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Editorial

It is a pleasure to edit this issue of *The Reasoner* and I am grateful to Michael Friedman for agreeing to be interviewed for the purpose.

Michael is Frederick P. Rehmus Family Professor of Humanities as well as the executive director of the Center for History and Philosophy of Science (CHPS) at Stanford University. He is primarily known for his contributions in at least two areas: the philosophy of science (and philosophy of physics in particular) as well as the history of philosophy of science. The latter includes work on logical empiricism and its intellectual roots in nineteenth-century philosophy of science (e.g., his books *Reconsidering Logical Positivism* (1999) and *A Parting of the Ways: Carnap, Cassirer, and Heidegger* (2000)). It also comprises his work on Kant and, in particular, on Kant's interaction with the exact sciences of his time. Michael's contributions to Kant scholarship include his books *Kant and the Exact Sciences* (1992), *Dynamics of Reason* (2001) and *The Kantian Legacy in Nineteenth-Century Science* (2006), as well as numerous articles that have shaped the subsequent debates in the field.

His new book *Kant's Construction of Nature* (Cambridge University Press) has just appeared in print and I thought of this as a good opportunity to ask him about his recent work related to Kant as well as about the evolution of his ideas over the years. Since this interview is for *The Reasoner* (and thus intended for an audience interested in reasoning in the sciences), the focus of our discussion is on one particular recurring topic in Michael's research, namely Kant's philosophy of geometry and, more specifically, the latter's understanding of the role of diagrams in geometrical reasoning. Diagrammatic reasoning has recently turned into an active field of research that comprises and connects work in the history and philosophy of mathematics, in psychology, as well as in logic. In our interview, Michael talks about his specific interpretation of Kant's understanding of geometrical proofs and also how his views relate to these recent and more general results concerning the mathematical reasoning with diagrams.

Georg Schiemer
MCMP, LMU Munich

Features

Interview with Michael Friedman

Georg Schiemer: Your new book *Kant's Construction of Nature* (Cambridge University Press) has just appeared in print. What is its main focus?

Michael Friedman: The subtitle of the book is "A reading

of the *Metaphysical Foundations of Natural Science*" and that is basically what it is. The Introduction tries to discuss the place of the *Metaphysical Foundations* in the critical system and explain why I take it to be a particularly important work even though it hasn't gotten as much attention as other works of the critical period. So I try to make a case that it is centrally important to the transition from the first to the second edition of the *Critique*.

I take one of the most interesting and deep philosophical questions about the *Metaphysical Foundations* to concern the relationship between it and the *First Critique*. If you take the application of the categories to outer objects in space and time to be very central—so that by appearances Kant primarily means bodies in space, not exclusively but primarily; well then what is the difference between the standpoint of the *Critique* and the *Metaphysical Foundations* (where the latter also emphasizes that the concept of matter is the concept of objects of specifically outer sense and does not explicitly consider inner sense)? So, I don't want to collapse the *Metaphysical Foundations* into the first *Critique* or vice versa.

The body of my book then consists of four chapters, which mirror the four chapters of the *Metaphysical Foundations*, namely the Phoronomy, the Dynamics, the Mechanics and the Phenomenology. These correspond to the table of categories, namely Phoronomy to quantity, Dynamics to quality, relation to the Mechanics and the Phenomenology to the modal categories. So I thus read through the main body of Kant's text. I talk about Kant's Preface in both the Introduction and the Conclusion of my book. Kant's Preface discusses the place of the *Metaphysical Foundations* in the critical system, but the main body of the text is just, as Kant puts it, bringing the empirical concept of matter successively under the table of categories and the corresponding principles. When you do that you get a particular concrete realization of the categories and you also get, on my reading, a very deep engagement by Kant with some of the important scientific thinkers of the time: Newton more than anyone—which I have stressed for a long time—but now I bring in Lambert and Euler and also try to situate Kant more in relation to Leibniz as well. So my book mainly discusses Kant's philosophy of physical sciences, physics is the central thing it is engaged with rather than Euclid and Euclidian geometry, although that is of course a crucial background and presupposed by Newton in the *Principia*.

GS: How is your recent work on Kant connected to your earlier work on his philosophy of geometry and diagrammatic reasoning?

MF: In my work on Kant I have been returning to geometry several times since my original paper on "Kant's theory of geometry" (1985). I have a new forthcoming paper called "Space and geometry in the B Deduction" that uses work from my 2012 paper "Kant on geometry and spatial intuition," which is the one that is explicitly about diagrammatic reasoning. Already in that paper is something about the B Deduction and how I view it. I started working in 1985 on Kant's relation to Euclidean constructions and that of course connects with what people take to be Euclid's diagrammatic way of reasoning. When I first developed that in 1985 it was against the background of Hintikka, Beth, and Parsons.

GS: Can you say something about this background and your "logical approach to Kantian intuition"?

MF: Well, I take it that the key idea of that approach is that logical inferences that we now take to be analytic, paradigmatically logical, are various types of quantifier instantiations: for Beth it was universal instantiation and for Hintikka it was existential instantiation. The crucial idea in all of these views is that when Kant claims that geometry (and perhaps mathematics more generally) is genuinely synthetic and not analytic, he is primarily concerned with the reasoning in geometry rather than the axioms or what is true or false in geometry. The kind of quantifier reasoning that we take to be paradigmatically logical, he took—in a way that was reasonable given the state of logic at his time—to be synthetic in his terminology, to be ampliative in some way or another.

Hintikka's way I think is clearest because he conceived existential instantiation in his terminology as introducing new individuals into consideration and correlates it, (I think rightly and I am very influenced by him on this) with what happens in Euclidean construction where we start with a figure and then expand the figure by constructing new lines and points, and so on. That procedure is introducing mathematical elements, which were not there at the beginning, so in that sense it is ampliative and synthetic. Although we might also construe it in a Hilbert-style axiomatization as analytic, because Hilbert's axioms already, for us, guarantee the existence of all of these points, Euclid does not work that way, he does not write down axioms guaranteeing the existence of all the points. He constructs those points and lines when they are needed in the proof, step by step.

The basic insight of Hintikka is very much my starting point, and where I bring Parsons in is in connecting that with Parsons' understanding of Kant's philosophy of arithmetic in terms of an iterative conception of arithmetical reasoning. The basic point about arithmetic is that we construct the sequence of numbers step by step. So, the form of the iterative construction in general is arithmetical and the particular iterative constructions in Euclid would then be a special case of that—which, unlike arithmetic, adds specific geometrical objects into the basic idea of iterating an operation. So, I was very influenced by Parsons' philosophy of arithmetic in that respect—trying to give a kind of unified picture of geometry and arithmetic—and also, I think more than Hintikka, I emphasized Euclidian construction as an iterative procedure.

GS: How does your understanding of the role of intuition in Kant's account of geometry relate to more recent Kant scholarship, for instance by Lisa Shabel, that seems to be influenced by work on diagrammatic reasoning in Euclid's *Elements*?

MF: It seems that implicitly Shabel is drawing on Ken Manders' work. Manders' paper "The Euclidian diagram" has been circulating unpublished at least since 1995 and was published in 2008 in Mancosu's volume *The Philosophy of Mathematical Practice*. It is a fundamental paper on diagrammatic reasoning in Euclid. For Manders, however, it was not explicitly connected to Kant. When it was finally published he added a postscript, as you probably know, where he refers to Shabel's dissertation (and another Berkeley dissertation that I don't discuss in detail), and he there picked up on its resonance with

Kant and made some remarks about it, although that is not his primary concern by any means. I think that Shabel's 1997 dissertation, although I don't think that she explicitly mentions Manders' paper (which was not yet published then), is very much along the lines of what Manders was doing. What she calls the mereo-topological properties are what Manders calls the co-exact properties of a diagram. So, her picture of diagrammatic reasoning is very much along the same lines.

GS: One principal idea addressed by Manders and, more recently, in work by John Mumma, is the so-called "generality problem", that is the question how particular diagrams can function as elements in a proof that allow the generalization to geometrical laws. Both explain this by focusing on the incidence relations in a diagram. How does this relate to your view of Kant's use of diagrams?

MF: The interesting thing here is that there are the incidence relations and then there are the existential aspects of these incidence relations—as when we assert that there is a certain (point of) intersection or a line. It's those existential assertions that I focused on in 1985. So it was the Skolem functions that provided generality constructively: they constructed individuals, but since they are functions they construct *any and all* instances of a relevant concept like a circle. The circle postulate says you give me point, you give me a line segment and I will give you the circle that has that point as center and that line segment as radius. This is completely general: every circle is constructed that way. It is general but also particular—because the output of the function is always an individual but the input is any individual that you can construct the output from. That is a nice way of looking at how the generality is done in terms of what we could call the schemata of the geometrical concepts. That was a key idea for me in 1985 that you also find, by the way, in Shabel's thesis.

The important point, however, is that there are other features about the axioms of incidence and order, which have more to do with the exact/co-exact-distinction, and these have to do with containment relations like when you observe that one angle is contained within another angle and is therefore smaller than that angle. That is the "mereo" part of the "mereo-topological" relations. That is not an existential feature of the diagram like an incidence relation; it is a containment relation that allows you to infer by the common notions an inequality.

GS: In your recent *Synthese* paper, you argue that this diagrammatic approach does not do full justice to Kant's philosophy of geometry. Can you explain why?

MF: Well, there are two aspects of why I am somewhat critical of the diagrammatic approach as an interpretation of Kant. The second one is more important in the long run since it also connects with the role of his theory of geometry in his wider theory of knowledge. But let me just talk about the first one: in the diagrammatic approach, especially starting with Manders, but I think changed fundamentally by Mumma, there is an emphasis on beginning with sensible particulars. Shabel is quite explicit about it: it is the actual sensible figure; she downplays the role of the pure imagination in Kant. All he means by the imagination, in her view, is that we look at particular figures on the page or on the blackboard but we look at them in a particular way, with particular eyes, and that is what allows us to do geometry. So how do you go from particulars to generality? Well for Manders there are certain implicit rules or practices that allow you to perform certain abstractions and focus on co-exact rather than exact properties and so forth—and that's how you do it.

I think that this emphasis on sensible particulars is foreign to Kant. I take the schematism chapter and what he says about geometry there to be very fundamental. The crucial thing is that the schema for Kant is a rule for instantiating a concept—which of course already has conceptual generality with respect to particular intuitions, and these are what Kant calls images, the *Bilder*. The *Bilder* are particular triangles, not the general construction of a triangle but the particular triangles that you may construct to illustrate a proof or in the course of a proof. So his idea is more of a top-down idea. In fact, for him there is a central role for concepts. For Kant, after all, the understanding takes precedence in some sense, and it then needs to have intuitions to get meaning, to get instantiation, to get relation to an object. But generality comes fundamentally from the understanding for Kant. It is just that the conceptual generality that you find in the logic of Kant's time (some kind of tree of concepts that has extensions and intensions) is finitary, and is therefore not sufficient to capture the kind of concepts that are used in mathematics—which involve the idea of a potential infinite sequence of instances that can be successively constructed from a concept.

So you start with a concept and then the schema too is general because it is a function. That is why it has to be in *pure* intuition; you cannot instantiate in full generality on a piece of paper or on a blackboard all the triangles that fall under the concept of a triangle.

GS: What is the second aspect you mentioned above?

MF: The first issue is more interesting from a mathematical diagrammatic reasoning point of view. I take the second one to be of broader interest. This relates to the biggest lacuna—from my point of view—in my 1985 paper. Because it is so much a story about how the formal reasoning works, and that Kant has things that can substitute for Skolem functions and existential instantiation for us, there is not much about what Kant takes to be the spatial form of intuition. The spatial form of intuition is a three-dimensional form for Kant, within which all empirical perception of outer objects takes place. So Kant's idea is that however we perceive any outer object, we also perceive it within this three-dimensional form; so, crudely put, we know that three-dimensional Euclidian geometry governs the behavior of anything we can perceive in outer sense. The role of space as the form of outer intuition is fundamental for Kant.

So what does diagrammatic and constructive reasoning have to with this, that is, with the three-dimensional space in which we perceive stuff, the space in which we ourselves move and the space in which we do physics? This is a crucial part of Kant's theory that you are just not going to get from the diagrammatic approach, and you don't get it from my 1985 approach either. You do begin to get it in my 2000 paper "Geometry, construction, and intuition in Kant and his successors," where I introduce spatial perspectives and the movements of the observer by which she successively takes up one or the other perspective. The resulting structure is Helmholtzian, you have something like free mobility, and you have something like what we now call this space problem of Helmholtz and Lie. So that is where I take myself to be creating a bridge between the formal analysis of Euclidian constructive reasoning and this kind of corresponding formal analysis of our spatial perception.

GS: Michael, thanks for the interview.

Yes, Ethical Relativism is Self-Stultifying!

Majid Amini uses a Tarskian analysis to defend moral relativists from Bernard Williams' self-stultifying claim (Is Ethical Relativism Self-Stultifying? *The Reasoner*, 7(2), February 2013, pp. 18–19). Williams proposes three propositions:

1. 'Right' is defined as 'right in a given society';
2. 'Right in a given society' is understood in a functionalist sense; and
3. It is wrong for a person in one society to condemn or interfere with the values of another society.

This leads to a contradiction because (3) uses an absolutist moral term "wrong". Amini invokes Tarski's distinction between an 'object-' and a 'meta-language' and argues that the 'right' used in (1) is employed in the object-language, whilst the 'wrong' employed in (3) is employed in the meta-language, the language we *use* to *talk about* the object-language. Because the moral senses in (1) and (3) are employed at different levels of language, Amini seems to have dissolved the contradiction. I will construct Amini's case along the following lines, which capture, I believe, the argument:

A. The Ethical Relativist (ER) observes/imagines the variety, variability, incompatibility and incommensurability of ethical statements made by people across cultures and times.

B. (A) leads ER to the conclusion that there is no single true morality.

C. From (B) ER adopts (3) 'it is wrong for a person in one society to condemn or interfere with the values of another society'.

D. ER concludes from (A) and (B) that we do not have enough epistemological evidence to accurately judge which statements made at the object level take priority over others.

E. From (C and/or D), ER concludes that we must tolerate all ethical statements across all cultures and times.

The moral judgements observed/imagined by ER (at A) occur in the object-language. ER's absolutist-relativist position (C) 'is at a *meta* level of language use since she is "talking about" the language in which ordinary moral agents "talk about" their moral judgements' (Amini, 2013, p. 18, original emphasis). ER then moves to a meta-meta-level to develop her tolerance thesis (E). Because ER draws her absolute thesis of relativism at (C), a different level to (A), there is no inconsistency between beliefs.

Amini supports this with a couple of sub-arguments. He claims that (B) is really an epistemological stance, which is captured in (D). Since (C) is a moral conclusion based on an epistemological interpretation of (B), (B) and (C) occur in different categories and are therefore non-contradictory. Further, the toleration thesis at (E) can be given an additional epistemological reading.

I remain unconvinced. Claiming that ER is an epistemological meta-ethical thesis threatens a non-sequitor with the same force as the is/ought gap. *We cannot know which decision is the true one, therefore we should X*. Further, (3) employs 'wrong' and as I argue below, it seems more natural to read this in a moral sense. I therefore believe that the epistemological reading is wrong.

The second defence is rather short and in a way quite elegant:

i. From her object-level observations at (A), ER concludes (1) at meta-level (m).

ii. From (i), ER concludes that (D) at meta-level (n), leading to (E), the thesis of tolerance.

Here, then, we have a multi-level and multi-categorical structure to show that ethical relativism need not lead to contradiction.

However, applying Amini's theory to a dispute puts ER onto the horns of a dilemma, where she either accepts that her position is self-stultifying after all, or she embarks on an infinite and possibly vicious regress. Consider an Ethical Absolutist (EA) who reasons not from (A) to (B), but from (A′: 'there is one true moral code'), to (B′: 'we ought not take any moral lesson from the many different codes adopted throughout the world'). Here EA adopts a moral code based on independent meta-ethical considerations, and then reasons to (B′), finally concluding (C′: some societies have adopted the wrong moral code).

In this situation ER seems committed to tolerating EA's thesis. Consider, ER believes *both* that 'right' is defined as 'right in a given society' *and* 'right' is defined as 'absolutely right for every culture and time' (EA's absolutist version of 1). This reintroduces the contradiction and it seems that moral relativism is self-stultifying after all.

First, I need to dismiss Amini's interpretation of 'toleration'. Amini argues that ER's meta-level reasoning involves a stalemate in decision-making; she can neither condemn, nor condone other moral values (Amini, 2013, p. 19). However, ER believes that 'right' is defined as 'right in a given society' (1). Suppose that ER comes across a society that holds an absolutist moral stance, then (1) says that she has to agree that *in that society* moral absolutism is *right*. When we combine this with (3), it is clear that ER does not reach a stalemate at the meta-level: ER cannot condemn the deontological society (by 3), and she *has to* condone that society's moral code (by 1).

To escape the conclusion that ER must agree with EA, we could say that their dispute is really a meta-level dispute, whereby ER and EA disagree in the ways that they talk about the object level, and no contradiction arises from such a disagreement.

I am also unconvinced by this move. It relies on the meta-level being a non-moral one, and as I have argued this is hard to accept. If in (3) we have a moral 'wrong' at the meta-level then at some stage EA must assert (3′: we should condemn the values of another society, if that society is using erroneous moral reasoning'). And by (3), ER seems committed to accepting that EA is right at the meta-level to assert (3′). Contradiction re-established.

Moving to a further meta-meta-level doesn't seem to solve the problem either. Whilst EA and ER could disagree about the right way to interpret the object language at the meta-level, the 'right' here is just as moral as the 'wrong' (in 3), and this introduces a contradiction into ER's thoughts. Nor would moving to 'correct' escape, since it would be 'morally correct'. At any level, for ER to say that an absolutist position is right for EA because we *ought to be relativists* amounts to a contradiction, making ER assert relativism and absolutism.

In moral contexts, it seems that ER holds a contradictory view at least three levels. Whenever we change levels, the contradiction moves up with us. Unless ER applies her relativity thesis and concedes that EA is right, the debate moves up a level; we seem to be embarked on an infinite and vicious regress.

Andrew J Turner

Satisfiable and unsatisfied paradoxes: how closely related?

In 'The Unsatisfied Paradox' (*The Reasoner* 6(12), December 2012, p. 184–5), Peter Eldridge-Smith has argued that no unique solution for the logical paradoxes is likely to exist in the presence of the following two kinds of paradox:

1. The *Unsatisfied* kind, to which Eldridge-Smith assigns some paradoxes of his own invention, for instance, the insatiable predicate paradox: *P* is the predicate 'doesn't satisfy *P*'.

2. The *Satisfiable* kind which contains the Liar, the Russell-Zermelo paradox, the paradox of heterologicality and other paradoxes proposed by Eldridge-Smith like the predicate 'does not satisfy itself'.

Paradoxes of the first kind involve predicates unable to be applied with sense anywhere (they are *unsatisfied paradoxes*) whereas paradoxes of the second kind involve predicates which have a vast range of application but find special items at which application fails.

For instance, the truth/falsity predicate in the Liar has wide application but an expression pronouncing itself false can hardly be made sense of. Similarly, the definition of Russell's set R:

(1) $\forall x\ (x \in R \vee x \notin x)$

applies without problem to many sets (the set of all natural numbers, for instance, which is not self-membered, will be in R) and breaks down when applied to R itself.

In contrast, the predicate *P* = 'doesn't satisfy *P*' has no domain of unproblematic application. Here's Eldridge-Smith's claim (*ibidem*, p. 185):

> Semantically, the predicates of the Liar and Grelling's can be partially defined without paradox; yet the predicate of the Unsatisfied paradox cannot be partially defined, even though it seems to make some sense. If these paradoxes had a common cause, formally analogous reasoning would result in analogous paradoxical extensions. So, they seem to have more than one cause or causal factor.

I will offer a brief reflection, which rather than suggesting the impossibility of a shared solution to both kinds of paradoxes, hints at a common trait of them: both kinds of paradoxes emerge from expressions that seem to involve circularity in reference or quantification.

Let's first focus on the satisfiable kind. The Liar would yield a proposition about itself and (1), if it is to cause a paradox, would quantify over the very object it would define.

Both the Liar sentence and (1) are *diagonal* expressions. Both of them express (or attempt to) objects that would be different from all the objects they are about; that is to say, these expressions diagonalize out of any object they are about (or they would do so if they were meaningful enough).

If the Liar sentence were meaningful enough, it would state the falsity of some proposition; hence, the proposition it would express could never have the same truth value as the proposition it would be about; so, the former would be different from the latter: it would diagonalize out of it. But, if able to express a proposition, the Liar sentence would express a self-referential one; so, the Liar is an attempt of self-diagonalization.

(1) makes the set R different from any set *s* in the domain of the definition in at least one member, namely, *s*, which would be in R iff it were not in *s*. Therefore, (1), if taken to quantify also over the set it defines, would diagonalize out of the very set it defines.

In both cases, there is a type of (attempted) self-reference: the Liar would express a proposition that would be about itself; (1) would quantify over the very set it defines. And in both cases, the self-reference would bring about self-diagonalization, hence contradiction.

We can make intuitive the idea that no proposition we can produce (about the others, if any, I have little to say) is available to itself as a referent: think of it as the product of a thought act and try to figure out how you could manage to refer to the output of your thought while your thought is still in process. It would be like using the tool you want to produce in its own production process. Rejecting this type of circularity would turn the Liar into a nonpropositional sentence. Similarly, if an object T cannot be given independently of a definition D, then D cannot be about T because T is not available to D. If, accordingly, we regard (1) as unable to quantify over R, the paradox vanishes.

So, one is naturally led to conjecture that paradoxes of this sort would disappear if intensional objects (such as predicates, concepts, definitions, propositions) were recognized as incapable of quantifying over themselves on the grounds that they are not available to themselves. Let ϕ be any intensional object and let D be the function taking intensional objects to the domains of objects they refer to or quantify over. Then the assertion that no intensional object ϕ is available to ϕ can be expressed by this formula containing an iterated function:

(2) $\forall n_{\geq 1}\ (\phi \notin D^n(\phi))$

ϕ is neither one of the objects ϕ is about nor one of the objects which the objects ϕ is about are about, etc. To avoid ungrounded chains of reference, there must be some $m \in N$ such that $\forall p_{>m}\ (D^p(\phi) = \emptyset)$.

Now, consider Eldridge-Smith's predicate *P* = 'doesn't satisfy *P*'. The predicate, if it were such, would be about itself and would diagonalize out of itself in exactly the same way as the Liar or Russell's set R would. More importantly, the predicate is obviously banned by (2). If I were to pick causes for these

paradoxes and solutions to them, I would propose exactly the same cause (violation of (2)) and exactly the same solution: (2) reveals the objects involved aren't the intensional objects they seem to be.

Rabern, Rabern, and Macauley ('Dangerous Reference Graphs and Semantic Paradoxes', corollary 13, forthcoming in the *Journal of Philosophical Logic*) have shown that all sentential paradoxes with *finite* reference chains require referential circularity. I won't pretend my proposal here will turn out able to solve all sentential paradoxes. But it might well be able to deal with circularity paradoxes of the two kinds Eldridge-Smith has put forward.

Laureano Luna
IES Doctor Francisco Marin

News

Amsterdam Workshop on Truth, 13–15 March

The Amsterdam Workshop on Truth served as a meeting point for researchers working on more or less formal approaches to the philosophy of truth.

The first speaker was Volker Halbach, who distanced himself from his earlier work with Leon Horsten on the axiomatisation of Kripke's theory of truth in partial logic PKF on the grounds that mathematical induction is considerably weakened. Martin Fischer's talk showed whether or not certain paradoxes arising from the interaction of modalities are reducible to paradoxes of a single modality. Johannes Stern provided a proof-theoretic alternative to Halbach and Welch's work on understanding modal predicates as the complex predicate of truth modified by a necessity operator ("necessarily true") to circumvent the objection one may have to adopt Halbach and Welch's possible world semantics. Theodora Achourioti argued that in appropriate contexts truth exhibits intensional properties that resemble those of an S4 modal operator. Jönne Speck introduced tense operators to express Kripke's notion of groundedness within the object language of an augmented theory of truth.

Nina Gierasimczuk provided a means of assessing belief revision methods in terms of identifiability at the limit of the revision processes. Sonja Smets presented a problem in applications of Dynamic Epistemic Logic to collective learning scenarios due to the phenomenon of "information cascades", and suggested a way forward.

Graham Leigh presented a variety of mathematical techniques available to the proof-theoretic deflationary truth theorist, including infinitary cut elimination and model constructions. Carlo Nicolai presented an axiomatic compositional theory of truth with the syntax formalised in a theory of hereditarily finite sets.

Paul Egré presented the strict-to-tolerant consequence theory of truth he developed with Robert Van Rooij, Pablo Cobreros, and David Ripley, with a distinction made between strict and tolerant assertion. To continue this idea, Stefan Wintein presented a uniformed signed tableau calculus with strict and tolerant assertion and denial.

Giulia Terzian offered and assessed some proposals for making more precise the notion of "simplicity" of truth in the deflationist literature. In the form of a dialogue, Jeffrey Ketland defended the notion that semantic facts are not naturalistically reducible.

Two talks were historically informed. Iris Loeb challenged the view that a postscript that Tarski added in a later version of "Der Wahrheitsbegriff in den formalisierten Sprachen" indicated that he moved from a semantic universalist to an anti-universalist. Georg Schiemer presented methods in work by Carnap and Tarski that allowed them to recast a model-theoretic approach to metamathematics within type theory.

Albert Visser presented a simple construction of full satisfaction classes with properties such as σ_n correctness, schematic correctness and extensionality. Philip Welch summarised features common to a wide variety of revision theoretic mechanisms and presented "ineffable liars" that diagonalise past the determinateness operators definable in Hartry Field's theory of truth. Finally, Leon Horsten argued that there are natural theories of truth for the purposes of metamathematics that satisfy both the demand of being semantically conservative and extending the expressive power of the object language in an adequate way.

Abstracts and slides of the talks can be found here.

Cian Chartier
ILLC, Amsterdam

Logic, Knowledge and Language, 14–15 March

On the 14th and 15th of March 2013 the international conference Logic, Knowledge and Language was held in Brussels as a tribute to Paul Gochet's memory. Fourteen speakers who had interacted with Gochet on topics related to the fields of formal logic, philosophy of language, epistemology and ontology had been invited. Even though some of them were eventually prevented from joining the conference because of health problems or climatic conditions, all sessions were very rich and intense.

Based on joint work with Klaus Frovin Jørgensen, Patrick Blackburn's paper re-examined Prior's work on the semantics of temporal indexicals through the lens of modern hybrid logic. By indexing propositional symbols with names of moments of time at which the propositions are true ($@_i p$: p is true at i), we can give an account of simultaneousness of (past and future) events, as well as express complex propositions relying on Reichenbach's distinctions between points of speech, of reference and of event. In such a system, an important role can played by the "now"-operator acting as an index (or "rigidifier") for propositions.

Based on joint work with Henrik Boensvang and Rasmus Rendsvig, Vincent Hendricks' talk showed how multi-agent modal logic (involving epistemic logic, game theory and judgment aggregation) could be applied to formalize phenomena involving "social proof" such as *informational cascades*—observing many individuals make the same choice provides evidence that outweighs one's own judgment based on private signal—and the *bystander effect*—individuals do not offer any means of help to the victim in an emergency situation when other individuals are present.

After commenting on the work that has been done in the fields of logic *for* knowledge as well as of logic *of* knowledge, Jacques Dubucs showed how logic can also be seen as *providing insights* to knowledge. In particular, analysis requires one to enrich available information by considering information that is not provided in what was given as well as by considering objects of another kind than the ones actually under investigation.

Susan Haack claimed that epistemology requires a theory of beliefs. Even though she concedes to W.V.O. Quine that

there are no sharply specifiable identity conditions for beliefs, to S. Stich that a functionalist account of beliefs is inadequate and to P. and P. Churchland that beliefs cannot be smoothly reduced to neurophysiological states, she still claims that we cannot do without knowing subjects and their beliefs, an (modestly naturalistic) account of which should involve three interlocking dimensions: behavioral, neurophysiological and sociohistorical.

In order to give an account of Henri Poincaré's claim that there is a need for intuition (>< purely formal logic) in mathematical proofs, Gerhard Heinzmann discussed several recent proposals for the formal characterization of informal provability (especially Rahman's dialogical type theoretical reconstruction of the Erlangen notion of a Constructive Language and Hintikka's Independence-Friendly Logic) before developing his own reverse project of an informal characterization of formal provability.

Willard Van Orman Quine's and Paul Gochet's nominalisms were the focus of discussion of three talks.

Hourya Sinaceur gave an account of Gochet's methodological nominalism in the view of Ernst Cassirer's distinction between substantial and functional identity; the question is not so much to tell what a proposition is than to ask which functions it fulfils and whether these functions could not be fulfilled by sentences.

Jean-Maurice Monnoyer showed how Gochet highlighted some of the main tensions and difficulties in Quine's nominalist positions. By commenting Quine's "Logistical approach to the problem of ontology" and his "Confessions of a confirmed extensionalist", Monnoyer discussed the feasibility of the nominalist project in the light of some of Gochet's own comments.

Dagfinn Føllesdal provided an idea of the way Quine had planned to rewrite *Word and Object* around 1998, i.e., two years before his death. The problems which Quine wanted to solve were amongst the ones Gochet (and others) had stressed. First, Quine wanted to involve some theory of perception in his book in order to give an account of stimulation (which is central as regards observation sentences) as empirically accessible. Secondly, Quine wanted to work out a new theory of modalities in order to show that we need a non-unified semantics: singular terms do not have the same semantics as general terms; no descriptive theory of names is possible.

Bruno Leclercq
Philosophy, Université de Liège

Philosophy of Information, 27–28 March

The fifth workshop on the Philosophy of Information took place at the University of Hertfordshire 27th to 28th March 2013, organised by the UNESCO Chair in Information and Computer Ethics in collaboration with the AHRC project 'Understanding Information Quality Standards and their Challenges' (2011–2013). The topic was the intersection between qualitative and quantitative views of information. Nineteen papers were presented whose themes were diverse yet united by the application of informational methods.

The keynote speaker, Dr Leonelli (Exeter) discussed *Data integration and the management of information in contemporary biology*. In particular, she reflected on what it means and takes to integrate data to acquire new knowledge about biological entities and processes, focusing specifically on the facilitating role of data-sharing tools. Continuing the biology theme, Russo (Brussels and Kent) and Illari (Hertfordshire and UCL) argued that biomarkers research can be used as a test case for an informational account of causality, illustrating how even in complex cases, the idea of tracing a causal link could still be vital to the scientific practice.

In an interesting perspective on consciousness, Gamez (Sussex) considered the question "*Are Information or Data Patterns Correlated with Consciousness?*" He discussed how experimental work on the correlates of consciousness is attempting to identify the relationship between phenomenal and physical states. While information integration is currently the only explicitly informational theory of consciousness, other algorithms could be used to identify information patterns in the brain that could be correlated with consciousness.

Algorithms were also discussed by Gobbo (L'Aquila) and Benini (Leeds) in their co-authored paper on computational complexity bringing together an aspect of information in Computer Science that is quantitative and qualitative at the same time: measuring, an act that is often described as 'describing a phenomenon by a number'. Other papers that were concerned with modeling were given by Coghill (Aberdeen) and Antón (Sevilla), while Hamami (Vrije) approached the topic from a mathematical perspective

Two papers considered information security and individual rights. Pym (Aberdeen) argued that information security is concerned with the protection of the attributes of items of information that are of value to the owners, users, and stewards of that information. Taddeo's (Warwick) paper addressed two challenging and ethical questions; namely, whether the transformations engendered by the information revolution create the need for individuals to claim new rights for themselves as agents living the onlife, and what such rights should be. Primiero (Ghent) looked at distrust and mistrust relations for privatively and modally qualified information channels.

Many of the papers referenced the work on the philosophy of information carried out by Floridi (Hertfordshire and Oxford). His paper, *Maker's Knowledge and the synthetic uninformative*, sought to understand what kind of knowledge this is as when Alice (knows or rather) is informed (holds the information) that Bob's coffee is sweetened because she just put two spoons of sugar in it.

The Workshop demonstrated that the philosophy of information is a multi-faceted and topical field of research, not only in itself, but also as a conceptual framework for other established philosophical domains, allowing elaboration from an informational perspective.

Interested readers can see all the abstracts on the website of Society for the Philosophy of Information and indeed, may be inspired to join. Please visit here for further information.

Penny Driscoll
PA to Prof. Luciano Floridi, University of Hertfordshire

Thinking and Rationality, 29 March–7 April

The workshop on "Thinking and Rationality" was organized as an event within the 4th World Congress and School in Universal Logic (UNILOG 2013), held in Rio de Janeiro between March 29–April 7, 2013. The main intention was to discuss, not only logical systems and logic theories, but why and how logic and thinking can coexist and help to model, express and understand

human cognition.

Contemporary logic offers several theories that intend to account for reasoning about truth, knowledge, beliefs, norms, preferences, etc. But also, twentieth century logic has shown that what is called "classical" logic is sometimes too demanding, and that it makes full sense to reason under more liberal attitudes, usually by criticizing certain classical principles, which results in reasoning under constructive paradigms (intuitionism), reasoning under contradictions (paraconsistency), multialethic reasoning (many-valuedness), reasoning under uncertainty (fuzziness), and so on. All this dynamic discussion is confronted and complemented with other tools for modeling decision making and intelligent interaction that take into account information states of agents and information flow, such as belief revision, preference revision, multimodal and dynamic logics, reasoning in societies against individual reasoning, etc. So logic nowadays naturally interacts with games, with social choice theory, with information, with probabilities, and grows in many other directions. Logicians and philosophers recognize the specificities of causal reasoning and counterfactual thinking, of reasoning under economic pressure, as well as the cultural influences on thinking and reasoning.

The workshop focused on several topics of this substantial agenda, not losing sight of the discussion of how, and in which sense, logic can be normative or descriptive for thought. The workshop consisted of fourteen contributed talks and an invited keynote talk.

Some representative talks in the spirit of the workshop are described below. Details of the other talks, by Samir Gorsky, Frode Bjordal, Rafael Azevedo, Mamede Lima-Marques and Manoel Tenorio Abilio Rodrigues, Marcelo Coniglio and Tarcisio G. Rodrigues, Sylvain Lavelle, Kent Hurtig and Luis Menasché Schechter can be found here.

Topics such as logical knowledge versus ordinary reasoning and discussions of how someone can know Modus Ponens and still reject it were tackled by Diego Tajer ("Logical Knowledge and Ordinary Reasoning; More than considering, Less than Believing"). Claudio Pizzi offered an analysis of the distinction between rationality and reasonableness in the context of theories of rational inference typical of the twentieth century ("Rational and Reasonable Inference"). On Pizzi's view, reasonable inference is rational, but the converse is not true.

On the methodological side, a study of the reconciliation between algebra, combinatorics and logic, three pillars of human thought, was proposed and discussed with emphasis on the resulting heuristic gain (Mariana Matulovic and Walter Carnielli: "Polynomials as Universal Tools: Unifying Proofs from Classical to Non-Classical Logics"). The role of the Logics of Formal Inconsistency (a family of paraconsistent logics that have consistency as a primitive notion) was examined together with its relation to non-monotonic reasoning (Ana Cholodovskis: "LFIs and Non-Monotonicity"), as well as computer applications in the tradition of semantic networks (Juliana Bueno-Soler: "Paraconsistent Description Logics from the Formal-Consistency Viewpoint").

The alleged inevitability of Gödel's Incompleteness Theorems was also challenged (Walter Carnielli: "Evading Gödel's Theorems?") by showing that in logical environments aware of certain subtleties opaque to traditional logic the usual proofs of Gödel's First Incompleteness Theorem do not obtain, nor is Gödel's Second Incompleteness Theorem a consequence of the first. The ties between logic and rationality were reassessed by Otávio Bueno (the keynote speaker, "Logic and Rationality") by revisiting issues such as the conjunction fallacy (Tversky and Kahneman), the early formulation of the calculus in terms of infinitesimals and its potentially contradictory theory, the perplexities around Dirac's delta function and the Bohr model of the atom. Strategies such as consistency-preserving and inconsistency-tolerant strategies were discussed. The conclusion is that it is still possible to maintain rational accounts (such as paraconsistent ones, or, more generally, accounts based on the Logics of Formal Inconsistency) without excluding potentially inconsistent beliefs, as long as one does not conflate inconsistency and triviality.

Walter Carnielli
Juliana Bueno-Soler
Marcelo Coniglio
CLE, UNICAMP

Collective Decision Making, 11–12 April

The ILLC Workshop on Collective Decision Making brought together participants from disciplines including logic, philosophy, economics, operations research, computer science, and artificial intelligence. With such a broad sweep it is perhaps unsurprising that the topics covered were extremely diverse. Though banal, the main unifying theme was the inherent difficulty involved in making collective decisions. This generality is borne out more precisely by classic impossibility results in social choice theory, the field which specifically considers formal procedures for collective decision making. Many of the talks may be interpreted as attempts to come to terms with these mathematical theorems.

Umberto Grandi's opening on "Restricted Manipulation in Iterative Voting" is a prime example. The Gibbard-Satterthwaite theorem, ensuring the manipulability of any reasonable voting procedure, is typically taken as a negative result, but was here turned into a positive. Iterative voting allows successive agents opportunities to update their votes according to their preferences. The immediate concern for iterative processes is convergence, and specific conditions entailing convergence were described. Following this, results concerning the experimental evaluation of the procedure were presented, showing a general increase in desirables such as Condorcet efficiency and Borda scores.

Game-theoretically, iterative processes typically converge to desirable Nash equilibria. Such processes thus made appearances other talks. For example, Nicolas Maudet presented recent results concerning "Voting Rules and Strategic Candidacy". Previously untried voting rules were subjected to candidacy games, a framework where candidates themselves have preferences about the outcome of an election, and are iteratively allowed to enter or withdraw. A mix of positive and negative results were presented: it seems that Condorcet-consistent rules ensure convergence more often than other rules.

Two talks considered judgment aggregation. The basic discursive dilemma involves three judges debating three issues, p, q, and $p \wedge q$, perhaps interpreted as motive, opportunity and guilt. Two judges believe p, two q, but only one $p \wedge q$. The problem is how to aggregate these into a consistent judgment set.

Daniele Porello described a proof theoretic analysis under which majority aggregation cannot derive a contradiction. The crucial components are an additive translation and the absence

of inferences equivalent to the structural rule weakening. This original work potentially offers direct insight into the discursive dilemma, allowing better understanding of the problem.

Dorothea Baumeister focused on the specific framework of premise based judgment aggregation, presenting various results concerning the computational complexity of manipulation and bribery. Though computational social choice is still relatively young, by now this is a firmly established approach in the field, mitigating undesirable theoretical results with computational difficulty and thus practical infeasibility.

Each day of the workshop ended with talks reconsidering more venerable ideas, though of very different characters. Martin van Hees presented a new formalization of one formulation of Kant's Categorical imperative. Burak Can gave a slick presentation reducing the characterization of the Kemeny distance from five to four logically independent axioms. Despite the theoretical difficulties involved in collective decision making, the workshop proved that there are still interesting questions to be asked and answers to be given.

Justin Kruger
ILLC, Amsterdam

Calls for Papers

The Square of Opposition: special issue of *History and Philosophy of Logic*, deadline 30 June.
Infinite Regress: special issue of *Synthese*, deadline 1 July.

What's Hot in ...

Logic and Rational Interaction

Now that the term is approaching its end, it is about time to find some readings for the coming holidays. Just in time, there are some fascinating new online resources centering on logic and rational interaction.

The active community at lesswrong.com has composed an incredible collection of articles related to decision theory. Just this march, they came up with a compelling overview article with the instructive name Decision Theory FAQ. The article is just as formal as it needs to be, introducing the big debates in and behind decision theory. The topics covered range from the normative vs. descriptive debate over a discusion of risk vs. uncertanty to a motivation of the von Neumann-Morgenstern axioms. A big last section is devoted to a discusion of Newcomb's paradox and its worth for discussing decision procedures.

For some more media: Stephan Hartmann and Hannes Leitgeb of MCMP have composed an eight week online video introduction to mathematical philosophy, starting early July. Requiring no mathematical background, the course will cover mathematical philosophy's treatment of classical topics such as truth, confirmation and rational belief. The kick off video can be found here, the course itself can be freely accessed on coursera.

For anyone willing to learn some logic and seeking for a point to start, Cambridge emeritus Peter Smith has composed the guide Teach yourself Logic. For almost any level of expertise and any logical topic of interest this guide offers some valuable lists of useful readings.

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 Rasmus Rendsvig, our web manager or to the loriweb address.

Dominik Klein
TiLPS, Tilburg University

Uncertain Reasoning

Suppose an urn contains 100 (identically shaped etc.) balls, 30 of which are red. Few uncertain reasoners would disagree with the claim that 30% is a natural probability assessment for the event 'a red ball will be extracted from the urn'. It would be surprising if disagreement was to emerge here, because the available information makes the answer cognitively compelling to most of us. Even de Finetti (1980: "Probabilità". *Enciclopedia Einaudi*, p. 1146) granted this much, and referred to the above as an example of "public probabilities".

The situation changes dramatically if we take events such as 'a nuclear weapon will be used in a terroristic attack in the next decade'. This is one example of what is often referred to as a *unique event*. The salient feature of the problem of quantifying our uncertainty in cases of this sort is that little or no insight can be derived from experience (data, frequencies, statistics, etc.). In addition no clear cut combinatorial reasoning (as in the urn above) can be invoked. In particular, the choice of the fundamental partition over which the probability mass should be distributed appears to be very far from being robustly determinable. Yet many important decisions demand that we quantify our degrees of belief on unique events. The question as to how we should rationally do so, is one for which uncertain reasoners give diverging answers.

Those who require that probability should come with a unique way of computing its values, possibly by reflecting some objective feature of the world, tend to agree that the *probability* of unique events is meaningless. Venn, Keynes, Knight, Shackle are just a handful of names in a large group of people who put forward such a requirement, albeit from rather distinct angles. Subjectivist like de Finetti and Lindley would rather say that *all events are unique* in the sense that, say empirical frequencies, cannot constrain our probability assessments in a *logical* way. And there are of course many intermediate positions.

S.S. Khemlani, M. Lotstein and P. Johnson-Laird (2012: "The Probabilities of Unique Events". *PLoS ONE* 7(10): doi:10.1371/journal.pone.0045975.) provides a very interest-

ing take on the problem by looking at the experimental evidence of how people reason about the probability of unique events. Rather than working with concocted problems, as in the "Linda the bank teller" experiment of Kahnemann and Tversky, the authors focus on unique events of the sort which are frequently found in the news, i.e., the re-election of president Obama in november 2012, the use of nuclear weapons in a terroristic attack etc.

One central finding of the paper is interpreted as extending to everyday-life unique events the well-established observations to the effect that people perform poorly in terms of satisfying the constraints that the probability of two events put on the coherent estimation of the probability of their conjunction. In addition it is found that deviations from the norms of probability are less significant when the quantitative representation of uncertainty occurs on an increasingly coarse scale.

The experimental setting builds on the framework of mental models which relies on a two-layered cognitive system. The first such layer is deputed to performing qualitative, non-numerical, reasoning in the form of iconic representations. It is called "intuitive" and "pre-numerical" by the authors because it corresponds to the kind of reasoning which is found in "infants, animals and adults in non-numerate cultures". The second layer is deputed to mapping the iconic representation of degrees of belief to quantitative estimates of uncertainty that allow for deliberation. The authors note that

> The iconic representations support only intuitive verbal descriptions of beliefs such as: President Obama is *likely* to be re-elected.

It would be very interesting to know whether comparative judgments of likelihood of the form 'it is not less probable then' (see my March 2013 column) are still within the computational means of the iconic system. For this would give very useful insights on the role played by the quantitative, deliberative, system in ensuring the additivity of the qualitative probability relation. This in turn would raise a more general and very interesting question, namely whether experimental evidence can provide useful insights to sharpen the normative debate on the foundations of probability. With respect to this, some findings reported in the paper (Table 2) show that experimental subjects concur significantly on the order with which they rank certain unique events. This clearly suggests the general untenability of the frequentist claim that the probability of unique events is meaningless.

Hykel Hosni
Scuola Normale Superiore, Pisa
CPNSS, LSE

Events

May

Logic in Question: Paris, France, 2–3 May.
ICLR: 1st International Conference on Learning Representations, Scottsdale, Arizona, 2–4 May.
SDM: 13th SIAM International Conference on Data Mining, Austin, Texas, USA, 2–4 May.
Analogy: The Role of Analogy in Argumentative Discourse, University of Coimbra, Portugal, 3–4 May.

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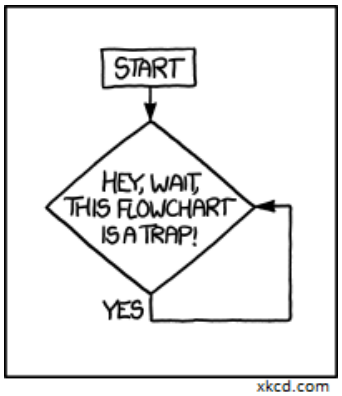

O&M: Ontology and Methodology, Virginia Tech, 4–5 May.
CTFoM: Category-Theoretic Foundations of Mathematics, Irvine, California, 4–5 May.
IMLCS: 2nd International Conference on Machine Learning and Computer Science, Kuala Lumpur, Malaysia, 6–7 May.
MSDM: 8th Workshop on Multiagent Sequential Decision Making Under Uncertainty, Saint Paul, Minnesota, USA, 6–7 May.
EMAS: 1st International Workshop on Engineering Multi-Agent Systems, Saint Paul, Minnesota, USA, 6–7 May.
ALA: Adaptive and Learning Agents Workshop, Saint Paul, Minnesota, US, 6–7 May.
MSDM: Multiagent Sequential Decision Making Under Uncertainty workshop, Saint Paul, Minnesota, USA, 6–7 May.
AAMAS: 12th International Conference on Autonomous Agents and Multiagent Systems, Saint Paul, Minnesota, USA, 6–10 May.
ADMI: 9th International Workshop on Agents and Data Mining Interaction, Saint Paul, Minnesota, USA, 6–10 May.
AISB: Workshop on The Emergence Of Consciousness, London, 9 May.
PhiLang: 3rd International Conference on Philosophy of Language and Linguistics, University of Lodz, Poland, 9–11 May.

SSHAP: 2nd Annual Conference of the Society for the Study of the History of Analytic Philosophy, Indiana University, 9–11 May.
PoI&IQ: Philosophy of Information and Information Quality, Lund, Sweden, 10 May.
Intensionality in Mathematics: Lund, Sweden, 11–12 May.
Frege: International Frege Conference, Wismar, Germany, 12–15 May.
UK-CIM: Causal Inference in Health and Social Sciences, University of Manchester, 14–15 May.
Reduction and Emergence in the Sciences: LMU Munich, 15 May.
MCS: 11th International Conference on Multiple Classifier Systems, Nanjing University, China, 15–17 May.
Mathematising Science: University of East Anglia, Norwich, 16–17 May.
ISCLC: 9th International Symposium of Cognition, Logic and Communication: Perception and Concepts, Riga, Latvia, 16–18 May.
UQ4E: Uncertainty Quantification for Extremes, Durham University, 17 May.
ArgDiaP: 10th Conference on Argumentation, Dialogue and Persuasion, Warsaw, Poland, 18 May.
LMP: 13th Philosophy of Logic, Math and Physics Graduate Conference, Ontario, Canada, 18–19 May.
SLACRR: St. Louis Annual Conference on Reasons and Rationality, St Louis, MO, 19–21 May.
TAMC: 10th Conference on Theory and Applications of Models of Computation, Hong Kong, China, 20–22 May.
NIDISC: 16th International Workshop on Nature Inspired Distributed Computing, Boston, Massachusetts USA, 20–24 May.
Carnap: Lectures and Graduate Conference, Ruhr-Universität Bochum, 21–23 May.
Modes of Explanation: Paris, France, 21–25 May.
Uncertain Reasoning: St. Pete Beach, Florida, USA, 22–24 May.
Putnam: Putnam's Model-Theoretic Arguments, MCMP, Munich, 23 May.
NVWF: Philosophy of Science in a Forest, The Netherlands, 23–25 May.
Truth & Paradox: MCMP, Munich, 24–25 May.
EI&I: Evolution, Intentionality and Information, University of Bristol, 29–31 May.
SILFS: Postgraduate conference in Logic and Philosophy of Science, Urbino, Italy, 29–31 May.
AIME: Artificial Intelligence in Medicine, Murcia, Spain, 29 May–1 June.
Argumentation in Mathematics: University of Groningen, 30 May.
LoQI: Logic, Questions and Inquiry, Paris, France, 30 May–1 June.
Frege Puzzles: Reference and Frege Puzzles, Umeå University, 31 May.
Graduate Epistemology Conference: University of Edinburgh, 31 May–1 June.

June

Benelearn: 22nd Belgian-Dutch Conference on Machine Learning, Nijmegen, Netherlands, 3 June.
Formal Epistemology Festival: Toronto, 3–5 June.
BSPS: British Society for the Philosophy of Science Annual Conference, University of Exeter, 4–5 June.
BAYSM: Bayesian Young Statistician Meeting, Milan, Italy, 5–6 June.
BISP: 8th Workshop on Bayesian Inference in Stochastic Processes, Milan, Italy, 6–8 June.
Logic of Simplicity: Carnegie Mellon University, Pittsburgh, USA, 7–9 June.
LORI: 4th International Workshop on Logic, Rationality and Interaction, Hangzhou, China, 9–12 June.
CADE: 24th International Conference on Automated Deduction, Lake Placid, USA, 9–14 June.
Necessity, Analyticity & A Priori: Oslo, 10–11 June.
ICAIL: 14th International Conference on Artificial Intelligence & Law, Rome, Italy, 10–14 June.
IWINAC: 5th International Work-Conference on the Interplay between Natural and Artificial Computation, Palma de Mallorca, Spain, 10–14 June.
Priestfest: Conference in honour of Graham Priest, University of Melbourne, 12–14 June.
SPE: 6th Semantics and Philosophy in Europe Colloquium, St. Petersburg, Russia, 12–14 June.
INEM: Conference of the International Network for Economic Method, Erasmus University Rotterdam, The Netherlands, 13–15 June.
SocPhilPsych: 39th Meeting of the Society for Philosophy and Psychology, Brown University, Providence, RI, 13–15 June.
CMNA: 13th Workshop on Computational Models of Natural Argument, Rome, Italy, 14 June.
AALP: Annual Meeting of the Australasian Association for Logic, University of Melbourne, 15–16 June.
ICML: 30th International Conference on Machine Learning, Atlanta, 16–21 June.
TRoREC: The Reach of Radical Embodied or Enactive Cognition, University of Antwerp, 17–19 June.
DGL: Decisions, Games, & Logic, Stockholm, Sweden, 17–19 June.
LOGICA: Hejnice, Czech Republic, 17–21 June.
TAP: 7th International Conference on Tests and Proofs, Budapest, Hungary, 18–19 June.
GP@50: The Gettier Problem at 50, University of Edinburgh, 20–21 June.
ICFIE: 2nd International Conference on Fuzzy Information and Engineering, Kanyakumari, India, 22–23 June.
Frege@Striling: Freges Epistemology of Basic Logical Laws, University of Stirling, 22–23 June.
ISF: 33rd International Symposium on Forecasting, Seoul, Korea, 23–26 June.
HDIA: High-Dimensional Inference with Applications, University of Kent, Canterbury, 24–25 June.
CMFP: Constructive Mathematics Conference, Serbia, 24–28 June.
IFSA-NAFIPS: Edmonton, Canad, 24–28 June.
CSR: 8th International Computer Science Symposium in Russia, Ekaterinburg, Russia, 25–29 June.
BW8: 8th Barcelona Workshop on Issues in the Theory of Reference, Barcelona, 26–28 June.
Cognitio: Montréal, Canada, 26–28 June.
Cognition: Ruhr-University-Bochum, 27–29 June.
Roles of Knowledge: University of Cambridge, 28–29 June.
Applied Philosophy: Society for Applied Philosophy Annual Conference, University of Zurich, 28–30 June.

July

LMiAP: 7th Latin Meeting in Analytic Philosophy, Institut Jean Nicod, Paris, 1–2 July.
CaEitS: Causality and Experimentation in the Sciences, Paris, 1–3 July.
CEPE: Ambiguous Technologies: Philosophical Issues, Practical Solutions, Human Nature, Lisbon, Portugal, 1–3 July.
SIROCCO: 20th International Colloquium on Structural Information and Communication Complexity, Ischia, Italy, 1–3 July.
Influences on the Aufbau: MCMP, Munich, 1–3 July.
CiE: The Nature of Computation, Milan, Italy, 1–5 July.
ISIPTA: 8th International Symposium on Imprecise Probability: Theories and Applications, Compiegne, France, 2–5 July.
IC-EpsMsO: 5th International Conference on Experiments/Process/System Modeling/Simulation/Optimization, Athens, Greece, 3–6 July.
YSM: Young Statisticians' Meeting, Imperial College London, 4–5 July.
Carnap on Logic: MCMP, Munich, 4–6 July.
ECSQARU: 12th European Conference on Symbolic and Quantitative Approaches to Reasoning with Uncertainty, Utrecht University, The Netherlands, 7–10 July.
AAP: Australasian Association of Philosophy Conference, University of Queensland, 7–12 July.
GDRR: 3rd Symposium on Games and Decisions in Reliability and Risk, County Cork, Ireland, 8–10 July.
CCA: Computability and Complexity in Analysis, Nancy, France, 8–10 July.
ICALP: 40th International Colloquium on Automata, Languages and Programming, Riga, Latvia, 8–12 July.
Scepticism: New Perspectives on External World Scepticism, MCMP, LMU Munich, 9–10 July.

What Can Category Theory Do For Philosophy?
University of Kent, Canterbury, 9–11 July

Gödel: From Logic to Cosmology, Aix-en-Provence, 11–13 July.
IUKM: 3rd International Symposium on Integrated Uncertainty in Knowledge Modelling and Decision Making, Beijing, China, 12–14 July.
AAAI: 27th AAAI Conference on Artificial Intelligence, Bellevue, Washington, USA, 14–18 July.
StaRAI: 3rd Workshop on Statistical Relational Artificial Intelligence, Bellevue, Washington, USA, 15 July.
ACSL: Workshop on Approaches to Causal Structure Learning, Bellevue, WA, USA, 15 July.
EetN: Formal Methods in Philosophy, Gdańsk, Poland, 15–17 July.
IACAP: Annual Meeting of the International Association for Computing and Philosophy, University of Maryland at College Park, 15–17 July.
PLS: 9th Panhellenic Logic Symposium, National Technical University of Athens, Greece, 15–19 July.
AI4FM: 4th International Workshop on the use of AI in Formal Methods, Rennes, France, 22 July.
DMIN: International Conference on Data Mining, Las Vegas, USA, 22–25 July.
LC2013: Logic Colloquium, Évora, Portugal, 22–27 July.
FoP: Foundations of Physics, LMU, Munich, 29–31 July.
Uncertainty Handling: Practical and Theoretical Concerns on Uncertainty Handling in AGI, Beijing, China, 31 July.
AGI: 6th Conference on Artificial General Intelligence, Beijing, China, 31 July–3 August.

August

AIBD: 1st Workshop on Artificial Intelligence for Big Data, Beijing, China, 3–4 August.
ITDAS: International Workshop on Information and Trust Dynamics in Artificial Societies, Beijing, China, 3–5 August.
WL4AI: Weighted Logics for AI workshop, Beijing, China, 3–5 August.
GKR: Graph Structures for Knowledge Representation and Reasoning, Beijing, China, 3–5 August.
NRAC: 10th International Workshop on Nonmonotonic Reasoning, Action and Change, Beijing, China, 3–5 August.
TAFA: 2nd International Workshop on Theory and Applications of Formal Argumentation, Beijing, China, 3–5 August.
IJCAI: 23rd International Joint Conference on Artificial Intelligence, Beijing, China, 3–9 August.
WCP: 23rd World Congress of Philosophy, Athens, Greece, 4–10 August.
BLAST: Chapman University, Southern California, 5–9 August.
KSEM: International Conference on Knowledge Science, Engineering and Management, Dalian, China, 10–12 August.
MLG: 11th Workshop on Mining and Learning with Graphs, Chicago, 11 August.
LMoGDM: Logical Models of Group Decision Making, Düsseldorf, Germany, 12–16 August.
WoLLIC: 20th Workshop on Logic, Language, Information and Computation, Darmstadt, Germany, 20–23 August.
Prior: Arthur Prior Centenary Conference, Oxford, 21–22 August.
RACR: 4th International Conference on Risk Analysis and Crisis Response, Istanbul, Turkey, 27–29 August.
EPSA: European Philosophy of Science Association, University of Helsinki, Finland, 28–31 August.
EoM: Epistemology of Modality, University of Lisbon, 29–31 August.

September

ICSCCW: 7th International Conference on Soft Computing, Computing with Words and Perceptions in System Analysis, Decision and Control, Izmir, Turkey, 2–3 September.
LSFA: 8th Workshop on Logical and Semantic Frameworks with Applications, Sao Paulo, Brazil, 2–3 September.
DiAL: Dialectic in Aristotle's Logic, Groningen, Netherlands, 2–4 September.
CSL: 22nd EACSL Annual Conference on Computer Science Logic, Turin, Italy, 2–5 September.
ECAL: 12th European Conference on Artificial Life, Taormina, Italy, 2–6 September.
ENPOSS: European Network for the Philosophy of the Social Sciences and the Philosophy of Social Science, University of Venice Ca' Foscari, 3–4 September.
Many-Val: Games, Decisions, and Rationality, Prague, Czech Republic, 4–6 September.
WPMSIIP: 6th Workshop on Principles and Methods of Statistical Inference with Interval Probability, Switzerland, 5–10 September.

MCU: Machines, Computations and Universality, University of Zurich, 9–12 September.
ITA: 5th International Conference on Internet Technologies and Applications, Glyndwr University, Wrexham, North Wales, UK, 10–13 September.
HAIS: 8th International Conference on Hybrid Artificial Intelligence Systems, Salamanca, Spain, 11–13 September.
SOCO: 8th International Conference on Soft Computing Models in Industrial and Environmental Applications, Salamanca, Spain, 11–13 September.
SEFA: Seventh Meeting of the Spanish Society for Analytic Philosophy, University Carlos III, Madrid, 11–14 September.
AIGM: 3rd Workshop on Algorithmic issues for Inference in Graphical Models, Paris, 13 September.
CLIMA: 14th International Workshop on Computational Logic in Multi-Agent Systems, Corunna, Spain, 16–17 September.
SUM: 7th International Conference on Scalable Uncertainty Management, Washington DC, 16–18 September.
SIFA: Graduate Conference on Language, Logic and Mind, University of Cagliari, 16–18 September.
CLPS: International Conference on Logic and Philosophy of Science, University of Ghent, 16–18 September.
ASAI: Argentine Symposium on Artificial Intelligence, UNC, Córdoba Capital, Argentina, 16–20 September.
KI: 36th Annual Conference on Artificial Intelligence, Koblenz, 16–20 September.
DKB: Dynamics of Knowledge and Belief, Koblenz, Germany, 16–20 September.

PROGIC

The sixth workshop on Combining Probability and Logic. Special focus: combining probability and logic to solve philosophical problems. Munich, 17–18 September

MATHEMATICAL VALUES: London, 17–19 September.
CAEPIA: 15th Conference of the Spanish Association for Artificial Intelligence, Madrid, Spain, 17–20 September.
IJCCI: 5th International Joint Conference on Computational Intelligence, Algarve, Portugal, 20–22 September.
FOTFS: History and Philosophy of Infinity, Cambridge, UK, 20–23 September.
PT-AI: Philosophy and Theory of Artificial Intelligence, Oxford, 21–22 September.
TBILLC: 10th International Tbilisi Symposium on Language, Logic and Computation, Georgia, 23–27 September.
AIAI: 9th IFIP International Conference on Artificial Intelligence Applications and Innovations, Paphos, Cyprus, 30 September–2 October.

OCTOBER

APMP: 2nd International Meeting of the Association for the Philosophy of Mathematical Practice, University of Illinois at Urbana-Champaign, USA, 3–4 October.
LORI: 4th International Workshop on Logic, Rationality and Interaction, Zhejiang University, Hangzhou, China, 9–12 October.
INVESTIGATING SEMANTICS: Ruhr-University-Bochum, 10–12 October.
EXPERIMENTAL PHILOSOPHY: State University of New York, Buffalo, 11–12 October.

INDUCTIVE LOGIC AND CONFIRMATION IN SCIENCE

University of Kent, Canterbury, 17–18 October

IDA: 12th International Symposium on Intelligent Data Analysis, London, UK, 17–19 October.
FPMW: French PhilMath Workshop, Paris, France, 17–19 October.
ICPI: International Conference on Philosophy of Information, Xian, China, 18–21 October.
LENLS: Logic and Engineering of Natural Language Semantics, Kanagawa, Japan, 27–28 October.
HAPOC: 2nd International Conference on the History and Philosophy of Computing, Paris, France, 28–31 October.

COURSES AND PROGRAMMES

Courses

IGSAR: 1st Interdisciplinary Graduate School on Argumentation and Rhetoric, Polish Academy of Sciences, Warsaw, Poland, 16–18 May.
BFAS: Spring School on Belief Functions Theory and Applications, Carthage, Tunisia, 20–24 May.
NORDIC SPRING SCHOOL IN LOGIC: Nordfjordeid, Norway, 27–31 May.
RISS-WOW: 2nd Robotic International Summer-School, Robots as Intelligent Systems Working in the Outer World, CAAS, Dubrovnik, Croatia, 17–22 June.
ACAI SUMMER SCHOOL 2013: Computational Models of Argument, King's College London, UK, 1–5 July.
EASSS: 15th European Agent Systems Summer School, Kings College London, 1–5 July.
ESSLLI: 25th European Summer School in Logic, Language and Information, Heinrich Heine University in Düsseldorf, Germany, 5–16 August.
MLSS: The Machine Learning Summer School, Max Planck Institute for Intelligent Systems, Tübingen, Germany, 26 August–6 September.
ETHICSCHOOL: Virtual Summerschool on Ethics of Emerging Technologies, 9–13 September.

Programmes

APHIL: MA/PhD in Analytic Philosophy, 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.
MASTER PROGRAMME: Philosophy of Science, Technology and Society, Enschede, the Netherlands.
MA IN COGNITIVE SCIENCE: School of Politics, International Studies and Philosophy, Queen's University Belfast.

MA in Logic and the Philosophy of Mathematics: Department of Philosophy, University of Bristol.
MA 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 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 Cognitive Science and Humanities: Language, Communication and Organization: Institute for Logic, Cognition, Language, and Information, University of the Basque Country, Donostia, San Sebastian.
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 Science: University of Osnabrück, Germany.
MSc in Cognitive Psychology/Neuropsychology: School of Psychology, University of Kent.
MSc in Logic: Institute for Logic, Language and Computation, University of Amsterdam.
MSc in Mathematical Logic and the Theory of Computation: Mathematics, University of Manchester.
MSc in Mind, Language & Embodied Cognition: School of Philosophy, Psychology and Language Sciences, University of Edinburgh.
MSc in Philosophy of Science, Technology and Society: University of Twente, The Netherlands.
MRes in Cognitive Science and Humanities: Language, Communication and Organization: Institute for Logic, Cognition, Language, and Information, University of the Basque Country (Donostia San Sebastian).
Open Mind: International School of Advanced Studies in Cognitive Sciences, University of Bucharest.
PhD School: in Statistics, Padua University.

Jobs and Studentships

Jobs

Post-doc Position: in Set Theory, Torino University, until filled.
Assistant Professor: in Logic or Analysis, Department of Mathematics, University of Connecticut, until filled.
Post-doc Position: in Artificial Intelligence, Institute for Artificial Intelligence, University of Georgia, until filled.
Post-doc Position: in Artificial Intelligence / Biomedical Informatics, Stevens Institute of Technology, until filled.
Post-doc Position: on the project "Probabilistic Representation of Linguistic Knowledge," Philosophy, King's College London, deadline 6 May.
Post-doc Position: on "Epistemic Protocol Synthesis" project, LORIA, France, deadline 15 May.
Lecturer: in Philosophy and Political Science, Department of Philosophy, Logic and Scientific Method at the London School of Economics and Political Science, deadline 21 May.
Post-doc Position: in Theoretical Philosophy, Department of Philosophy, Linguistics and Theory of Science, University of Gothenburg, deadline 29 May.
Professor: in Theoretical Philosophy, University of Helsinki, deadline 30 May.
Assistant: to the Chair of Logic and Contemporary Philosophy, Institute of Philosophy, University of Neuchâtel, deadline 31 May.

Studentships

PhD Position: on project "Non-Classical Foundations of Mathematics," Department of Mathematics and Statistics, University of Canterbury, New Zealand, until filled.
PhD Position: on the project "Models of Paradox," Philosophy, University of Otago, until filled.
PhD Positions: on the project "The Structure of Reality and the Reality of Structure," Philosophy, Erasmus University Rotterdam, The Netherlands, deadline 1 May.
PhD Positions: on "Epistemic Protocol Synthesis" project, LORIA, France, deadline 15 May.
PhD Position: on "Managing Severe Uncertainty" project, Department of Philosophy, Logic and Scientific Method at the London School of Economics and Political Science, deadline 15 June.