
THE REASONER

VOLUME 8, NUMBER 9

SEPTEMBER 2014

www.thereasoner.org

ISSN 1757-0522

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lation from Jeff Paris' MSc classes in Manchester, I felt that logic-based uncertain reasoning was the thing I wanted to do. So it was with enormous enthusiasm that I accepted the Editor's invitation to arrange the interview below for the readers of *The Reasoner*. I think they will join me in thanking David for his time and kindness during its preparation.

For the record, David Makinson is Guest Professor in the Department of Philosophy, Logic and Scientific Method of the London School of Economics. Before that, in reverse chronological order, he worked at King's College (London), UNESCO (Paris), and the American University of Beirut, following education in Oxford, UK after Sydney, Australia. He is the author of *Sets, Logic and Maths for Computing* (second edition 2012), *Bridges from Classical to Nonmonotonic Logic* (2005), *Topics in Modern Logic* (1973), as well as many papers in professional journals. His research has covered many areas in logic, including the logic of uncertain inference, belief change, and normative systems.

EDITORIAL

Among logicians, [David Makinson](#) needs no introduction. Readers of neighbouring disciplines are likely to be well acquainted with the Preface Paradox, which he put forward as a doctoral student. Others will certainly go a-ha! when realising that he is the M in AGM trio (Alchourrón, Gardenfors, Makinson) which introduced the logical approach to the theory of belief change. Perhaps less known to general audiences is his development of the model theory of non-monotonic consequence relations, which nonetheless means (personally) a lot to me. When I learnt the "Gabbay-Makinson" consequence re-



[HYKEL HOSNI](#)

Marie Curie Fellow,
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FEATURES

Interview with David Makinson

Hykel Hosni: "A tale of five cities" is the title of your scientific autobiography, which opens the recent volume *David Makinson on Classical Methods for Non-Classical Problems* (Hansson, S.O. ed., Outstanding Contributions to Logic, Volume 3, Springer, 2014). The two keywords you chose for the chapter were "logic" and "life" ...

David Makinson: It's really about my life *in* logic. Mindful of David Hume's remark that "it is difficult for a man to speak long of himself without vanity", I set the goal of saying nothing directly about my personal life, letting it appear only indirectly through reflections on personalities, places and problems en-

countered on a long journey. A goal impossible to attain, but I like to think I got reasonably close.

HH: Commenting on the role of dialectical materialism in stimulating an interest in logic in your teenage years, you write “strange are the starting points of long journeys”. What are your thoughts about the relation between logic and politics?

DM: Well, what got me going was the metaphysics of dialectical materialism, rather than the political agenda that it was supposed to be delivering. Avid schoolboy reading had led me to Engels’ *Anti-Dühring* and *Dialectics of Nature*, where one is asked to accept the presence of contradictions in nature. Understanding a contradiction as an assertion that cannot possibly be true, I naturally found that very puzzling, and my first reaction was to conclude that the term was being used figuratively, referring to causal currents running in opposite directions. But no, the sources insisted that when they said ‘contradiction’ they meant real, unmitigated inconsistency—leaving me quite nonplussed and with an ear cocked for logical clarification . . . To get back to your question: of course, every logician is going to have political views and preferences, and there is no reason why it should be otherwise. But as soon as someone starts insinuating that their political commitments may somehow be derived from their logical investigations, you may as well switch off. And as soon as some political party or government starts telling people what sort of logic is politically correct, there are grave troubles afoot.

HH: Logic and politics brings us to your DPhil supervisor, Michael Dummett . . .

DM: As is well known, his religious beliefs led him to a deep opposition to any form of racism and, although I had no truck with the former, I had great respect for the latter—without ever discussing it with him, for our exchanges were always limited to logic.

HH: You refer to your position at UNESCO by commenting “I could write at length about UNESCO, but little of it would be complimentary and this is not the place to do it.” Can you tell us more about this? . . .

DM: I would prefer not to, except in general terms. Whenever political powers, whether elected or not, begin trying to influence the outcome of factual investigations, distortion sets in almost immediately. To see that, we don’t have to go back to the notorious Lysenko doctrines of the Soviet Union under Stalin; we find it in very recent history, in the way in which the British government under Blair used its powers to edit, revise, twist and spin the professional analysis of information being collected on supposed weapons of mass destruction in Saddam Hussein’s Iraq. It is vital for the security of a country that its intelligence organization be able to resist the pressures coming down from the political bosses, delivering the ungarnished truth as the professionals see it, regardless of the costs to the pronouncements and prospects of those above them. But let’s get closer to your query. UNESCO has always been a stage for legitimizing the competing world views that enter into the ideologies of participating governments. In its early years, the competition was mainly between world views of Lockean liber-



alism, Soviet communism, and Catholic doctrine. If you read, say, the Universal Declaration of Human Rights, you find bits of all three, jumbled together with scant regard for coherence. In later years, a fourth ideology came to share the stage, to legitimize a so-called third-world perspective. Since the collapse of communism, the playing field has become more chaotic, with more than a hundred and sixty member states all trying to make sure that nothing that the organization publishes reflects adversely on them, and that every major document contains at least some words from their angle. You can imagine the effect of this on publications on history, social conditions, . . . but I should stop here.

HH: Back to logic. It is customary, though at times misleading, to distinguish between mathematical and philosophical logic. May I push you to explain what philosophical logic is and how it relates to logic in general?

DM: We know what the philosophy of history, the philosophy of science and so on are: reflection on general issues, whether of a methodological, epistemic, ethical or perhaps even metaphysical nature, that arise repeatedly in the course of working in those disciplines. So it is too with the philosophy of logic. But what is this animal called philosophical logic? Is it just the same, or something else and, if so, what? Personally, I prefer to avoid the term altogether. In the hands of some it seems to be a way of developing doctrines in the philosophy of logic without the inconvenience of actually doing any logic, and to my mind that is a grave error. In my undergraduate years I was very interested in the philosophy of science, but soon came to realize that if I were to contribute to it, I should begin by devoting enough time and energy to obtain a solid grounding in least one of the empirical sciences. That posed a dilemma, and I abandoned my ambitions in the area. Similarly, nobody should try to contribute to the philosophy of logic except on the basis of reflection on work in logic itself, preferably including their own efforts.

HH: One often has the impression that philosophical logic is more interesting to non-logicians, notably computer scientists and linguists, than to logicians themselves. Do you have any thoughts on this?

DM: Well, in every discipline it is hard enough keeping up with the nitty-gritty without taking on the additional burden of trying to sort out general perspectives; young logicians seeking professional advancement these days can hardly afford the luxury of the latter. In contrast, for some philosophers, ‘philosophical logic’ has sometimes held out the promise of eating juggled hare without needing to catch the beast.

HH: What to do you think are the key problems to be solved in the area?

DM: In the area of logic itself? I must confess that I find it hard to declare with any confidence what might objectively be “the key problems”. There are some that have fired me up and others that have left me cold, and I fully expect that other researchers respond, quite legitimately, in different ways. Logic is by now a vast subject area with many open problems, as well as interesting concepts just below the surface struggling for explicit formulation. On the other hand, in the philosophy of logic I think that it is rather misleading to speak of problems and solutions, but rather of perspectives to be articulated, fleshed out, rendered as coherent as feasible and weighed for their insights and limitations.

HH: Sometimes working on the key questions doesn’t make securing an academic job any easier. What would you recom-

mend to starting PhD students on this?

DM: Feeling like Polonius, I would respond by saying: try to form a realistic appreciation of your own limits; decide how far you are ready to make the sacrifices needed to fill gaps in your background; work just within the boundary of your limitations with occasional forays beyond. And don't dig a hole so deep that you can never get out of it.

HH: Can you name a paper of yours which got less attention than you thought it deserved?

DM: Ask me at any time, and it will be the paper that I have just published and that nobody yet seems to have heard of! Of course, what gets attention can vary with time and circumstances. There was a long period in which I had more or less given up on the prospects for my 1965 paper "The paradox of the preface": nobody much paid attention to it, and those few who did so seemed to add little. But suddenly, decades later, it became a classic text in formal epistemology. A more recent paper that seems to have fallen "stillborn from the press", to use another phrase of David Hume, is "Friendliness and sympathy in logic", a chapter in the collection *Logica Universalis* (2nd edition, ed. J.-Y. Beziau, Birkhauser, 2007, pp. 191–205). It is not an attempt to solve a recalcitrant problem. I like to see it as recreational logic, for it shows how we can play with a familiar notion like classical consequence, broadening it in a way that makes contact with a surprising range of concepts hidden in the history of the subject since Boole. If nothing else, it is fun.

HH: I'd like to add a further question on the foundations of probability. An unpublished text of yours bore the title "A sensible girl should dump Popper for Kolmogorov". Could you tell us more about that?

DM: That was the title of a draft, circulated among a few colleagues. I had long been irritated by Popper's well-known paper on the axiomatization of probability, which I felt to be inelegant in two ways: its insistence on trying to articulate the notion independently of the languages of classical logic or sets, and its treatment of probability measures as irreducibly two-place functions. The former seemed to me to be possible but perverse, and I suspected the execution of the latter to be incoherent. The text sought to uncover the incoherence. But as I continued my investigations and, above all, read alternative presentations of irreducibly two-place probability functions both before Popper (notably Hosiasson-Lindenbaum and Rényi) and after him (for example, van Fraassen) I began to see what was really going on behind his clumsy formulations, and how his perspective lay in the middle of a network of different such accounts, of varying levels of specificity, one of which (Hosiasson-Lindenbaum back in 1941) has very tight links—which I had not at all expected—with AGM belief revision. All this brought me to a new respect for the two-place approach and a better understanding of what Popper was actually doing. So the sensible girl no longer had good reasons to dump Popper for Kolmogorov; she could continue the flirtation, perhaps also going out with van Fraassen or Rényi or, with gender adjustments, Janina Hosiasson-Lindenbaum.

HH: So the final text, published as "Conditional probability in the light of qualitative belief change" *Journal of Philosophical Logic* 40: 2011, 121–153, ended up saying the opposite of the draft?

DM: Pretty much so! And when I think about it, this anecdote says something about my general way of working, especially over the last fifteen or twenty years. I get into a sub-

ject and, as I read and learn, may come across things near the bottom that puzzle or annoy me. These become the main focus of my thinking, and I develop "a point of view" on them that I gradually articulate as a written text. Then (and this is the crucial step) I try the patience of friends and colleagues in the hope of getting some critical feedback. Good criticism is one of the rarest and most valuable commodities in our profession, and blessed are those who are willing to fire away at their friend's ship as it attempts to sail out of port. Sometimes the vessel sinks without a trace, occasionally it survives relatively unscathed or, as in the advice to the sensible girl, becomes more or less the opposite of what it was. In all cases, it is for the better.

HH: So logic is an essentially cooperative enterprise?

DM: Purely formal results can be obtained in splendid isolation, on the basis of just one's reading and thinking about what has so far been done. But anything that goes beyond formal observations and that tries to form a general perspective needs external stress analysis. That is why it is so important to have friends willing and able to do the dirty job, and is why email has become such a useful tool for the gradual evolution of an initial idea. I find that the most common shortcomings are not errors, but blinkers restricting vision and needing the hand of an interlocutor to be removed. One may have set out very nicely certain features of the notions under study while neglecting others that are equally important; bringing them together can take one's perspective to a new level.

HH: A final question. Many readers of *The Reasoner* are not logicians. Could you suggest a book which you think will help them appreciate the relevance of logic to reasoning?

DM: Isn't that a bit like asking for the relevance of mathematics to engineering? But I suppose you do have a point: after all, one may query the relevance of much of theoretical economics to business. Before mentioning any specific book, I would say two things that have gradually become clear to me over the years. First: don't narrow attention to logic alone—consider formal methods in general. For any kind of abstract reasoning you need a basic working knowledge of sets, relations, functions, recursion and induction, a little bit of combinatorics, very elementary probability and graphic devices such as trees—all these together with, and leavened by, logic. So let me blow my own trumpet and recommend the introductory text *Sets, Logic and Maths for Computing* (Springer, second revised edition, 2012). Don't be put off by the title: the book is really for everybody, the last two words are just to satisfy the series in which it appeared.

HH: And the second point?

DM: Logic is not just deductive logic, that is, the study of un-failing inference. It is also about the less settled notions of uncertain reasoning, both quantitative and qualitative. To be sure, one cannot even begin studying uncertain inference in a formal manner without having some command of deductive inference, but that does not mean that the latter is the only kind amenable to rigorous study. What books for the beginner? The ideal text, bringing it all together, has not yet been written. But on uncertain reasoning in a quantitative framework, one might perhaps begin with Kyburg and Teng *Uncertain Inference* (Cambridge University Press, 2001) especially chapters 1 and 3 through 5. On qualitative inference one could continue with chapters 6 and 7 of the same book, or—if I may unashamedly continue to blow my own trumpet—one could work from *Bridges from Classical to Nonmonotonic Logic* (London: College Publications, 2005).

By the way, much of my recent work is concerned with understanding the seams between the two frameworks—see for example the [tutorial slides](#) on the 2014 Chiemsee Summer School site.

Are Seemings Trustworthy? A Reply to Piazza

To address Moretti's (2013: 'Mizrahi's Argument against Phenomenal Conservatism,' *The Reasoner* 7(12):137-139) objection against my original argument Mizrahi (2013: 'Against Phenomenal Conservatism,' *The Reasoner* 7(10):117-118)), I (Mizrahi 2014: 'Against Phenomenal Conservatism: A Reply to Moretti,' *The Reasoner* 8(3):26) revised my reductio against Phenomenal Conservatism as follows:

- 1 **PC** If it seems to S that p , then, in the absence of defeaters, S thereby has at least some degree of justification for believing that p .
[Assumption for reductio]
- 2 It seems to S_1 that p and it seems to S_2 that $\neg p$, independently of each other.
- 3 In the absence of defeaters, S_1 has some degree of justification for believing p and S_2 has some degree of justification for believing $\neg p$.
[From 1 and 2]
- 4 If a Method of Fixing Belief (*MFB*) produces distinct pieces of evidence of the same type that provide some degree of justification for contradictory beliefs, then it is untrustworthy.
- 5 Appealing to seemings (MFB_s) produces distinct pieces of evidence (a seeming that p and a seeming that $\neg p$) of the same type (seemings) that provide some degree of justification for contradictory beliefs.
[From 3]

Piazza (2014, 'Mizrahi and Moretti on Seemings and Trustworthiness,' *The Reasoner* 8(6):64-65) finds **4** problematic and offers these alternative readings:

- 4.1 A trustworthy *MFB* should not supply the same subject S —or two different subjects S_1 and S_2 , when they are similar in all relevant respects—under circumstances of approximately the same type with prima facie justification for contradictory beliefs.
- 4.2 A trustworthy *MFB*, independently of the features of their epistemic situations, should not supply S_1 with prima facie justification for believing p , and S_2 with prima facie justification for believing $\neg p$.

For Piazza (2014: 64), replacing **4** with **4.2** makes my reductio unsound, since **4.2** is false when applied to an *MFB* like sensory perception, whereas replacing **4** with **4.1** makes my reductio invalid, since **1** and **2** “do not entail that MFB_s generates evidence supplying prima facie justification for contradictory beliefs for the same subject under circumstances of approximately the same sort.” To salvage my reductio, Piazza argues (2014: 65), one must “show that MFB_s possibly supplies, if not one and the same subject, at least two distinct but relevantly similar subjects, acting under circumstances of approximately the same sort, with justification for believing contradictory propositions.” Piazza (2014: 65) claims that the “prospects of [showing that] seem dim.”

I think that my reductio can be salvaged. First, I think that Piazza is too quick to dismiss the possibility that a subject can have prima facie justification for contradictory beliefs under circumstances of approximately the same sort. Consider ambiguous images like Figure 1.



Figure 1

Looking at Figure 1, it seems that this woman is old or that she is young. By **PC**, the seeming that this woman is old is prima facie evidence that she's old, whereas the seeming that this woman is young is prima facie evidence that she's young. Granted, the contents of these seemings— \langle this woman is old \rangle and \langle this woman is young \rangle —are incompatible, not flat-out contradictory. But the fact that one can have incompatible seemings, I submit, shows that it's not impossible for seemings to provide for a subject prima facie justification for contradictory beliefs.

Second, I think it can be shown that seemings can provide “prima facie justification for contradictory beliefs for two distinct but relevantly similar subjects acting under circumstances of approximately the same sort” (Piazza 2014: 65). In fact, I think that's precisely what my examples show. They are examples of users of an *MFB* who get contradictory results when they use it even though they are “relevantly similar” insofar as they are equally competent users of that *MFB*. For instance, Jackson and Dennett are both accomplished professional philosophers, similarly trained, well-versed in the same body of literature, and equally skilled at pumping intuitions. And yet, when they consider the Mary thought-experiment, they have contradictory seemings. “To Jackson, it seems that Mary learns something new, whereas to Dennett it seems that she doesn't” (Mizrahi 2013: 117).

[N.B. Since seemings are intellectual appearances, Jackson's belief that Mary learns something new and Dennett's belief that she doesn't are based on what intellectually appears to them when they consider the Mary thought-experiment. In that respect, even if they later support their beliefs with other claims, it's still the case that things intellectually appear a certain way to them upon considering the Mary thought-experiment and that these intellectual appearances provide the initial basis for their beliefs about Mary. The question is whether or not such intellectual appearances are trustworthy.]

Although Jackson and Dennett are “relevantly similar subjects” insofar as they are equally competent at intuition-pumping, they form contradictory beliefs by using MFB_s . Accordingly:

- a If two equally competent users of an *MFB* form contradictory beliefs when they use that *MFB*, then that *MFB* is untrustworthy.
- b Equally competent professional philosophers form contradictory beliefs when they use MFB_s .
- c Therefore, MFB_s is untrustworthy.

If this argument is sound, then, pace Piazza (2014: 65), seemings can provide prima facie justification for contradictory

beliefs even for “relevantly similar subjects.”

Piazza (2014: 65) would probably reject **b**, since to him “it seems *prima facie* plausible that S1 and S2, to the extent to which their seemings conflict, are not relevantly similar and have acted under epistemic circumstances that are not, not even approximately, of the same sort.” So he would move by *modus tollens* from **a** to the conclusion that the users are not equally competent. That is:

- a** If two equally competent users of an *MFB* form contradictory beliefs when they use that *MFB*, then that *MFB* is untrustworthy.
- c*** *MFB_s* is trustworthy.
- b*** Therefore, it’s not the case that the users are equally competent.

Note, however, that there are two problems with this move. First, it’s rather *ad hoc*, particularly of the “no true Scotsman” variety. That is, for any two users of *MFB_s* who form contradictory beliefs, they could simply be dismissed as being unequally competent. Second, this move amounts to simply asserting that *MFB_s* is trustworthy, i.e., **c***. But the question is precisely whether or not *MFB_s* is trustworthy.

MOTI MIZRAHI
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NEWS

Grounding, Metaphysics, Science and Logic

The idea that reality is not constituted by a mere juxtaposition of facts, but rather displays a complex network of facts of various degrees of fundamentality or basicness, is probably as old as philosophical and scientific thinking about reality itself. What determines these degrees of fundamentality is most naturally thought of as the relation of one fact holding in virtue of other facts or, as philosophers currently like to say, the relation of one fact being grounded in other facts.

The notion of grounding has been prominent throughout the history of philosophy since its very beginning, and it can be found at work already in Plato’s *Euthyphro* and in Aristotle’s conception of the four causes. Yet it was not a proper object of serious philosophical inquiry until Bernard Bolzano’s *Wissenschaftslehre* (1837), a truly ground-breaking but largely neglected work. Things indeed changed only in the last decade or so, starting with Kit Fine’s seminal article “The Question of Realism” (2001), and subsequent publications by Fine as well as, among others, G. Rosen, J. Schaffer, F. Correia and B. Schnieder.

Grounding, Metaphysics, Science and Logic is the topic of a Swiss National Science Foundation Sinergia project recently started at, and jointly conducted by, the universities of [Hamburg](#), [Neuchâtel](#) and [Geneva](#).

An important assumption of the project is that grounding comes in various sorts or types. Accordingly, the project focusses on the core notion of metaphysical grounding, as well as three other notions which are intimately connected to it, viz., conceptual, logical and causal grounding. These notions play a central role in the philosophical disciplines grouped within the project, namely metaphysics, logic, and the philosophy of natural science, which are the research domains of the

subprojects at, respectively, Hamburg, Neuchâtel and Geneva. More precisely: the Hamburg subproject, coordinated by [Benjamin Schnieder](#), investigates metaphysical grounding, and its relation to notions such as priority, modality, essence and fundamentality; the Neuchâtel subproject, coordinated by [Fabrice Correia](#) (the PI of the whole project), focusses on the logic of grounding, in its different varieties; lastly, the Geneva subproject, coordinated by [Marcel Weber](#), explores how the notion of metaphysical grounding sheds light on notions such as causation, dispositions, and laws.

The overall goal is to further our understanding and knowledge of these various sorts of grounding relations, as well as their interrelations to other important concepts employed in these three interconnected disciplines. A notable feature of the project is that it takes on board the philosophy of science, whereas the current debate mainly involves metaphysics and logic. This, as it were, fixes an oddity, since the general idea of some facts grounding other facts – in particular, the idea of some facts causally grounding other facts and the idea of some facts grounding the facts of causation themselves – is certainly central to the natural sciences.

The project currently involves seven researchers for the next three years: [Michael Clark](#) and [Nathan Wildman](#) at Hamburg, [Jan Plate](#) and [Jan Walker](#) at Neuchâtel; [Lorenzo Casini](#) and [Pablo Carnino](#) at Geneva.

Several conferences are already being planned. Announcements and official call for papers will be regularly advertised through the usual channels and posted [here](#). Stay tuned!

LORENZO CASINI
Philosophy, Geneva

Logica, 16–20 June

Logica 2014 was the 28th event in the series of conferences annually held in the Czech Republic. The symposium is since its beginnings organized by the Department of Logic of the Institute of Philosophy of the Czech Academy of Sciences. Logica 2014 took place at Hejnice Monastery (North Bohemia) from June 16 to June 20, 2014.

Traditionally, the symposium is focussed on issues that are interesting both for ‘philosophically’ and for ‘mathematically’ oriented logicians. This year 32 lectures were presented during the conference. The invited speakers were Dorothy Edgington (University of London), Graham Priest (University of Melbourne and CUNY), Göran Sundholm (University of Leiden) and Dag Prawitz (University of Stockholm).

Dorothy Edgington delivered a lecture on conditionals and truth values. In particular, she examined a new approach, due to Richard Bradley, which is based on assigning fictional truth conditions and whose ambition is to treat embedded conditionals in a way that does not produce counterintuitive results. Graham Priest provided an alternative to the standard dialethic solutions of the paradoxes of semantic self-reference. Normally, it is assumed in these solutions that the biconditional employed in the T-Schema is detachable, i.e., it satisfies *modus ponens*. Graham Priest explored the possibility that it is a paraconsistent material conditional, and so does not detach.

Göran Sundholm discussed the notion of assumption as a crucial concept for the understanding of Natural Deduction techniques in the proof theory. In his lecture a pragmatic distinction was drawn between antecedent propositions in conse-

quence relations and epistemic assumptions that premises are known. This distinction was spelled out via a comparison between Gentzen's two Natural Deduction formats for representing derivations.

Dag Prawitz discussed Gentzen's and Heyting's ideas about proofs. Although the perspectives of these authors are, at first sight, very different, Dag Prawitz suggested that a certain fusion of their ideas is possible and on this basis, some questions that they left open may be answered.

Several papers discussed philosophical and historical issues often related to Frege, Carnap and other prominent figures from the history of logic. One whole session was devoted to theories of truth. Since Graham Priest was present at the event, it is not surprising that also paraconsistent logics were discussed by several participants. Besides the mentioned topics a wide range of other logical phenomena and issues were addressed, such as, for example, historical counterfactuals, action models for relevant logics, different interpretations of logical consequence, intuitionistic Robinson arithmetics, and hyperintensional non-propositional attitudes.

As every year, the participants were invited to submit their papers to be considered for publication in the next volume of *The Logica Yearbook* (College Publications), the proceedings from the conference.

The scientific program of the symposium was accompanied with a rich social program sponsored by an excellent Czech brewery Bernard. The details concerning the symposium can be found at the [conference webpage](#).

Vít PUNČOCHÁŘ

Charles University, Prague

Logic, Algebra and Truth Degrees, 16–19 July

Logic, Algebra and Truth Degrees 2014 was the fourth official meeting of the [Working Group on Mathematical Fuzzy Logic](#). It was held on 16–19 July 2014 in Vienna, Austria as a part of [Vienna Summer of Logic](#) and brought together over 70 researchers (plus numerous 'spectators' from other VSL conferences).

Mathematical Fuzzy Logic is a subdiscipline of Mathematical Logic which studies the notion of comparative truth. The assumption that "truth comes in degrees" has proved to be very useful in many theoretical and applied areas of Mathematics, Computer Science and Philosophy. The present instalment of LATD encouraged participation of researchers from the intertwined (or neighbouring, based on one's point of view) areas of substructural and many-valued logics and its featured topics included: proof theory and computational complexity; algebraic semantics and abstract algebraic logic; first, higher-order and modal formalisms; applications and foundational issues; and geometric and game theoretical aspects.

There were six invited speakers and two tutorials. Alasdair Urquhart discussed some recent results in relevance logics and presented a collection of open problems especially concerning the decidability of various fragments. Dale Miller introduced, via semantics and proof-theory, the logic of Polarized Intuitionistic Logic where intuitionistic and classical connectives freely mix. Melvin Fitting presented a family of justification logics (which notably contains Artemov's Logic of Proofs LP) and gave a new method for obtaining formal arithmetical semantics for these logics. George Metcalfe compared the first-order

Gödel and Łukasiewicz logics in terms of admitting variants of Skolem and Herbrand theorems. Dana Scott argued for an alternative foundation of Geometry 'without points' using the Boolean algebra of measurable sets modulo null sets. Silvio Ghilardi related the bounded proof property for hypersequent calculi to the embeddability properties of classes of one-step modal algebras in order to illustrate the proof-theoretic applications of step-algebras and step-frames. Vincenzo Marra gave a tutorial on Łukasiewicz logic, justifying the axiomatisation of the logic based on an analysis of the semantics of vague predicates. Franz Baader presented a tutorial on fuzzy description logics that deal with graded notions for reasoning tasks.

In addition there were 53 contributed talks; let us mention a short sample. Luca Spada, Nick Bezhanishvili and Nick Galatos presented a method to generalize the canonical formulas for intuitionistic logic in order to axiomatise all varieties of k -potent residuated lattices. Ori Lahav and Arnon Avron showed that the extension of the known hypersequent calculus for standard first-order Gödel logic with usual rules for second-order quantifiers is sound and cut-free complete for Henkin-style semantics of second-order Gödel logic. Franco Montagna, Mattia Bongini and Agata Ciabatonni presented a new method to construct relational hypersequent calculi for a large class of many-valued logics and gave a sufficient condition for their co-NP completeness.

PETR CINTULA

Academy of Sciences of the Czech Republic

REVANTHA RAMANAYAKE

Vienna University of Technology

Calls for Papers

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

MAXIMUM ENTROPY APPLIED TO INDUCTIVE LOGIC AND REASONING: special issue of *Entropy*, deadline 1 December 2014.

COMBINING PROBABILITY AND LOGIC: special issue of *Journal of Applied Logic*, deadline 15 January 2015.

CAUSATION AND MENTAL CAUSATION: special issue of *Humana.Mente*, deadline 15 March 2015.

WHAT'S HOT IN . . .

Uncertain Reasoning

The *low cost* revolution opened up a whole new set of possibilities for intra-European commuting. Low cost companies not only allowed an unprecedented number of passengers to fly for fares which were unthinkable a couple of decades ago, but also caused higher-end carriers to dramatically cut their own fares. Arguably, this is the *real* low cost revolution. As it often happens, however, new possibilities also mean a whole new stock of potential anxieties. For, if you fly often (and rely on a finite budget) chances are that you may experience the *Frequent Flyer's Nightmare*. The common symptoms are something like the following. You know you've been paying reasonably little in the past *when* you managed to book well in advance. So you have an incentive to find the right time for booking your next flight. But when is exactly that time? If you have ever experienced anything like this, you know exactly where it can lead, namely days of frantic data collection on, say [Google Flights](#).

The question naturally arises as to whether a reasonable quantification of the uncertainty involved in the pricing can take us out of the misery of the Frequent Flyer's Nightmare.

The culprit is the method, used by virtually all carriers, known as *dynamic pricing*, which combines intertemporal price discrimination and client-type discrimination. The idea is roughly as follows. Flights tend to be extremely expensive if you walk to the sales desk at the airport and ask, as in the '80s films, for "the next flight to Rome". We all know that we should try to book in advance because, quite reasonably, fares increase monotonically with the flight occupancy rate. But this is true only at a certain point in time. Unlike other services in the travel industry, notably most train tickets, you are indeed very likely to overpay your fare if you book *too far ahead*. So the dynamics of airfares is really non-monotonic. Supply-and-demand clearly does play an important role here. Flights over weekends, school breaks or major sporting events, are visibly more expensive. But these regularities are relatively easy to predict, as they reflect publicly available information. The kind of information air companies do not disclose, of course, is the number of empty seats currently available on the flight you are interested in. Here is where the non-monotonicity comes in. Suppose fares started very low, say a year in advance. Since planes have a fixed and relatively small, if compared to trains, number of seats, this would result in the plane filling up *too quickly* and indeed quite inefficiently, for business travellers are usually forced to buy at a very short notice and are consequently well prepared to pay much higher fares. So companies actively discourage people to book until a few months ahead by setting prices that Frequent Flyer finds way too expensive.

Then, about [eight-to-six weeks](#) prior to the departure date, fares go down. That is the time when the Nightmare comes true. Companies clearly know that Frequent Flyer is on the lookout for the bargain and want them to buy sooner, rather than later. So they tend to give (unverifiable) information about the number of seats *left* at the best price advertised for the flight on their website. It really can get stressful when this asymmetry of information causes unexpected and sometimes substantial day-to-day variation in prices. That is when the Frequent Flyer's Nightmare peaks.

So, back to the central question: Is there an optimal buying time for air tickets? According to professor Claudio Piga of Keele Management School and his co-authors, the answer is quite surprisingly simple: book exactly 10 days ahead. This is, in essence, the recommendation (for Ryanair only) of a paper which has been recently presented at the [2014 Royal Economic Society Conference](#) in Manchester and which is to appear in extended form in the Review of Economics and Statistics. A previous version of the paper is available from [SSRN](#).

If the 10 days estimate is at all accurate, Ryanair will no doubt concoct a method to get back its uncertainty hedge—one way or another!

[HYKEL HOSNI](#)
 Marie Curie Fellow,
 CPNSS, London School of Economics

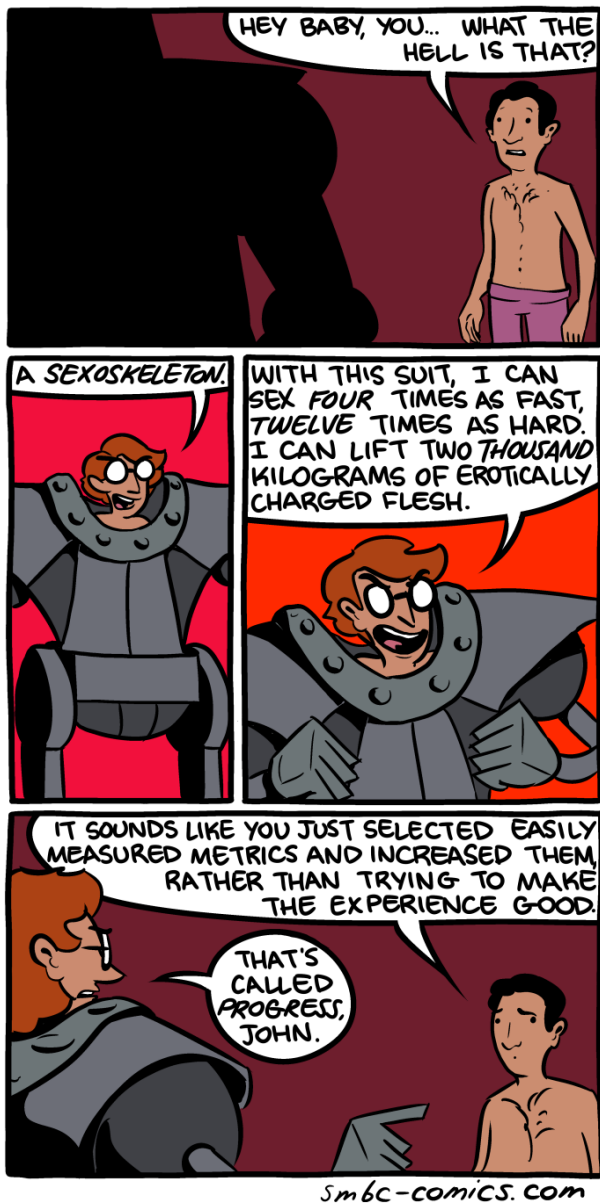


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EVENTS

SEPTEMBER

- WoLLIC**: 21st Workshop on Logic, Language, Information and Computation, Valparaiso, Chile, 1–4 September.
- LPOSGW**: Approaches Within Philosophy of Science, London, 2–3 September.
- SOPhIA**: Salzburg Conference for Young Analytic Philosophy, Austria, 4–6 September.
- COLLECTIVITY**: Bristol, 5–7 September.
- AESTHETICS**: The Aesthetic Aims of Science, London, 8 September.
- DGN**: Decisions, Groups, and Networks, LMU Munich, 8–9 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.
M & I: Models and Inferences in Science, Rome, 11–13 September.
LANCOG: workshop on Modal Syllogistic, Lisbon, 11–13 September.
PAM: Predicate Approaches to Modality, MCMP, LMU Munich, 12 September.
SWINBURNE: The Philosophy of Richard Swinburne, Oxford, 12 September.
SCLC: 10th Symposium for Cognition, Logic and Communication, University of Latvia, Riga, 12–13 September.
AICS: Artificial Intelligence and Computer Science, Bandung, Indonesia, 15–16 September.

SUM: 8th International Conference on Scalable Uncertainty Management, Oxford, UK, 15–17 September.
CAUSATION IN SCIENCE: Norway, 15–17 September.
CCC: Continuity, Computability, Constructivity: From Logic to Algorithms, University of Ljubljana, 15–19 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.
PGM: 7th European Workshop on Probabilistic Graphical Models, Utrecht, The Netherlands, 17–19 September.
ARD: Argumentation, Rationality and Decision, Imperial College London, 18–19 September.
ME&M: Modal Epistemology and Metaphysics, Belgrade, 18–20 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.
EoM: 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.
EoP: Epistemology of Perception, KU Leuven, 25–26 September.
EFAC: Disagreements, University of Tartu, 25–27 September.
JOHAN VAN BENTHEM: ILLC, Amsterdam, 26–27 September.
BELIEF: 3rd International Conference on Belief Functions, Oxford, 26–28 September.
DoI: Dimensions of Intentionality, Ruhr-Universität Bochum, Germany, 29 September–1 October.
PMR: Proof Theory, Modal Logic and Reflection Principles, Mexico City, 29 September–2 October.

OCTOBER

WCPA: Western Canadian Philosophical Association, Vancouver, BC, 3–5 October.
FPMW: 6th French Philosophy of Mathematics Workshop, Toulouse, 9–11 October.
DESCARTES LECTURE: Leitgeb on Rational Belief, Tilburg University, Netherlands, 20–22 October.
EBC: Explanantion Beyond Causation, LMU Munich, 23–24 October.
ILCS: Inductive Logic and Confirmation in Science, University of Utah, 24–25 October.
ICSR: Knowledge Representation and Reasoning in Robotics, Sydney, Australia, 27–29 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.

NOVEMBER

ECSI: European Conference on Social Intelligence, Barcelona, Spain, 3–5 November.

PoCE: Phenomenology of Cognitive Experiences, University College Dublin, 5–7 November.

EPISTEMIC REASONS: University of Sherbrooke, Canada, 7–8 November.

GROUNDED COGNITION: Düsseldorf, 7–8 November.

ACGC: 8th Arché Graduate Conference, University of St Andrews, 8–9 November.

BOTB: Bayes on the Beach, Queensland, Australia, 10–12 November.

LORENTZ: Logics for Social Behaviour, Leiden, 10–14 November.

SoPhiSci: Social Philosophy of Science, Moscow, Russia, 18–19 November.

EPISTEMIC CONSEQUENTIALISM: London School of Economics, 21 November.

ARE& W: Analogical Reasoning East and West, Heidelberg, 24–25 November.

DECEMBER

NZAP: University of Canterbury, New Zealand, 1–5 December.

FE & RE: Formal Epistemology and Religious Epistemology, Oxford University, 8–9 December.

ABM: Agent-Based Modeling in Philosophy, LMU Munich, 11–13 December.

COURSES AND PROGRAMMES

Courses

IJCAI: 2nd IJCAI School on Artificial Intelligence, Buenos Aires, Argentina, 1–5 September.

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

CSSiP: 9th Cologne Summer School in Philosophy on Practical Reasons, Cologne, 15–19 September.

GEOMETRY AND PHYSICS: 17th International Summer School in Philosophy of Physics, 15–19 September.

AAAI: Texas, USA, 25–29 January.

COMBINING PROBABILITY AND LOGIC: University of Kent, 20–21 April.

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.

PROFESSOR: of Uncertainty Quantification, School of Mathematical Science, University of Nottingham, until filled.

PERMANENT POSITIONS: Federal University of Bahia, Brazil, until filled.

POSTDOC POSITION: in Philosophy, University of Oslo, deadline 1 September.

POST-DOC POSITION: in Logic and Uncertainty, School of Computer Science & Informatics, Cardiff University, deadline 2 September.

POSTDOC POSITION: on the project “Grading evidence of mechanisms in physics and biology,” Philosophy, University of Kent, deadline 3 September.

LECTURER: in Theoretical Probability, School of Mathematical and Physical Sciences, University of Reading, deadline 12 September.

POST-DOC POSITION: in Artificial Intelligence, University of Mannheim, deadline 15 September.

LECTURER: in Theoretical Philosophy, Uppsala University, deadline 15 September.

POST-DOC POSITION: in Causal Inference, University of Amsterdam, deadline 15 September.

POST-DOC POSITION: on the project “Argument Analytics,” Computer Science, Philosophy and Linguistics, University of Dundee, deadline 30 September.

ASSISTANT PROFESSOR: in Philosophy of Science, University of Chicago, deadline 30 September.

POST-DOC POSITION: in Philosophy, UNAM, deadline 3 October.

ASSISTANT PROFESSOR: in Philosophy of Mind, University of Toronto, deadline 13 November.

Studentships

PHD POSITION: in Philosophy, University of Oslo, deadline 1 September.

PHD POSITION: on the project “Grading evidence of mechanisms in physics and biology,” Philosophy, University of Kent, deadline 3 September.

PHD POSITION: in Artificial Intelligence, University of Mannheim, deadline 15 September.

PHD POSITION: in Causal Inference, University of Amsterdam, deadline 15 September.

PHD POSITION: in Philosophy of Science, University of Bristol, deadline 20 October.

PHD POSITION: in Computational, Mathematical or Philosophical Logic, University of Pretoria, deadline 30 October.

PHD POSITION: on the project “Recognizing Trust in Natural Language,” Computer Science, Philosophy and Linguistics, University of Dundee, deadline 30 November.