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§1 EDITORIAL

Michael Bishop and J.D. Trout open their *Epistemology and the Psychology of Human Judgment* (2005, OUP) with a statement of the proper aims of a theory of knowledge worth its name:

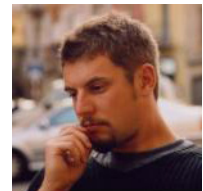
It is time for epistemology to take its rightful place alongside ethics as a discipline that offers practical, real-world recommendations for living. In our society, the powerful are at least sometimes asked to provide a moral jus-

tification for their actions ... But our society hands out few sanctions to those who promote and defend policies supported by appallingly weak reasoning. Too often, condemnation is meted out only after the policies have been implemented and have led to horrible results: irresponsible war and split blood or the needless ruin of people's prospects and opportunities.

They go on to lament that what they call Standard Analytical Epistemology—the epistemology of ‘justified true belief’ and Gettier problems—cannot deliver such practical, real-world recommendations because it has conservatism built right into it: an account is deemed successful in so far as it coheres with our ordinary considered judgements about what counts as knowledge can hardly be of use in domains where deep and durable changes are what we need.

The root of the problem, as seen by Bishop and Trout, is therefore methodological. A branch of philosophical inquiry cannot be of much use if it proceeds by contemplating imagined, hypothetical scenarios involving characters such as Smith and Jones and facts such as the number of coins in Jones's pocket where the aim is to achieve a reflective equilibrium between the judgements about such situations and some philosophical theory.

Although the names of the characters that star in the imagined scenarios differ from field to field, much



of contemporary analytical philosophy is characterised by precisely this method of reflective equilibrium, and Bishop and Trout's criticism carries over. Consider my own field, the philosophy of causation. Is causation equivalent to counterfactual dependence? Well, that can't quite be right because if Billy and Suzy both throw rocks and only Suzy's succeeds at breaking the glass, there's causation without counterfactual dependence. QED. And what have we learned for our practical endeavours to understand and control the world, for which the study of causal relations is supposed to be of help? Or consider another field, the study of social norms. Is there a convention that four o'clock is the time to have tea? Well, according to Margaret Gilbert, when Sally suggests to Charles that he come for tea at five, Charles may be a little surprised but has no sense of impropriety, and hence there is no convention. QED. Once more, the study of norms and conventions is something that *should* have to capacity give us practical advice. But the practical implications of Gilbert's argument are at best unclear. One of my favourites also involves a character named Smith as well as an ominous garden. Michael Tooley (1977, 'The Nature of Law', *Canadian Journal of Philosophy*, 6, p. 686) thus proves that laws of nature may be local:

All the fruit in Smith's garden at any time are apples. When one attempts to take an orange into the garden, it turns into an elephant. Bananas so treated become apples as they cross the boundary, while pears are resisted by a force that cannot be overcome. Cherry trees planted in the garden bear apples, or they bear nothing at all. If all these things were true, there would be a very strong case for its being a law that all the fruit in Smith's garden are apples.

The examples multiply easily. But back to Bishop and Trout. The authors actually spend relatively few pages criticising epistemology's standard methodology, the bulk of the book being devoted to the development of an alternative. What I want to emphasise here is that Bishop and Trout regard epistemology as a branch of the philosophy of science. Epistemology can and should be informed by the results of psychology, statistics, AI and other sciences concerned with good reasoning, systematise these results and explain them. In so far as epistemology is to be of practical guidance, it should be continuous with science.

It is plain that similar lessons can be learned for other areas of philosophy. An alternative to studying phenomena such as causation, laws of nature and social norms (to stay with our examples) by means of thought experiments involving intuitive responses to scenarios cooked up by a philosopher is to consider the products of relevant scientific work and take these as the data a philo-

sophical theory has to respond to. There are certainly beginnings of this 'philosophy of science attitude' in the three mentioned and many others areas of philosophical inquiry but so far it remains in its infancy and is relatively poorly understood. And yet, if our work should result in 'practical and real-world' advice, I currently see no better alternative.

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§2

FEATURES

Interview with Kevin Korb

Kevin Korb is reader at the School of Information Technology at Monash University

Julian Reiss: First of all, could you tell us a bit about your intellectual history? You have degrees in philosophy as well as in computer science, worked as a software engineer and now teach in a department of computer science. What were the kinds of questions that motivated you when you began your career?

Kevin Korb: I was first attracted to philosophy when I was first exposed to it, in an introductory ethics class. It wasn't the ethical problems themselves that I found attractive, but the way of investigating philosophical problems. I quickly turned away from ethics (too damned hard!) to philosophy of scientific method and to Popper's ideas in particular. I retain from his writings (I hope) an inclination towards a rational critical spirit. Having applied that spirit to Popper, I've long since jettisoned Popperianism itself, making the migration from Popper to Bayes, as have many others. So, my current work has to do with making sense of Bayesian confirmation and induction, and also automating these. Amongst other things, this has led to the development of a Bayesian causal discovery algorithm, CaMML (Causal discovery via Minimum Message Length—which is a Bayesian statistical inference technique invented by Chris Wallace).



By the way, in the meantime, after a long interlude, I've returned to ethics. In particular, I've been simulating ethical phenomena and investigating their evolution. The evolvability of altruism has driven a lot of the discussion in the philosophy of biology in recent decades, and my work on evolutionary artificial life has pushed me into those discussions.

JR: What are the issues you spent most time thinking

about today?

KK: Today I worked on a paper (with Charles Twardy) for IJCAI 2009 developing a probabilistic extension of the Halpern-Pearl and Hitchcock accounts of token causation using Bayesian networks. Their accounts are deterministic, somewhat against the spirit of Bayesian networks. It's natural to extend them to provide a criterion for causality that makes use of Peter Menzies' "difference-making" account of causality. We're also working to unite this approach with a Salmon-Dowe causal process interpretation of the arcs in causal Bayesian networks. I also worked today on a collaborative effort to do an experimental study of causal discovery algorithms with the Bayesian net group at Albacete. For me, the main issue involved there is to make sense of the evaluation of causal discovery algorithms. Evaluation measures commonly in use are edit distance (from the true causal model to the discovered model) and Kullback Leibler divergence. Both of these are defective, and I'm trying to develop an improved measure that overcomes their defects.

JR: How do you see the relationship between philosophy and AI?

KK: As an intimate relationship, in principle. If you don't know what an agent is, you're not likely to be able to create one. From the other side, if you have a theory of agency, you should be willing to test it. I think computer simulation is, or should be, at the forefront of the experimental philosophy movement! It's certainly far more *experimental* than sample surveys! For my part, I'm interested in what agency is and in evolving agents. In my spare time at the moment I'm developing a simulation that evolves agents' utilities. This came about because in my ethical simulations the utilities thus far have all been designed (by the great Designer in the Sky, namely me). But, however intuitive the utilities we may ascribe to agents and their situations, it's less arbitrary to get them to evolve on their own.

JR: We share an interest in computer simulations, and you have done some work on simulation of social phenomena. In a nutshell, what is your take on the epistemology of simulations?

KK: In a nutshell, I think the epistemology of simulation is (nearly) identical to the epistemology of experiment. They raise the same basic epistemological questions: Am I testing the right theory? Is my sample a sample of the target population or something else? Do I have a severe test? Are my measurements biased? Of course, the simulation has to be a proper implementation of the theory under investigation (a problem of verification, as they call it in software engineering), but physical experiments face the same kind of issue, for example, in establishing that the sampled population is the population of interest. Pragmatically, simulations often have huge advantages over physical experiments, in implementability, replicability, flexibility and for sen-

sitivity analysis. Oh, yes, and in cost.

JR: As compared to other sciences such as climatology, epidemiology, ecology and many of the physical sciences, computer simulations are comparatively rare in the social sciences. What do you think is the reason for that? Do you think social scientists will eventually overcome their fears of contact?

KK: I think this is already happening. I just typed "social simulation" in google scholar. Restricting the search to 1997 yielded 35 hits; for 2007 I got 470. The field was given a massive boost by Axtell and Gilbert's 1996 book *Growing Artificial Societies*. Shortly thereafter the Journal of Artificial Societies and Social Simulation started up. Still, what you suggest is true enough: social simulation still lags far behind the other sciences. Philosophy is still farther behind, though! There are only a handful of philosophers engaged in computer simulation, which is a shame, because it's a massive intelligence amplifier (to use Good's expression, which he applied to Bayes factors), mostly being ignored! Paul Thagard's been doing his stuff for a while now. Glymour's group at CMU likewise. And causal Bayesian networks have become important models for causal philosophers. But there's an awful lot more that could be done. For example, argumentation theories in informal logic can, and should, be implemented in computers; if they can't work there, then (à la Thagard) they aren't worth a damn. I did such a thing in the mid-1990s, but it was at most a proof of concept.

JR: You think there is a role for computer simulations to address philosophical questions, then. Do you believe that they will become more popular in our profession in the future?

KK: I think computers will end up being as important to philosophy as paper and ink have been in the past ... and not (merely) by replacing paper and ink!

JR: Many thanks for the interview, Kevin!

Representational reasoning: a preliminary sketch

Logical analysis of any reasoning applies the model of *propositional reasoning*, presenting it as built out of steps of inference from propositions to further propositions. This interpretative reconstruction, though sometimes distant from the form our discourse or thinking apparently takes, does often effectively reveal the reasoning's implicit rational structure. But some common kinds of reasoning are better understood by applying a different model, that of *representational reasoning*.

Representational reasoning employs *representational thinking*, in which we think about objects of one kind, the *Os*, by taking objects of another kind, the *Rs*, to represent these *Os* in certain respects, on the basis of an isomorphism we take to hold between the *Rs* and the

Os. If we believe that, relative to some one-one correspondence between *Rs* and *Os*, certain features (F_o, G_o, \dots) hold of or among some individual *O*(s) if and only if certain other features (Fr, Gr, \dots) hold of or among the respective corresponding *R*(s), we may for, e.g., a given *O* which is F_o , see the corresponding *R*'s being Fr either as *corresponding* to (or mirroring, or matching) that *O*'s being F_o , or, more radically, as *representing* its being F_o .

We can deploy this thinking where there are operations—observations or manipulations—we can perform on the *Os* (e.g., counting or measuring them) which would establish new facts about the *Os*, with parallel isomorphism-preserving operations performable on the *Rs*: if a certain operation on the *Os* is impracticable, or more difficult than the corresponding operation on the *Rs*, we may learn something about some *Os*, which the operation on them would have disclosed, by instead performing the corresponding operation on the corresponding or representing *Rs* and from the result reading a fact about the *Os*. Dealing with two flocks of sheep of known sizes, we manipulate beads on an abacus, and from the result read off the total number of sheep; we measure a distance between two points on a map and read the result as the distance between the towns represented.

This is the natural interpretation of our thinking in a spectrum of cases, ranging from: (1) calculations using an abacus (and arithmetical sums are, I believe, more highly conventionalised versions of abacus calculations), or using a slide-rule; through (2) uses of maps, diagrams, flow charts, musical notation, and so on; to (3) reading learned natural signs (including symptoms and evidence generally) and using instruments based on these (e.g., barometers), or using any empirical model (mechanical, computer or abstract) of a structure, process or system.

In any of these cases, thinking which takes the *Rs* not as representing but merely as corresponding to the *Os* is best understood as propositional reasoning—specifically, reasoning by analogy, with a statement of the isomorphism as major premiss. But we do often in our observations or operations take the *Rs* as representing the *Os*, in a strong sense—as standing for or in place of them, or as substitutes for them. Is such thinking really just again telescoped analogical propositional reasoning? Claim: while in case (3) it is, in case (1) it is not. (Case (2), not discussed here, is complex.)

The pivotal issue: is relying on the isomorphism relying on empirical fact(s) (corresponding to a premiss), or on something on which the reasoning practice rests as a presupposition (or on some mixture of these)? In case (3) (natural signs/models), the assumed isomorphism functions as a substantial premiss (someone sceptical about the isomorphism can rationally challenge the reading of sign or model); the reasoning is really tele-

scoped propositional reasoning. Materials for a possible contrary argument regarding case (1):

- (i) (Preliminary) Use of any symbolism is underpinned by conventions plus assumed contingent facts. E.g., propositional reasonings expressed in words are underpinned by facts about meaning and meaning-constancy in language (including ultimately facts, e.g., about our shared capacities to recognise distinct tokens of a word-type and attach uniform meanings to these tokens). Such contingent underpinnings are presuppositions of the practice, never taken to be additional premisses in individual reasonings (and not open to challenge from within the practice).
- (ii) In, e.g., (representational) abacus calculations, the only factual assumption made in taking the *Rs* (beads) as representing the *Os* is that *Rs* and *Os* are both countable sorts. For, given any two countable sorts, *As* and *Bs*, having paired off the *As* and the *Bs* we could (in principle) determine the number of any finite collection of *Bs* by counting the corresponding *As* (or conversely): given countability, cardinalities will be mirrored under the pairing. Abacus calculations are in essence sophisticated versions of such surrogate countings (with constitutive conventions about what beads on different rows represent).
- (iii) Any thinking about numbers of *Os* already assumes that *Os* are countables; the only additional assumption made in abacus calculating is that the *Rs* (beads) are countables. This is indeed contingent (*Rs* might have lacked the requisite stable individual identities). But the *Rs* will be of a paradigmatically countable sort, countable if any things at all (including *Os*) are (whence our choosing them to represent any other countables). Their being countable is an underpinning of the representational thinking incorporated in the practice, not a premiss in individual abacus calculations.

(Another argument: category-assignments, such as our taking *Rs* and *Os* to be countables, while they carry factual commitments, provide a framework for our thinking, to which these commitments stand as presuppositions rather than being premisses.)

Conclusion: some apparently representational reasonings (including at least some kinds of calculating) are arguably to be seen as genuinely representational, not just enthymematic propositional reasonings. The propositional model must be dominant within logical analysis, because we can reflect articulately on our thoughts only as captured in (sentential) forms of words; indeed, only by propositional reasoning can we distinguish and discuss representational rea-

sonings. And any representational reasoning can be reconstructed as a propositional reasoning. But the representational model has a proper subordinate place in Logic; we will lose important insights into some kinds of representational reasoning if we force them into a propositional mould.

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Omnipotence and Contradiction

Here is a classic puzzle concerning omnipotence: suppose there is an omnipotent being, Jean. Is Jean able to create an immovable stone? Assume she *can* create it. Such a stone cannot be moved by any being at all, including any omnipotent being. Hence, the immovability of the stone would apparently limit Jean's powers, and thus she would not be omnipotent. But if Jean *cannot* create the stone, she appears not to be omnipotent in the first place. So, this reasoning may seem to reveal that the idea of omnipotence is incoherent.

Recently, Alex Blum (2008: 'The Paradox of Omnipotence', *The Reasoner*, 2(12)) presented the above puzzle and proposed a solution. I will make two points concerning his contribution. The first point is not original, but often overseen: in the above form, the puzzle involves a very simple confusion and does not get off the ground. But there is another, more problematic form of the puzzle. The second point is that there is a problem with the solution proposed by Blum.

First things first: is the alleged puzzle really puzzling? Assume Jill is a highly creative mind. By virtue of her creativity she could design a drug which would render her completely mindless. Does it quite paradoxically follow that she is and isn't creative? No; if anything should appear puzzling here, it is due to a confused description of the case. The fact is simply that Jill *has* some ability, creativity, which she could use such that she would lose this very ability (it would make her mindless). But that someone has something which she can *lose* in no way amounts to a contradiction.

Taken by itself, the assumption that Jean (an omnipotence being) can create an immovable object is not more puzzling than Jill's case: the *mere ability* to create an immovable stone poses no limits to Jean's omnipotence. If she were to use the ability, however, and created an immovable stone, then Jean would apparently bring about the *loss* of her own omnipotence. Unless there are reasons to regard Jean's causing herself to lose her omnipotence as an impossible state of affairs, no puzzle remains. And no such reasons are forthcoming unless some *additional* assumptions are made, namely that

(i) the omnipotent being is *essentially* omnipotent (it

cannot exist without being omnipotent), and that

(ii) the omnipotent being is a *necessary being*, such that it cannot bring about its own non-existence.

(This observation is not novel; see, e.g., J. Hoffman & G. Rosenkrantz 2008: [Omnipotence](#), *The Stanford Encyclopedia of Philosophy* (Fall 2008 Edition), E. N. Zalta (ed.). Nevertheless, it should be repeated as long as the above traditional version of the puzzle appears in the literature.)

So, let us now assume Jean is a necessary being and essentially omnipotent. Could she create an immovable stone?

Blum's answer (which is a standard response; cp. Hoffmann & Rosenkrantz 2008) is as follows: omnipotence must not be taken as the ability to perform any specifiable action whatsoever. That some being cannot square the circle, e.g., does not speak against its omnipotence. More generally:

Omnipotence & Impossibility:

If the performance of task *T* would result in the truth of a logical impossibility, then even an omnipotent being *x* cannot perform *T*, while this does not impair the omnipotence of *x*.

A note in passing: an impossibility is a proposition which is false in every possible world. Some impossibilities are logical (they are false in virtue of logical laws). Non-logical impossibilities may, e.g., include conceptual falsities ($4 < 3$, bachelors are unmarried) and/or (non-)identity-statements ($\text{water} \neq H_2O$). Majid Amini (2009: 'The Red Herring of Logical Impossibility', *The Reasoner*, 3(1)) holds that **O&I** is insufficient, because it only allows an omnipotent being to lack abilities whose exertion results in true *logical* impossibilities, whereas omnipotence would still require abilities whose exertion results in true *non-logical* impossibilities. But he overlooks that the truth of *any* impossibility entails anything whatsoever, including the truth of any logical impossibility. Hence, any ability whose exertion results in a true non-logical impossibility *is* an ability whose exertion results in a true logical impossibility.

Now, Blum argues, thanks to **O&I** we can hold that an omnipotent being cannot create an immovable object (because this would result in a true contradiction), while this does not speak against the omnipotence of the being.

But why should Jean's creating an immovable stone lead to a contradiction? We assume:

A.1 Jean is essentially omnipotent and necessarily existing.

A.2 Jean creates an immovable stone (call it STONE).

Blum presumably thinks that A.1 and A.2 entail the following contradiction:

C STONE is immovable and \neg STONE is immovable.

The first conjunct immediately follows from A.2. The second conjunct may seem to follow from A.1: since Jean is omnipotent, she can move STONE, and hence, STONE is not immovable.

But this reasoning is inconclusive, at least if STONE is *essentially* immovable. To move an essentially immovable object is an action the performance of which would result in a contradiction (because if an object is moved, it is movable and therefore not immovable). By **O&I**, we must therefore deny that an omnipotent being can move STONE. Again by **O&I**, this inability does not impair the omnipotence of the omnipotent being.

Curious as it is, given **O&I** one should apparently conclude that Jean can create an essentially immovable stone. If she creates it, there will be something she cannot do (i.e., move the stone), but this will not speak against her omnipotence.

The only way to argue, based on **O&I**, that Jean cannot create an essentially unmovable stone would be to show that there cannot exist such a thing anyway. Perhaps, an argument could stem from considerations on what it is to be a stone (or a material object in general), but no such argument is forthcoming from reflections on the idea of omnipotence.

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Rejoinder to Majid Amini on Omnipotence

Majid Amini touches on interesting points in his rejection of my solution of the paradox of omnipotence (2008: ‘The Paradox of Omnipotence: Not for an omnipotent God’, *The Reasoner*, 2(12)). I argued that a stone too heavy for an omnipotent being to lift is one which is logically impossible to lift. Hence for God to lift such a stone is no less impossible a task than it is for him to draw a square circle.

Amini points out that Descartes believed that God can perform the impossible, and that there are others who are willing to consider the possibility of there being multiple omnipotent beings. I considered neither position. For I intended to solve a problem that was an irritant for the traditional theist who believes that necessarily there is but one omnipotent God, who although a necessary being and omnipotent, cannot tamper with possibilities in the widest sense. ‘Logical possibility’, in the paper as well as here, is meant to be so understood, as attested by its having been grouped in the paper with ‘necessity’.

The critical point adduced by Amini against my solution rests on his arguing that since the lifting of a stone is not an impossible task, neither is its being unperformable by an omnipotent being. But the lifting of an *unliftable stone* is an impossible task irrespective of whether the agent is omnipotent or not. God’s omnipotence plays no role in the task to be performed. Its sole duty is to render the stone necessarily unliftable. Hence, contrary to Amini’s contention it is not the case that “the task qua task is certainly devoid of any impossibility” (Ibid. p. 5).

One may venture even further. If “necessary unliftability” cannot be an essential property, then an unliftable stone is uncreatable as well. I vacillated in the paper on this point.

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Divine liars: the devil’s in the details

Hartley Slater falsely supposed that I think there’s no essential difference between the sentential and the propositional formulations of (strengthened) Divine Liars, at the start of his ‘Supposed Liars, Divine Liars and Semantics’ (*The Reasoner*, 3(1)). My ‘Liars, Divine Liars and Semantics’ (*The Reasoner*, 2(12)) had merely questioned a presumption of Patrick Grim’s sententially formulated (4) = ‘God doesn’t believe that (4) is true.’ Grim had presumed without comment, let alone justification, that those two instances of ‘(4)’ could be the same proper name. And although such naming practices are fairly standard nowadays, that’s why the idea that their legitimacy is challenged by the paradoxicality of their application to Liar-style sentences could be of some interest.

Propositional reformulations, such as my tentative (4*) = ‘God doesn’t believe that (4*) ever expresses a true proposition,’ raise different and more difficult considerations, which I’d simply ignored in order to state my question as clearly as I could within a thousand words. An obvious difference is that although a semantic problem with sentences is *prima facie* a problem with propositions, and vice versa, hardly anyone argues over whether sentences exist. Less obviously, although when considering (4)—which can be so-named even if I’m right about the illegitimacy of that naming practice, if the occurrence of ‘(4)’ within (4) isn’t also as (4)’s name—it had seemed acceptable to implicitly presuppose some ordinary linguistic notion of literal truth, perhaps I should make that notion more explicit when properly reformulating (4) propositionally. So instead of (4*) consider (4**) = ‘God doesn’t believe that the modern English sentence (4**) could ever express any true proposition literally.’

That's still pretty tentative, e.g., the modality might be difficult to explicate, and even literal truth is notoriously difficult to define. 'Snow is white,' for example, literally means that snow is white, and is true if indeed snow is white, but it's hard to say what such repetitions mean in other, more general words. Still, there's presumably some such semantic rule, say (T), that's both true enough and applicable to such sentences as—for a simpler example (called 'B' earlier)—(L) = 'This sentence is not (now) true.' The parenthetical 'now' is only there to reduce the risk of equivocation, incidentally.

Suppose, if only for the sake of *reductio*, that (L) was expressing something literally. What (L) would then be expressing would, via (T), at least include *that (L) isn't true*, which is (in view of the self-reference) that it isn't true that (L) isn't true, which is (via double-negation elimination) *that (L) is true*. Now, what I've just shown is, I think, that the last two italicised expressions would be expressing the *same* proposition if (L) was being used to express *any* proposition literally. And maybe I've effectively shown that (L) expresses no proposition literally, i.e., that it's nonsense. But I've not *thereby* allowed that sentences may express *more* than one proposition. Recall that Slater said (ibid, 4):

Cooke says, with regard to 'Liar sentences', that 'they do seem to be saying, not only that they are not true, but also, if less obviously, that they are (therefore) true'. So sentences, he allows, may express more than one proposition, even if they may express one proposition more obviously than another. But if so then one cannot immediately derive, with respect to the previous case that the (one and only) proposition that (4*) expresses is (the obvious one) that God doesn't believe that (4*) ever expresses a true proposition.

A sentence may of course express different propositions, e.g. literally and analogically, or by being equivocal, or when it's expressed by different people, or at different times or places, or because the language in which it exists changes, etc. But Slater will, I suspect, have difficulty indicating what other proposition could have been expressed by (4*)—or better, (4**)—literally. If he has to use different words to those of (4*), then is it really expressed by (4*)? And if he doesn't, then why wasn't it expressed when he used those same words to express the 'obvious' proposition?

Furthermore even if one may, in such a way as Slater's (above), point unambiguously to one proposition, something like the original problem with (4) would arise. Note that if (4**)—or (4*)—is, as I believe it is, nonsense, then it doesn't express any proposition literally, and so ideally one wouldn't be able to derive that it does. But if, counterfactually, (4**) was expressing

anything literally, then presumably by (T) that would be the proposition that *God doesn't believe that the modern English sentence (4**) could ever express any true proposition literally*. And that does seem like a proposition to me, if only because I'd assert it, in so many words, on the grounds that (4**) is literal nonsense and that God would, were he real, be wise enough to know that. So, whether or not any other propositions are expressible by (4**), literally or otherwise, we've something like the problem that (4) presented to theists. That is, if (4**) could be used to express a true thought literally then God doesn't believe—via the truth of that (last italicised) proposition—that it could be so used, whereas if (4**) couldn't be so used then that proposition is true, whence any completely omniscient being would believe it.

Something like it; but as I say, it may be that a reformulation more precise than (4**) is required to yield a paradox sufficiently close to that of (4). In fact, I happen to be agnostic about whether that's even possible, about whether there's at least that essential difference between the two sorts of formulation. But the point is that the traditional resolution of Liar-style sentences—that you can't, by talking nonsense, say that you aren't telling the truth—applies to any legitimate formulation, and would in particular apply to sentential formulations, were they allowed.

Martin Cooke

Divine liars

Martin Cooke in 'Liars, Divine Liars and Semantics' (*The Reasoner* 2(12)) says:

Patrick Grim ... tries to show that no one is omniscient-knows all and only truths-via the following sentence which he ... called '(4)': God doesn't believe that (4) is true. ... If (4) is true then (4) is a truth that God doesn't believe, and if (4) is false then there is a falsehood that God does believe. Furthermore, if (4) is not so much false as senseless then, since (4) is still not true, and since God is omniscient (if he exists), God doesn't believe that (4) is true. But that is just (4), so (4) is true, whereas ex hypothesi (4) is not true.

The error in the argument is "But that is just (4)." Since ex hypothesi (4) is senseless then it cannot be just "God doesn't believe that (4) is true." The latter is clearly sensible. It is a *different sentence token* of the same *sentence type*. As Laureano Luna pointed out ('A note on tokenism and self-reference,' *The Reasoner*, 2(11)), in case of natural languages, sentence tokens

rather than sentence types must be our truth bearers. That is the lesson of the Liar Paradox. Why is this so?

It is a commonplace that, as a rule, truth and falsity depend on tokens, over and above their types. 'I am hungry' has different truth-values, depending on who makes the utterance. The same goes for all cases that involve indexicality, either explicitly through words such as 'I', 'you', 'here', etc., or implicitly—by contextual factors surrounding the utterance or the inscription.

Gaifman ([Pointers to Propositions](#), Columbia University, p. 3.) There is no a priori reason to assume that that two different tokens of the same type mean the same thing. Consider the example below.

C: "C is not true."

D: "C is not true."

The assumption that C and D have the same meaning leads to a contradiction forcing us to conclude that C and D do *not* have the same meaning. Then the paradox vanishes. If C is meaningless then it is not true, and D says so.

But C indeed *is* meaningless! If it were meaningful we ought to be able to compare it with reality and verify or falsify it. The problem is that the "reality" that C reflects, is itself a comparison of a sentence [namely of C] with reality. If we attempt to compare C with reality we enter an infinite loop, and our attempt will fail. C is inherently incomparable with reality. It does not express a possible state of affairs. Hence C *is not true*. We clearly understand this and our understanding is expressed by D. Verifying D does not seem to pose a major problem. D states that C does not correspond to an actual state of affairs, which is true. Note the subtle difference between C and D. C refers to itself but D does not. The formal semantics that allows two different tokens of the same type to have different meanings must be non-compositional (Gaifman, pp. 5-6).

Replacing (4) with (4*) = 'God doesn't believe that (4*) ever expresses a true proposition' does not make any difference. If (4*) is senseless then it does not express a true proposition. Presumably God does not believe that (4*) expresses a true proposition. But that is not just (4*).

Naming the sentence 'C' is not the problem. Any means of referring to the sentence will do:

<The sentence in angle brackets is not true.>

The sentence in angle brackets is not true.

The sentence in angle brackets is senseless (meaningless). The sentence immediately below it is true.

Could (4*) express two different propositions as Hartley Slater suggests in 'Supposed Liars, Divine Liars and Semantics' (*The Reasoner* 3(1):3-4)? Not so. (4*) is meaningless just like C. Hence (4*) does not express any proposition. Rather than reading two different propositions in one sentence type it is more natural to read two different propositions in two different sentence tokens (Gaifman, p. 8).

X.Y. Newberry

A Priori Claims, Self-Evidence, and Moral Naturalism

In *Morality in a Natural World: Selected Essays in Metaethics*, David Copp offers a defense of moral naturalism. In the essay "Moral Naturalism and Self-Evident Moral Truths," Copp argues that self-evident moral truths are accountable within a naturalistic framework as such truths are not a priori as normally conceived. Copp's defense focuses upon the empirical defeasibility of self-evident moral claims. The argument, however, is a red herring as the central issue is the status of a priori evidence itself and not the defeasibility which Copp focuses upon. Additionally, the position gives up too much to moral nonnaturalism to be an adequate defense of moral naturalism.

Moral naturalism is the claim that moral properties are natural properties. As Copp (2007: *Morality in a Natural World*, Cambridge University Press, p. 94) states,

But then since moral naturalism views moral properties as having the same metaphysical and epistemological status as ordinary unexceptional properties, moral naturalism seems committed to viewing all of our knowledge or justified belief of synthetic moral propositions as a posteriori.

Commitment to moral naturalism is clearly at odds with any conception of self-evident moral truths as a priori.

The claim of self-evidence is that common sense principles, such as it is wrong to torture innocent people, are known without any argument or justifying information. Robert Audi (2004: *The Good in the Right*, Princeton University Press) and Russ Shafer-Landau (2003: *Moral Realism: A Defence*, Clarendon Press) both identify a proposition as self-evident in terms of its truth being known once one understands the proposition. Copp does not argue against this conception of self-evidence, but instead attempts to illustrate how a naturalist can agree with the idea that such common sense principles are self-evident. Copp denies that self-evident propositions are understood independently of experience as is required for such propositions to be

known a priori. The key is the qualification to the notion of self-evidence which he makes in developing his view of an understanding of a proposition.

The central issue, however, is whether or not self-evidence is compatible with moral naturalism. The issue, for Copp, hinges upon the empirical defeasibility of self-evident propositions. As Copp (2007: p. 105) states,

Both Audi and Shafer-Landau acknowledge that the justification possessed by self-evident propositions is defeasible. Even if a person's belief that *p* could be defeasibly justified without empirical evidence that *p*, it does not follow that there can be no direct empirical evidence that not-*p*.

The first difficulty for Copp arises here with the implications of defeasibility. Copp appears to be assuming that the existence of any empirical evidence that not-*p* would simply outweigh any non-empirical evidence in favor of *p*. The mere possibility that empirical evidence could outweigh non-empirical evidence is not enough as both Audi and Shafer-Landau can easily accept the revision of understanding, a necessary condition of self-evidence in both accounts, based upon new evidence whether it be a priori or a posteriori. The issue is the status of the a priori evidence itself, an issue Copp's discussion of defeasibility ignores by instead focusing upon defeasibility.

The focus upon defeasibility influences Copp (2007: p. 109) to revise the definition of self-evidence to the following:

A proposition *p* is self-evident in relation to a cognitive situation *S* just in case *p* is a truth such that a person in *S* who adequately understood and attentively considered just *p* would be defeasibly justified in believing that *p*.

Importantly, the notion of defeasibility here is not tied to empirical evidence only, or even primarily. Thus, such a definition seems acceptable to those maintaining a view of self-evidence as a priori. However, Copp then repeats the mistake of focusing upon empirical defeasibility again. He states (2007: p. 109):

The important point is that the argument is compatible with the thesis that the common sense principles are empirically defeasible.

The argument, however, does not discuss the state of a priori evidence. In particular, one can completely agree with Copp's position concerning self-evidence and remain committed to both self-evidence as a primarily a priori concept and non-naturalism.

Copp might reply that the point of the argument is only to illustrate that naturalism is compatible with self-

evident moral claims, not to establish an empirical notion of self-evidence. However, the compatibility of naturalism and self-evidence relies upon the status of self-evident claims themselves. If they are primarily a priori, then naturalism is incompatible with self-evidence. The claim of empirical defeasibility only states that empirical evidence can be relevant in determining the truth of a proposition. Naturalism, epistemologically characterized, is a claim about our primary source of moral knowledge. Thus, the focus upon the notion of empirical defeasibility only establishes the relevance of empirical evidence to understanding, something non-naturalists can accommodate, but does not establish the relevance of this evidence at the primary level conceived by a priori evidence at use in the concept of self-evidence.

The final concern is that this view of self-evidence gives up too much ground to the nonnaturalists by making empirical grounds a defeater condition only. Moral naturalists claim the primacy of an a posteriori conception of moral knowledge. The role as defeater evidence only places a posteriori considerations as a secondary concern after the a priori considerations are primarily met. Although moral nonnaturalists will certainly accept such an ordering, this does not further the case for naturalism which is Copp's primary goal by attempting to accommodate self-evidence within a naturalistic framework. Ultimately, Copp does not succeed in providing an account of self-evidence compatible with moral naturalism. The account provided fails to illustrate the compatibility of self-evidence with moral naturalism at the appropriate epistemic level.

Christopher M. Caldwell
History and Philosophy, Virginia State University

§3

NEWS

Geneva workshop on Neglected Diseases, 8–9 December 2008

'The Science and Politics of Neglected Diseases: Philosophical, Bioethical and Sociological Perspectives on International Health Inequalities' was a workshop organised by two LSE research centres, the Centre for Philosophy of Natural and Social Science and the BIOS Centre, and funded and hosted by the Brocher Foundation in Geneva, Switzerland. Its aim was to bring together an interdisciplinary group of researchers to discuss severe inequalities in global health outcomes from a variety of perspectives such as the ethical foundations for interventions, the organisation of research, the implementation of new strategies, evidence and funding.

Though the workshop was characterised by lively debates and disagreements, there seemed to emerge a consensus on at least four issues:

1. The global allocation of investment into health is skewed and there exists an obligation to do something about it. There are many disagreements about the details but it is clear that the current distribution of funding of research and health care systems is unjust. Also clear is that there are both prudence-related as well as ethical reasons to reduce injustices. Athar Hussain, director of the LSE Asia Research Centre, argued that there are many reasons why researching tropical diseases is in the enlightened self-interest of the West. Dan Brock, Director of the Division of Medical Ethics at Harvard, looked at the ethical bases for redistribution and showed that with the exception of extreme forms of libertarianism all moral theories accept an at least minimal obligation of mutual aid, which is created simply by the need of the disadvantaged and the ability to help at little sacrifice of the advantaged.
2. Narrowly defined ‘Neglected Diseases’ are only one side of the problem. Populations affected by neglected diseases suffer from a variety of other research-related inequalities. Joel Lexchin, physician and professor of health policy at the University of York (Canada), argued that the poor suffer from a number of inequalities relating to diseases that also or even dominantly affect inhabitants of first-world countries because local conditions make treatments that are successful in the first world difficult to apply in the third, because of interactions with other diseases and because the diseases themselves have different characteristics in different contexts. The problem of defining the very concept of disease itself was taken up by Alex Broadbent, philosopher in the Department of History and Philosophy of Science at the University of Cambridge, who pointed out flaws in both the monocausal as well as the multifactorial model of disease and argued in favour of a contrastive model. Ann Kelly, an anthropologist based at the London School of Hygiene and Tropical Medicine, noted that attempts to understand the aetiology and best treatment courses for diseases such as malaria are contingent on much hidden labour on the part of research subjects based in developing settings.
3. Relatedly, it became clear that research into new treatments is only a small part of the problem. On the one hand, there are great obstacles in the area of *access* to treatments. Charles Gardner, Senior Innovation Specialist at the Global Forum for

Health Research, drew attention to the fact that innovation concerns the whole process from the generation of ideas, the transformation of these ideas into something useful and the implementation of the solutions and pointed out that the latter stages are often intricate and not well-understood. On the other hand, there are numerous problems affecting the research itself when local conditions differ from place to place. Michael Parker, Director of the Ethox Centre at Oxford and leader of the ethics programmes of the Malaria Genomic Epidemiology Network, described numerous difficulties regarding data generation, labelling, aggregation and sharing that stem from the conflict between the necessity of standardisation on one side, and local differences and expertise on the other.

4. Another consensus emerged regarding the role of philanthropic money from institutions such as the Gates and Rockefeller foundations. While everyone agreed that this money is welcome and better spent this way than on many alternative uses, there was also agreement that philanthropy is not without its problems. Nicolas Guilhot, sociologist at the Social Science Research Council, talked about many consequences of the recent trend to commercialise research and pointed out that philanthropic money often originated in the least regulated and most ‘predatory’ sectors of the economy and that the values held there often affect the way in which philanthropically funded projects are run. Tido von Schön-Angerer, Executive Director of MSF’s Campaign for Access to Essential Medicines, noted that there are various problems concerning the governance of philanthropic foundations, especially when they dominate whole areas of research such as the Gates Foundation.

Of course, many differences remain. One concerns the alternative strategies to reincentivise biomedical research. James Robert Brown, Professor of Philosophy at the University of Toronto, criticised so-called Advance-Market Commitments and argued that biomedical research is best left in the public hand, while James Love, Director of Knowledge Ecology International, advocated the creation of a Medical Innovation Prize Fund that awards large cash prizes to reward developers of new treatments. Both argued in favour of a radical reform of the current intellectual property system, however, whereas Detlef Niese, head of External Affairs in Global Development at Novartis, showed many ways in which pharmaceutical companies even in the current system can help to overcome severe inequalities.

Finally, there was also some optimism. It is uncontroversial that current biomedical research is beset with

innumerable problems. Nevertheless, more and more researchers in all fields seem to be concerned by these problems and are starting to act. This can be witnessed by various public-private partnerships in which pharmaceutical companies cooperate with NGOs and, with the support of governmental and philanthropic funds, conduct research into neglected diseases, by initiatives originating in the pharmaceutical industry itself, by an increasing number of specialised organisations and internet platforms, as well as by a growing awareness of the importance and severity of the problems discussed at the workshop in many academic and public quarters.

[Julian Reiss](#)
EIPE, Rotterdam

[Linsey McGoey](#)
James Martin Institute, Oxford

[Ayo Wahlberg](#)
BIOS Centre, LSE

3rd Indian Conference on Logic and its Applications, 7–11 January

The 3rd Indian Conference on Logic and its Applications (ICLA) was held in the Institute of Mathematical Sciences, Chennai during 7–11 January, 2009, continuing the tradition of the biennial series of conferences and winter schools held in alternate years as initiated from the year 2005. The conference this year was mainly supported by the Institute of Mathematical Sciences, with additional support from organisations like Microsoft Research, ASL and FOLLI. The conference proceedings have been published as volume 5378 of the Springer Lecture Notes in Artificial Intelligence (LNAI).

The event started with the two-day parallel pre-conference workshops on (i) Algebraic Logic and (ii) Logic and Social Interaction. The Algebraic Logic workshop was basically framed as a series of tutorials mainly focused on Relation Algebras (Ian Hodkinson and Robin Hirsch) and Substructural Logics (Hi-roakira Ono and Peter Jipsen). Interesting techniques like the game-theoretic methods as well as rainbow-algebra constructions were introduced so as to prove different representation results in relation algebras. A thorough introduction was given on substructural logics, residuated lattices, the structure theory as well as their interconnections.

The Logic and Social Interaction workshop focused on current advances made towards modeling complex interactive situations. Johan van Benthem started the rich repertoire of talks with his deep insights into the

meaning of the term rational agency and provided pointers towards combining/parametrizing the different notions involved, viz. preference, belief, knowledge, action, strategies, etc. in a feasible way with the pertinent question—can the logic approach add anything new to the already existing theories of social procedures? Rohit Parikh gave an enticing talk considering language splitting within the AGM framework of belief revision so as to differentiate the non-relevant part while doing revision, followed by an intricate logical framework describing the subtleness of election campaigning. Francesca Rossi followed that up with a thorough overview of preference reasoning as applicable in various social procedures studying their computational and expressive properties as well as the notions of fairness and non-manipulability of choices. Different possible merging operations for agents' beliefs in the line of preference merging in social choice theory were discussed by Alexandru Baltag. Jan van Eijck talked about the connections between analyzing discourses in natural language theory and the social software protocols, whereas Rineke Verbrugge led the logicians present there through a path of cognitive science approaches towards the study of theory of mind.

In both these workshops budding young researchers presented their ongoing work and greatly benefited from their interactions with these leading experts, and several new collaborations emerged—making these workshops a huge success.

The main conference started from the 9th of January with a highly educative game theoretic analysis of some intriguing stories of east and west delivered by Rohit Parikh. The contributed papers encompassed an enormous realm of logic with some papers on traditional Indian logic as well and its applicability in modern day discourses. This diverse trend followed in the invited papers also, where we made acquaintance with different interactive proof assistants (aiding in machine-checking proof theory), thanks to lucid description provided by Rajeev Gore, got a survey of fuzzy and paraconsistent logics—from antiquity to its present day scenario—from Esko Turunen. Moshe Vardi delved into an informative survey of computer science logics from their origin in the 1920s—from the philosophical background to the current industrial applications—giving a sense of doing something useful. Johan van Benthem analysed the decision making aspects in games from a logical perspective with the main emphasis on backward induction procedure, whereas Johann Makowsky talked about MSOL-definability of graph polynomials focussing on the 'uniform difficult point property. On a completely different note, Joel Hamkins immersed us in the second-order category theoretic framework of set theory, considering forcing as a method of building outer as well as inner models of set theory.

Finally, ICLA 2009 also witnessed a historic occa-

sion with the first ever general body meeting of the Association for Logic in India (ALI) held in between all these knowledge building and sharing activities, where its first Executive Council was chosen for the smooth functioning of the logic activities in India in the next two years till ICLA 2011. ALI announced the 3rd Indian Winter School on Logic and Applications to be held in Department of Computer Science, University of Hyderabad, from January 4 to 15, 2010.

Sujata Ghosh
ISI Kolkata

LOGOS Workshop on Singular Thought, 16–17 January

The debate on the distinction between singular and general thoughts (also known as the *de re / de dicto* distinction) was first introduced by Quine’s discussion of a distinction between notional and relational readings of belief-reports and (independently of Quine) has been fundamental for the disputes between descriptivist and direct reference theorists. The classical debate has offered a great variety of contrasting proposals, but most standard accounts imposed an epistemic constraint on *de re* thoughts inspired by Russell’s Principle of Acquaintance, i.e., in order to think about particular objects we have to be somehow causally or epistemically *en rapport* with them.

The LOGOS Workshop took place in Barcelona on 16–17 January. An interesting range of new contributions on the topic were put forward by eight contributors and discussed together with a large audience of participants including professional philosophers and graduate students from all over Europe and America.

Robin Jeshion (University of California Riverside, ‘The Significance of Names’) contended that it is more a significance condition than an acquaintance condition that constrains the working of ordinary proper names. Peter Pagin (University of Stockholm, ‘Cybersemantics’) elaborated a semantics for cyber games where the singular attitudes of the players are in fact about the causally related data structures on the server running the program. Cian Dorr (University of Pittsburgh, ‘Transparency and the Context-Sensitivity of Attitude Reports’) presented an original argument in favour of the context-dependence of attitude reports. John Hawthorne and David Manley, (respectively, Oxford and University of Southern California, ‘Something in Mind’) presented part of their forthcoming book on reference. They disputed the acquaintance condition and advocated a unified account of names, demonstratives, indefinite and definite descriptions by drawing on considerations on their context-sensitivity. Kathrin Glüer-Pagin (University of Stockholm, ‘Empty Names

in Relational Semantics’) proposed to use a relational semantics for vacuous proper names that allows them to have descriptive contents while accounting for the rigidity intuitions. Imogen Dickie (University of Toronto, ‘Practical Acquaintance’) proposed an interpretation of acquaintance as *non-conceptual practical knowledge-which* by appealing to empirical results on visual attention and to the Wittgensteinian principle that if a perceptual link with a thing puts you in a position to form a conceptual representation of a thing, it must put you in a position to grasp the basic aspects of deployment of the conceptual representation. François Recanati (Institut Jean-Nicod & Arché, ‘Singular thought and acquaintance: the mental-file approach’) endorsed what he calls ‘restricted instrumentalism’. We can generate mental vehicles of singular thought by using the resources of natural language even in the absence of acquaintance, but only when (1) we *expect* that acquaintance with the referent will enable us to gain information from it and (2) we are *right* in our anticipation of some forthcoming informational relation *R* to the stipulated referent. Jim Pryor (New York University, ‘Why we need acquaintance’) proposed an ambiguity thesis about ascriptions of attitudes, and interpreted the attitude-operator in some cases as a quantifier on properties related to the object of the ascribed attitude; this would be serviceable to the acquaintance theorist in cases in which we appear to ascribe *de re* thoughts relative to objects with which the subject lack acquaintance.

Fiora Salis
LOGOS-University of Barcelona

Calls for Papers

PRACTICAL REASONING AND NORMATIVITY: Special Issue, *Philosophical Explorations*, deadline 1 February 2009.

REASONING FOR CHANGE: Special issue of the journal *Informal Logic*, deadline 10 February.

REPRESENTING, LEARNING, AND PROCESSING PREFERENCES: THEORETICAL AND PRACTICAL CHALLENGES: Special issue of *Artificial Intelligence*, deadline 15 February.

COMMONSENSE REASONING FOR THE SEMANTIC WEB: Special issue of *Annals of Mathematics and Artificial Intelligence* (AMAI), deadline 28 February.

JUST REASON: Special issue of the journal *Studies in Social Justice*, deadline 1 April.

INTUITIONISTIC MODAL LOGICS AND APPLICATIONS: Special issue of *Information and Computation*, deadline 31 May.

CAUSALITY IN THE SCIENCES

A volume of papers on causality across the sciences
Deadline 1 July

§4
INTRODUCING ...

In this section we introduce a selection of key terms, texts and authors connected with reasoning. Entries will be collected in a volume *Key Terms in Logic*, to be published by Continuum. If you would like to contribute, please [click here](#) for more information. If you have feedback concerning any of the items printed here, please email thereasoner@kent.ac.uk with your comments.

Blaise Pascal

Blaise Pascal (1623-1662) was a French mathematician, physicist, and religious philosopher. In mathematics, he wrote on conic sections (1640), designed a calculating device counting integers (1642-1644), laid the foundations for the calculus of probabilities, and interpreted geometry as the ideal scientific method (*Esprit de géométrie*, 1654). In physics, he tested the theories of Galileo and Torricelli by constructing a mercury barometer, and wrote treatises on the weight and density of air. He also invented the syringe, created the hydraulic press, and demonstrated, against Aristotle, that a vacuum could exist in nature (1647-48).

At the end of 1654, Pascal experienced a mystical conversion, and frequented the Jansenist convent of Port Royale. He had some influence on the writing of the *Logique de Port-Royale* by Arnauld and Nicole. In *Les Provinciales* (1657), Pascal defended Arnauld, on trial for his controversial religious works against the Jesuits. Subsequently, he started his work of Christian spirituality, which remained unfinished at his death; the fragments were published under the title *Pensées* (Thoughts). He showed that the man without Grace was incapable of truth, meaning that only religion had to be loved. Pascal's wager was suggested as an argument for overcoming the indifference of the sceptic. The crucial assumption was that reason was powerless to deduce God's existence; in other words, Descartes' deductive proof was irrelevant. However, reason showed that we could wager on God's existence, for there was nothing to lose and everything to gain. If God did not exist, the sceptic lost nothing but a false belief, which was a finite loss. On the other hand, if God did exist, then the sceptic gained eternal life, which was an infinite gain. The wager from reason intended only to convince the non-believer, and had eventually to be replaced by faith, i.e.

Euler diagrams

Euler diagrams represent categorical propositions as pairs of circles, overlapping partially, wholly, or not at all. Leonhard Euler (1707–1783) popularized them in *Lettres à une princesse d'Allemagne* (1768), overlooking anticipations by Leibniz and others. Three circle Euler diagrams evaluate syllogisms, but clumsily compared with their offspring, Venn diagrams.

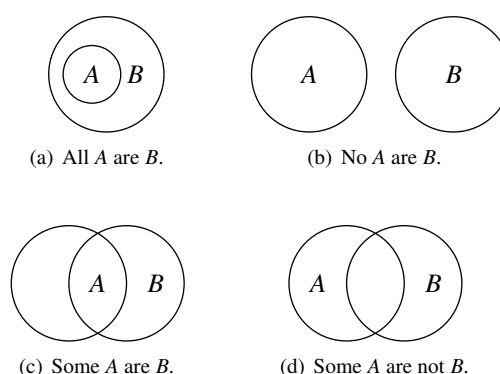


Figure 1: Euler Diagrams.

Andrew Aberdein
Humanities & Communication, Florida Institute of
Technology

§5
LETTERS

Dear Reasoners,

I need your stories. I appeal to all Reasoners for recollections of challenges they encountered in their early learning of mathematics. Such stories frequently lead to surprisingly deep mathematics. An example (discussed in my [draft book](#)):

A girl aged 6 easily solved 'put a number in the box' problems of the type $7 + [] = 12$, by counting how many 1's she had to add to 7 in order to get 12 but struggled with $[] + 6 = 11$, because she did not know where to start.

Alexandre Borovik
Mathematics, Manchester

§6 EVENTS

FEBRUARY

NEW TRENDS ON INTELLIGENT SYSTEMS AND SOFT COMPUTING: Granada, 5–6 February.

SYNTAX AND ONTOLOGY OF PREDICATION: IHPST, Paris, 6–7 February.

ACM INTERNATIONAL CONFERENCE ON INTELLIGENT USER INTERFACES: Sanibel Island, Florida, 8–11 February.

AIA: IASTED International Conference on Artificial Intelligence and Applications, Innsbruck, Austria, 16–18 February.

COLLOQUIUM: PhD's in Logic, Ghent, 19–20 February.

CICLING + LEXICOM: 10th International Conference on Intelligent Text Processing and Computational Linguistics; pre-conf event: Lexicom-Americas workshop, 24–28 February.

INTERONTOLOGY: 2nd Interdisciplinary Ontology Conference Tokyo, Japan, 27 February–1 March.

MARCH

MODELS AND SIMULATIONS 3: Charlottesville, Virginia, 3–5 March.

&HPS2: Integrated History and Philosophy of Science, University of Notre Dame, 12–15 March.

ADS: Agent-Directed Simulation Symposium, Part of the Spring Simulation Multiconference, San Diego, California, 22–27 March.

SPUC: The Science and Philosophy of Unconventional Computing, Cambridge, 23–25 March.

EVIDENCE, SCIENCE AND PUBLIC POLICY: Sydney Centre for the Foundations of Science, 26–28 March.

EACL: Computational Linguistic Aspects of Grammatical Inference, Athens, 30 March.

CSIE: World Congress on Computer Science and Information Engineering, Los Angeles/Anaheim, 31 March–2 April.

APRIL

SPARSITY IN MACHINE LEARNING AND STATISTICS: Cumberland Lodge, UK, 1–3 April.

FOUNDATIONS OF MATH: New York University, 3–5 April.

MATCHING AND MEANING: Automated development, evolution and interpretation of ontologies, Edinburgh, 9 April.

TOO FUNKY: an international workshop on sympathy and emanation, Leiden Institute of Philosophy, The Netherlands, 10–11 April.

EUROGP: 12th European Conference on Genetic Programming, Tübingen, Germany, 15–17 April.

SEMANTICS AND PHILOSOPHY IN EUROPE: Institute of Philosophy, University of London, 16–18 April.

AISTATS: Twelfth International Conference on Artificial Intelligence and Statistics, Clearwater, Florida, 16–19 April.

ESANN: 17th European Symposium on Artificial Neural Networks Advances in Computational Intelligence and Learning, Bruges (Belgium), 22–24 April.

PHILOSOPHICAL METHODOLOGY: AHRC Project on ‘Intuitions and Philosophical Methodology’ at the Arché Philosophical Research Centre, University of St. Andrews, 25–27 April.

MAY

FOUNDATIONS OF MATHEMATICS: Philosophy and Foundations of Mathematics—Epistemological and Ontological Aspects, SCAS, Uppsala, 5–8 May.

LOGIC OF JOHN DUNS SCOTUS: 44th International Congress on Medieval Studies at Western Michigan University, 7–10 May.

AAMAS: The Eighth International Joint Conference on Autonomous Agents and Multi-Agent Systems, Budapest, 10–15 May.

ACL2: International Workshop on the ACL2 Theorem Prover and Its Applications, Northeastern University, Boston, 11–12 May.

MSDM: Multi-agent Sequential Decision-Making in Uncertain Domains, AAMAS, Budapest, 11 or 12 May.

PHILOSOPHER'S RALLY: University of Twente campus, Enschede, the Netherlands, 12–13 May.

PHILANG: International Conference on Philosophy of Language and Linguistics, Łódź, Poland, 14–15 May.

PHILOSOPHY AND COGNITIVE SCIENCE: The XIXth edition of the Inter-University Workshop, Zaragoza, 18–19 May.

BENELEARN: 18th Annual Belgian-Dutch Conference on Machine Learning, Tilburg University, 18–19 May.

UR: Uncertain Reasoning, Special Track of FLAIRS, Island, Florida, USA, 19–21 May.

AI: The twenty-second Canadian Conference on Artificial Intelligence, Kelowna, British Columbia, 25–27 May.

SCIENCE AND VALUES—THE POLITICISATION OF SCIENCE: Center for Interdisciplinary Research (ZiF), Bielefeld, Germany, 25–30 May.

CSHPS: The Canadian Society for History and Philosophy of Science, annual conference as part of the Congress of the Humanities and Social Sciences (CFHSS), Carleton University, Ottawa, 26–28 May.

JUNE

ARGUMENT CULTURES: Ontario Society for the Study of Argumentation, Windsor, Canada, 3–6 June.

O-BAYES: International Workshop on Objective Bayes Methodology, Wharton School of the University of Pennsylvania, Philadelphia, PA, 5–9 June.

PHILOSOPHY OF PROBABILITY II: Graduate Conference, Centre for Philosophy of Natural and Social Science, London School of Economics, 8–9 June.

CNL: Controlled Natural Languages, Marettimo Island, Sicily, 8–10 June.

SOCIETY FOR PHILOSOPHY AND PSYCHOLOGY: Indiana University, Bloomington, 12–14 June.

NA-CAP: Networks and Their Philosophical Implications, Indiana University in Bloomington, 14–16 June.

NAFIPS: 28th North American Fuzzy Information Processing Society Annual Conference, University of Cincinnati, Cincinnati, Ohio, 14–17 June.

ICML: The 26th International Conference On Machine Learning, Montreal, Canada, 14–18 June.

SPSP: Society for Philosophy of Science in Practice, University of Minnesota, Minneapolis, 18–20 June.

FORMAL EPISTEMOLOGY WORKSHOP: Carnegie Mellon University, 18–21 June.

UAI: The 25th Conference on Uncertainty in Artificial Intelligence, Montreal, Canada, 18–21 June.

NON-CLASSICAL MATHEMATICS: Hejnice, Czech Republic, 18–22 June.

PRAGMATISM & SCIENCE CONFERENCE: Center for Inquiry Transnationa, Amherst, NY, 19–20 June.

WoLLIC: 16th Workshop on Logic, Language, Information and Computation, Tokyo, Japan, 21–24 June.

LOGICA: The 23rd in the series of annual international symposia devoted to logic, Hejnice (northern Bohemia), 22–26 June.

JULY

TWO STREAMS IN THE PHILOSOPHY OF MATHEMATICS: Rival Conceptions of Mathematical Proof, University of Hertfordshire, Hatfield, UK, 1–3 July.

ECSQARU: 10th European Conference on Symbolic and Quantitative Approaches to Reasoning with Uncertainty, Verona (Italy), 1–3 July.

E-CAP: Computing and Philosophy, Universitat Autònoma de Barcelona, 2–4 July.

METAPHYSICS OF SCIENCE: University of Melbourne, 2–5 July.

TARK: Twelfth Conference on Theoretical Aspects of Rationality and Knowledge, Stanford University, 6–8 July.

INFORMATION FUSION: 12th International Conference, Grand Hyatt, Seattle Washington, 6–9 July.

TABLEAUX: Automated Reasoning with Analytic Tableaux and Related Methods Oslo, Norway, 6–10 July.

SPT: Converging Technologies, Changing Societies, 16th International Conference of the Society for Philosophy and Technology, University of Twente, Enschede, The Netherlands, 8–10 July.

IC-EpsMsO: 3rd International Conference on Experiments / Process / System, Modelling / Simulation / Optimization, Athens, Greece, 8–11 July.

ARCOE: Automated Reasoning about Context and Ontology Evolution, Pasadena, 11–12 July.

IJCAI: 21st International Joint Conference on Artificial Intelligence, Pasadena, CA, 11–17 July.

ISHPSSB: International Society for the History, Philosophy, and Social Studies of Biology, Emmanuel College, St. Lucia, Brisbane, Australia, 12–16 July.

LOGIC AND HERESY IN THE MIDDLE AGES: Leeds Medieval Congress, 13–16 July.

DMIN: International Conference on Data Mining, Las Vegas, USA, 13–16 July.

ICAI: International Conference on Artificial Intelligence, Las Vegas, USA, 13–16 July.

ICLP: 25th International Conference on Logic Programming, Pasadena, California, 14–17 July.

ISIPTA: 6th International Symposium on Imprecise Probability: Theories and Applications, Durham University, 14–18 July.

AIME: 12th Conference on Artificial Intelligence in Medicine, Verona, Italy, 18–22 August.

ViC: Vagueness in Communication, Bordeaux, France, 20–24 July.

IWSM24: 24th International Workshop on Statistical Modelling, Cornell University in Ithaca, NY, USA, 20–24 July.

LMSC: Workshop Logical Methods for Social Concepts, Bordeaux, France, 20–31 July.

ICCBR: Eighth International Conference on Case-Based Reasoning, Seattle, Washington, 20–23 July.

AUGUST

CADE-22: 22nd International Conference on Automated Deduction, McGill University, Montreal, 2–7 August.

LOGIC AND MATHEMATICS: University of York, 3–7 August.

MEANING, UNDERSTANDING AND KNOWLEDGE: 5th International Symposium of Cognition, Logic and Communication, Riga, Latvia, 7–9 August.

LICS: Logic in Computer Science, Los Angeles, 9–11 August.

LGS6: Logic, Game Theory, and Social Choice 6, Tsukuba Center for Institutes, Japan, 26–29 August.

PASR: Philosophical Aspects of Symbolic Reasoning in Early Modern Science and Mathematics, Ghent, Belgium, 27–29 August.

11TH EUROPEAN CONFERENCE: Artificial Neural Networks in Engineering, University of East London, 27–29 August.

PRACTICE-BASED PHILOSOPHY OF LOGIC AND MATHEMATICS: ILLC, Amsterdam, 31 August–2 September.

SEPTEMBER

FOUNDATIONS OF UNCERTAINTY: Probability and Its Rivals September, Villa Lanna, Prague, Czech Republic, 1–4 September.

MECHANISMS AND CAUSALITY IN THE SCIENCES

University of Kent, Canterbury, UK, 9–11 September

PHLOXSHOP II: Humboldt-Universität, Berlin, 9–11 September.

MoS: Grand Finale Conference of the Metaphysics of Science AHRC Project, Nottingham, 12–14 September.

ISMIS: The Eighteenth International Symposium on Methodologies for Intelligent Systems, University of Economics, Prague, Czech Republic, 14–17 September.

FROCoS: Frontiers of Combining Systems, Trento, Italy, 16–18 September.

PROGIC: 4th Workshop on Combining Probability and Logic, special focus: new approaches to rationality in decision making, Groningen, The Netherlands, 17–18 September.

OCTOBER

JOINT ATTENTION: Developments in Philosophy of Mind, Developmental and Comparative Psychology, and Cognitive Science, Bentley University, Greater Boston, 1–3 October.

THE HUGH MACCOLL CENTENARY CONFERENCE: Boulogne sur Mer, 9–10 October.

CASE STUDIES OF BAYESIAN STATISTICS AND MACHINE LEARNING: Carnegie Mellon University, Pittsburgh, PA, 16–17 October.

BREAKING DOWN BARRIERS: Blackwell Compass Interdisciplinary Virtual Conference, 19–30 October.

EPSA: 2nd Conference of the European Philosophy of Science Association, 21–24 October.

RR 2009: Third International Conference on Web Reasoning and Rule Systems, 25–26 October.

NOVEMBER

ACML: 1st Asian Conference on Machine Learning, Nanjing, China, 2–4 November.

EPISTEMOLOGY, CONTEXT, AND FORMALISM: Université Nancy 2 France, 12–14 November.

M4M-6: 6th Workshop on Methods for Modalities, Copenhagen, Denmark, 12–14 November.

ISKE: The 4th International Conference on Intelligent Systems & Knowledge Engineering, Hasselt, Belgium, 27–28 November.

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JOBS

PROFESSORSHIP IN PHILOSOPHY: Department of Philosophy at the Norwegian University of Science and Technology, Trondheim, Norway, deadline 1 February.

POST-DOC POSITION: Causality and Probability, Konstanz, Germany, deadline 13 February.

LECTURER IN STATISTICS: UCL Department of Statistical Science, deadline 6 March.

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COURSES AND STUDENTSHIPS

Courses

MASTER PROGRAMME: Philosophy of Science, Technology and Society, Enschede, the Netherlands.

MSc IN MATHEMATICAL LOGIC AND THE THEORY OF COMPUTATION: Mathematics, University of Manchester.

MA IN REASONING

An interdisciplinary programme at the University of Kent, Canterbury, UK. Core modules on logical, causal, probabilistic, scientific, mathematical and machine reasoning and further modules from Philosophy, Psychology, Computing, Statistics, Social Policy and Law.

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

MASTER OF SCIENCE: Logic, Amsterdam.

SUMMER INSTITUTE ON ARGUMENTATION: University of Windsor, Canada, contact **H.V. Hansen** or **C.W. Tindale**, 25 May–6 June.

SUMMER SCHOOL IN LOGIC AND FORMAL EPISTEMOLOGY: Carnegie Mellon University, 8–26 June.

ACAI: Advanced Course in Artificial Intelligence, School of Computing and Mathematics, University of Ulster, Northern Ireland, 23–29 August.

Studentships

PHD POSITION: Causality and Probability, Konstanz, Germany, deadline 13 February.