side-payments. Providing a logico-mathematical model, the authors argue that the same strategy as for the individual case also works for the social case: agents should sacrifice some small pleasures to achieve their important goals.

However, the way of sacrificing differs. In the social case, agents sacrifice not by simply forgoing bad options, but by sharing successful outcomes through little transfers to the other players. As the authors show, allowing for side payments bridges the gap between individual maximization and societal (un)happiness. If the payments are well designed, there is no stable state in which individual goals are violated. That is, all pure strategy Nash equilibria satisfy all individual goal functions. But how to find an efficient set of side payments? Fortunately, this can be completely left to the individual players. Allowing each agent to decide upon his transfers to the rest of the group before submitting his vote guarantees the satisfaction of all individual goals in every stable outcome. Sometimes promising our friends a party helps us all to achieve the big goals.

LORIWEB is always happy to publish information on topics relevant to the area of Logic and Rational Interaction—including announcements about new publications and recent or upcoming events. Please submit such news items to Carlo Proietti, our web manager via submit@loriweb.org.

DOMINIK KLEIN
TiLPS, Tilburg University

Uncertain Reasoning

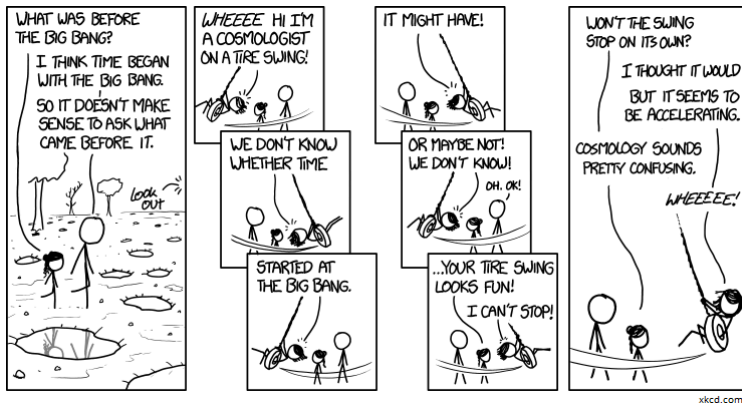
The rather broad research field which goes by the name of *imprecise probability* has enjoyed an ever increasing popularity over the past two decades. Imprecise probability appears, in one or another of its many guises, in a variety of areas of artificial intelligence, statistics, decision theory and epistemology. Interested readers can get a flavour of the field from [The Society for Imprecise Probability: Theories and Applications \(SIPTA\) website](#).

Building on several forerunners, P. Walley's monumental book (1991, *Statistical Reasoning with Imprecise Probabilities*, Wiley) has long been the central reference for this area. This spring, however, two volumes will be filling the shelves of the imprecise probability enthusiasts, both of which have been recently announced by [Gert de Cooman](#) on his blog.

The first is titled [Introduction to Imprecise Probabilities](#) and is edited for Wiley by Thomas Augustin, Frank P.A. Coolen, Gert de Cooman and Matthias C.M. Troffaes. It is a 448 page strong collection of 16 chapters spanning the foundations and applications of imprecise probabilities which is due to be published in May 2014.

The second is a monograph written by Matthias C.M. Troffaes and Gert de Cooman, entitled [Lower Previsions](#). This volume is also to be published by Wiley in May 2014 and, as a matter of an interesting coincidence, is also 448 pages.

There is little doubt that both volumes will contribute to widening the impact of the



imprecise probability approach in the uncertain reasoning community.

HYKEL HOSNI

Marie Curie Fellow,
CPNSS, London School of Economics

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EVENTS

MAY

SKORUPSKI: Symposium, London, 3 May.

LAMAS: 7th Workshop on Logical Aspects of Multi-Agent Systems, Paris, France, 5–6 May.

MSDM: Workshop on Multi-Agent Sequential Decision Making Under Uncertainty, Paris, France, 5–6 May.

SQUARE: 4th World Congress on the Square of Opposition, Pontifical Lateran University, Vatican, 5–9 May.

ADMI: 10th International Workshop on Agents and Data Mining Interaction, Paris, France, 5–9 May.

MS6: Models and Simulations 6, University of Notre Dame, 9–11 May.

EIDYN: Normativity and Modality, Edinburgh, 9–11 May.

MMM: Mind, Mechanism, and Mathematics, Columbia University, 12–14 May.

DRETSKE: Duke University, 14 May.

FORMAL METHODS: Singapore, 12–16 May.

WPI: 6th Workshop in the Philosophy of Information, Duke University, 15–16 May.

SLACCR: St. Louis Annual Conference on Reasons and Rationality, St. Louis, MO, 18–20 May.

SCIENCE & METAPHYSICS: Ghent, Belgium, 20–21 May.

ABSTRACTION: Philosophy and Mathematics, Oslo, 21–23 May.

WFAP: Language and Philosophical Method, University of Vienna, 22–24 May.

ARGDIA: 12th ArgDiaP Conference “From Real Data to Argument Mining”, Warsaw, Poland, 23–24 May.

VALUES: in Science and Science Policy, George Mason University, 23–24 May.

MAP: Mathematics, Algorithms and Proofs, Paris, France, 26–30 May.

FILMAT: 1st International Conference of the Italian Network for the Philosophy of Mathematics, Milan, 29–31 May.

FORMAL ETHICS: EIPE, Erasmus University Rotterdam, 30–31 May.

JUNE

MSLP: Mathematizing Science, University of East Anglia, 1–3 June.

F& MI: Fundamentality and Metaphysical Infitism, University of Helsinki, Finland, 2–3 June.

ALGMATHLOG: Algebra and Mathematical Logic: Theory and Applications, Kazan, 2–6 June.

THE EVIDENCE WORKSHOP

University of Kent, 4–5 June

CWAP: Normativity of Meaning, Belief and Knowledge, Krakow, Poland, 4–6 June.

LOGICMATHPHYSICS: Ontario, Canada, 5–6 June.

GROUND: The Logic of Ground, Oslo, 5–6 June.

TECHNOCOG: Innovation and Scientific Practice, Barcelona, 5–6 June.

POP: 4th LSE Graduate Conference in Philosophy of Probability, London, 6–7 June.

LG& M: Logic, Grammar, and Meaning, University of East Anglia, 7–9 June.

EC: 15th ACM Conference on Economics and Computation, Stanford University, CA, USA, 8–12 June.

MoT: Truthmaking as Grounding: For and Against, Barcelona, 9–10 June.

CCR: 9th International Conference on Computability, Complexity and Randomness, Singapore, 9–13 June.

SCE: Social Cognition & Emotion, Manchester, 10–11 June.

PARACONSISTENCY: Paraconsistent Reasoning in Science and Mathematics, Munich, Germany, 11–13 June.

IYSM: International Young Statistician Meeting, Università di Cagliari, Italy, 13–14 June.

COLT: 27th Annual Conference on Learning Theory, Barcelona, 13–15 June.

LOGICA: Hejnice, Czech Republic, 16–20 June.

MAEB: Metaphors and Analogies in Evolutionary Biology, Bristol, 17–18 June.

SILFS: International Conference of the Italian Society for Logic and Philosophy of Sciences, University of Rome “Roma TRE”, 18–20 June.

BEST: Boise Extravaganza in Set Theory, University of California, Riverside, 18–20 June.

AMSTA: 8th International KES Conference on Agents and Multi-agent Systems—Technologies & Applications, Crete, Greece, 18–20 June.

FEW: 11th Annual Formal Epistemology Workshop, University of Southern California, Los Angeles, CA, 20–22 June.

SEP: 42nd Annual Meeting of the Society for Exact Philosophy, California Institute of Technology, Pasadena, CA, 22–24 June.

3RD REASONING CLUB CONFERENCE

University of Kent, 23–24 June

CE: Computability in Europe, Budapest, Hungary, 23–27 June.

CAMAL: Causal Modeling & Machine Learning, Beijing, China, 25–26 June.

SPS: Metaphysics of Science, Lille, 25–27 June.

A & N: The “Artificial” and the “Natural” in the Life Sciences, University of Exeter, 25–27 June.

CogSciJR: Jagiellonian-Rutgers Conference in Cognitive Science, Kraków, Poland, 25–29 June.

EPISTEMIC INJUSTICE: Bristol, 26–27 June.

SPE: Semantics and Philosophy in Europe, Berlin, 26–28 June.

& HPS: Integrated History and Philosophy of Science, Vienna, Austria, 26–29 June.

EGEC: 4th Annual Edinburgh Graduate Epistemology Conference, University of Edinburgh, 27–28 June.

IPSP: Imprecise Probabilities in Statistics and Philosophy, LMU Munich, 27–28 June.

SELF-KNOWLEDGE: Radboud University Nijmegen, the Netherlands, 27–28 June.

EEN: European Epistemology Network Meeting, Madrid, 30 June–2 July.

FUR: 16th Conference on Foundations of Utility and Risk, Rotterdam, Netherlands, 30 June–2 July.

JULY

IACAP: Annual Meeting of the International Association for Computing and Philosophy, Thessaloniki, Greece, 2–4 July.

WCT: workshop on Computability Theory, Prague, 3–4 July.
YSM: Young Statisticians’ Meeting, Bristol, 3–4 July.
OPEN MINDS: University of Manchester, 4 July.
SotFoM: Symposium on the Foundations of Mathematics, Kurt Gödel Research Center, University of Vienna, 7–8 July.
CICM: Intelligent Computer Mathematics, University of Coimbra, Portugal, 7–11 July.
TiLXIV: Trends in Logic, Ghent University, Belgium, 8–11 July.
FLoC: 6th Federated Logic Conference, Vienna, 9–24 July.
BSPS: British Society for the Philosophy of Science, University of Cambridge, 10–11 July.
SIS: Scientific Meeting of the Italian Statistical Society, Cagliari, Italy, 11–13 July.
DEON: 12th International Conference on Deontic Logic and Normative Systems, Ghent, Belgium, 12–15 July.
CLC: Classical Logic and Computation, Vienna, Austria, 13 July.
SAT: 17th International Conference on Theory and Applications of Satisfiability Testing, Vienna, Austria, 14–17 July.
IPMU: 15th International Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems, Montpellier, France, 15–19 July.
LATD: Logic, Algebra, and Truth Degrees, Vienna, 16–19 July.
PSC: Proof, Structure and Computation 2014, Vienna, Austria, 17–18 July.
NMR: 15th International Workshop on Non-Monotonic Reasoning, Vienna, Austria, 17–19 July.
IJCAR: 7th International Joint Conference on Automated Reasoning, Vienna, Austria, 19–22 July.
CCA: Computability and Complexity in Analysis, Darmstadt, Germany, 21–24 July.
PAAR: 4th Workshop on Practical Aspects of Automated Reasoning, Vienna, Austria, 23 July.
PRUV: International Workshop on Logics for Reasoning about Preferences, Uncertainty and Vagueness, Vienna, Austria, 23–24 July.
AUAI: Uncertainty in Artificial Intelligence Conference, Quebec, Canada, 23–27 July.
KRC: Reasoning Conference, Konstanz, Germany, 24–27 July.
IJCAI: 24th International Joint Conference on Artificial Intelligence, Buenos Aires, Argentina, 25 July–1 August.
CAUSAL INFERENCE: Quebec, Canada, 27 July.
STARAI: 4th Workshop on Statistical Relational AI, Quebec, Canada, 27–28 July.
LOFT: Eleventh Conference on Logic and the Foundations of Game and Decision Theory, University of Bergen, Norway, 27–30 July.
UCM: Uncertainty in Computer Models 2014, University of Sheffield, 28–30 July.

AUGUST

AIML: Advances in Modal Logic, University of Groningen, 5–8 August.
ICPP: 13th International Conference on Philosophical Practice, Belgrade, 15–18 August.

CLIMA: 15th International Workshop on Computational Logic in Multi-Agent Systems, Prague, Czech Republic, 18–19 August.
SBQ: Science and the Big Questions, VU University Amsterdam, 18–21 August.
ECAI: 21st European Conference on Artificial Intelligence, Prague, Czech Republic, 18–22 August.
DARE: International Workshop on Defeasible and Ampliative Reasoning, Prague, Czech Republic, 19 August.
ROBO-PHILOSOPHY: Aarhus University, Denmark, 20–23 August.
HYP0: Hypothetical Reasoning, Tübingen, Germany, 23–24 August.
SLS: 9th Scandinavian Logic Symposium, University of Tampere, Finland, 25–27 August.
ECAP: 8th European Conference of Analytic Philosophy, University of Bucharest, Romania, 28 August–2 September.
SOCIAL MIND: Origins of Collective Reasoning, University of Oslo, 29–30 August.

SEPTEMBER

WoLLIC: 21st Workshop on Logic, Language, Information and Computation, Valparaíso, Chile, 1–4 September.
SOFIA: Salzburg Conference for Young Analytic Philosophy, Austria, 4–6 September.
WPMSIIP: 7th Workshop on Principles and Methods of Statistical Inference with Interval Probability, Ghent, Belgium, 8–12 September.
COMMA: 5th International Conference on Computational Models of Argument, Scottish Highlands, 9–12 September.
BPPA: British Postgraduate Philosophy Association Conference, Leeds, 9–12 September.
ENPOSS: 3rd European Network for the Philosophy of the Social Sciences Conference, Madrid, 10–12 September.
GANDALF: 5th International Symposium on Games, Automata, Logics and Formal Verification, Verona, Italy, 10–12 September.
CI: Collective Intentionality, Indiana, USA, 10–13 September.
X-PHI: 5th Workshop of Experimental Philosophy Group UK, Oxford, 11–12 September.
LANCOG: workshop on Modal Syllogistic, Lisbon, 11–13 September.
SCLC: 10th Symposium for Cognition, Logic and Communication, University of Latvia, Riga, 12–13 September.
NoR&N: Nature of Rules and Normativity, Prague, Czech Republic, 17–19 September.
IWSBP: 11th International Workshop on Boolean Problems, Freiberg, Germany, 17–19 September.
ICTCS: 15th Italian Conference on Theoretical Computer Science, Perugia, Italy, 17–19 September.
EERG: Buffalo Annual Experimental Philosophy Conference, Buffalo, 19–20 September.
ICSS: International Conference on Social Sciences, Bucharest, Romania, 19–20 September.

FOIS: 8th International Conference on Formal Ontology in Information Systems, Rio de Janeiro, 22–25 September.

KI: 37th German Conference on Artificial Intelligence, Stuttgart, 22–26 September.

LAP: Logic and Applications, Dubrovnik, Croatia, 22–26 September.

JELIA: 14th European Conference on Logics in Artificial Intelligence, Madeira Island, Portugal, 24–26 September.

EO: Epistemology of Modality, Aarhus University, Denmark, 24–26 September.

IEEE: Intelligent Systems, Warsaw, Poland, 24–26 September.

LANCOG: Workshop on Analyticity, Lisbon, 25–26 September.

EO: Epistemology of Perception, KU Leuven, 25–26 September.

JOHAN VAN BENTHEM: ILLC, Amsterdam, 26–27 September.

BELIEF: 3rd International Conference on Belief Functions, Oxford, 26–28 September.

October

WCPA: Western Canadian Philosophical Association, Vancouver, BC, 3–5 October.

EBC: Explanantion Beyond Causation, LMU Munich, 23–24 October.

ILCS: Inductive Logic and Confirmation in Science, University of Utah, 24–25 October.

MDAI: Modeling Decisions for Artificial Intelligence, Tokyo, Japan, 29–31 October.

IDA: 13th International Symposium on Intelligent Data Analysis, Leuven, Belgium, 30 October–1 November.

COURSES AND PROGRAMMES

Courses

MLSS: Machine Learning Summer School, Reykjavik, Iceland, 25 April–4 May.

EPISTEMIC GAME THEORY: EPICENTER, Maastricht University, 12–23 May.

IGSAR: 2nd Interdisciplinary Graduate School on Argumentation and Rhetoric “Corpus Analysis in Argument Studies”, Polish National Academy of Sciences, Warsaw, 21–24 May.

NASSLLI: 6th North American Summer School in Logic, Language and Information, University of Maryland, College Park, 21–29 June.

EASLLC: 3rd East-Asian School on Logic, Language and Computation, Tsinghua University, China, 2–8 July.

CARNEGIE MELLON: Summer School in Logic and Formal Epistemology, 2–20 July.

SIPTA: 6th SIPTA School on Imprecise Probabilities, Montpellier, France, 21–25 July.

MCMP: MCMP Summer School on Mathematical Philosophy for Female Students, Munich, Germany, 27 July–2 August.

ESSLLI: 26th European Summer School in Logic, Language and Information, University of Tübingen, Germany, 18–22 August.

EPISTEMOLOGY & COGNITION: Groningen, 25–29 August.

CLPA: Summer School on Argumentation: Computational and Linguistic Perspectives on Argumentation, University of Dundee, Scotland, 4–8 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.

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 & 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 POSITION: in Set Theory, Torino University, until filled.

POST-DOC POSITION: in Logic, Department of Philosophy, Linguistics and Theory of Science, Gothenburg, deadline 19 May.

POST-DOC POSITION: on the project “Knowledge-First Virtue Epistemology”, KU Leuven, Belgium, deadline 30 May.

Studentships

PHD POSITION: on the project “Hybrid-Logical Proofs at Work in Cognitive Psychology”, Roskilde University, deadline 9 May.

PHD POSITIONS: in Logic, Department of Philosophy, Linguistics and Theory of Science, Gothenburg, deadline 12 May.

PHD POSITION: on the project “Knowledge-First Virtue Epistemology”, KU Leuven, Belgium, deadline 30 May.

PHD POSITION: on project “Set Theory and Truth”, Philosophy, University of Aberdeen, deadline 6 June.