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## EDITORIAL

I am very happy to act for the third time as guest editor of *The Reasoner*.

I will open this issue with an interview with Gerhard Schurz, an Austrian philosopher of science presently holding the [Chair of Theoretical Philosophy](#) at the University of Düsseldorf, where he lectures on a broad range of topics, including—beyond

his research areas—history of philosophy, philosophy of literature, ethics of environment, pragmatism and post-modernism, and philosophy of culture. A few months ago, he invited me to Düsseldorf to give a talk at his [Forschungsseminar](#): it was an exciting experience, thanks both to the atmosphere of the campus and to the warm welcome by the members of this great research group. So, it was quite natural for me to ask Prof. Schurz for an interview, and I'm very happy that he immediately and enthusiastically accepted. The result of our (e-)conversation is the long interview that follows, in which Prof. Schurz introduces quite extensively his own work and views. This allows me to keep my editorial really short.



During the past three decades, Prof. Schurz taught at various European and American universities (Salzburg, Erfurt, Yale, to name but a few) and published five books and [more than 170 papers](#) in philosophy of sci-

ence, logic, artificial intelligence, epistemology, meta-ethics, and applied ethics. Some of his contributions are presented in the interview. Two of them have been directly inspired by David Hume: [the logical analysis of the “is-ought thesis”](#) (according to which nothing about what ought to be the case can be deduced from what is) and [the theory of “meta-induction”](#), which boldly tackles the problem of justifying induction in a non-circular way. Another important contribution is Schurz’s [theory of relevant deduction](#), which explains, without recurring to non-classical logics, how to distinguish the “relevant” from the “irrelevant” (although valid) consequences of a statement, and which can solve a number of well-known paradoxes and problems in the practical application of deductive logic (for instance in the analysis of confirmation, of verisimilitude, and of deontic and ethical reasoning). While here it is impossible to give even a cursory survey of his other contributions, it is worth mentioning at least the unifying trait of his work, which will certainly appeal to the readers of *The Reasoner*, i.e., the use of formal methods to address old and new philosophical problems.

A central theme of Prof. Schurz’s recent research has been the analysis of the notion of natural and cultural evolution. On this topic, he just published, in German, an impressively dense book, *Evolution in Natur und Kultur*, which I could only glance through while in Düsseldorf, but which I hope will be soon translated into English—more on this book below. Let me stop, now, and start with the interview; but first, let me thank the editors of *The Reasoner* for their work, and Roberto Festa and Luca Tambolo for many inspiring conversations on these topics over the past few years.

GUSTAVO CEVOLANI  
Philosophy, Bologna University

## FEATURES

### Interview with Gerhard Schurz

GUSTAVO CEVOLANI: First of all, thank you for agreeing to be this month’s interviewee. As usual, let me start by asking you about your intellectual career. How did you first get into research in logic and philosophy of science? Who had the greatest influence on your views and on your way of doing research?

GERHARD SCHURZ: I was studying chemistry and physics in Graz (Austria) when

I realized that my primary interests were the logico-philosophical dimensions of science. After completion of my master program in chemistry, I finished my PhD in 1983 with a thesis on explanation. When I started studying philosophy I was influenced by Kant, Peirce, Piaget, and Habermas, but during my study I got attracted by the philosophy of the late logical empiricists, especially Rudolf Carnap and Carl G. Hempel. I was fascinated by the possibility of applying exact methods to deep philo-



sophical questions, and I learned very much from Wolfgang Stegmüller’s monumental book series *Problems and Results of Philosophy of Science and Analytic Philosophy* (1969ff). Also [Paul Weingartner](#), who offered me an assistant job with tenure track at the Philosophy Department in Salzburg (Austria), had an important influence on me, as well as [Karel Lambert](#) and [Kit Fine](#) with whom I wrote joint papers during many stays at Philosophy Departments in the USA (UCI, Yale University). I am profiting a lot from my joint research with my former PhD students and/or collaborators [Hannes Leitgeb](#), [Markus Werning](#), [Franz Huber](#), [Eckhart Arnold](#), [Matthias Unterhuber](#), [Paul Thorn](#) and [Alexander Gebharter](#). For more on my Düsseldorf department and my work see [my webpage](#).

GC: In a series of papers co-authored with Paul Weingartner, you put forward one of the main contributions—the so called “[relevant element](#)” approach—to the post-Popperian research program on verisimilitude or truthlikeness. Let me ask you a question I already put to [Theo Kuipers](#) and [Ilkka Niiniluoto](#). How important is this program for contemporary philosophy of science and why does it appear to be largely underestimated, if not plainly ignored by many philosophers of science?

GS: The research program on verisimilitude was at its height in the 1970s and 1980s and continues to be an active field: an explication of the concept of verisimilitude that explains what it means that scientific theories come closer to the truth (although they are never fully true) remains a major research agenda in philosophy

of science. That this research program appears to be underestimated by many contemporary philosophers of science has presumably two reasons. First, much of the research in this field uses *formal methods*, and I don't tell a secret when saying that not all philosophers of science like formal methods. Second, it is typical for the academic landscape to have periodic waves: while some debates have calmed down, others are experiencing a come-back. I hope that also truthlikeness will have its come-back, maybe in connection with the belief revision debate (c.f., the new [Erkenntnis volume](#) on this topic).

GC: Recently, you edited (with Ioannis Votsis) a [rich special issue of Synthese](#) devoted to scientific realism. What are your impressions about the present state of the realism/anti-realism debate? Most problems in this debate, like the classical issue of referring/non-referring theoretical terms, concern the philosophical analysis of physical and natural sciences. I would say that it is hard to understand the relevance of such problems for the philosophy of social sciences. Do you agree?

GS: The realism/anti-realism debate concerns all scientific disciplines that have developed explicit theoretical models. Theoretical models postulate theoretical entities or relations (e.g. atoms and force fields) that explain and predict the observable phenomena in terms of ontological "deep structures" but are not themselves observable. Are theoretical models that transcend the empirical realm merely useful instruments for deriving empirical predictions? Or do they refer to really existing entities, and hence can be said to be literally true or close-to-the-truth? This is one of the deepest questions in philosophy of science, and the debate on this question is one of the most long-living ones in the last century.

The theoretical models that are discussed in this debate are typically taken from physics. I agree that it is difficult to see the relevance of these discussions for the philosophy of social sciences. Difficult but not impossible. One problem is that most disciplines in humanities and social sciences have not developed rich theoretical models. Another problem is that philosophers in the realism/anti-realism debate do not sufficiently reflect what goes on in the philosophy of the social sciences, and vice versa. There exist some interesting applications of the realism/instrumentalism question to humanities and social sciences. For example, does the concept of "intelligence" really correspond to a homogeneous trait of human persons, or is it merely instrumental for normative evaluations? Another example is the concept

of a "meme" in cultural evolution theory—i.e., a piece of information or a human skill that is not genetically but culturally transmitted from generation to generation. Does this concept refer to a really existing kind of entity that is replicated or reproduced in cultural evolution? Questions of this sort are hotly debated in the philosophy of social sciences, but they are rarely discussed or reflected in connection with the realism/anti-realism debate which focuses on theoretical models in physics.

GC: In your research on the problem of induction, you propose a "meta-inductivist" strategy which addresses Hume's challenge by improving Reichenbach's idea of optimal prediction methods. Interestingly, your approach is based both on game-theoretical methods and computer simulations. Can you give us a sketch of this approach?

GS: Since my dissertation I was fascinated by the problem of finding a non-circular justification of induction. I couldn't believe in Hume's skeptical diagnosis, that the method of induction—the central method of empirical science as opposed to ideological dogmatism—is based on mere "habit" and, thus, is not so different from dogmatism. In my account (see e.g., [Philosophy of Science 75, 2008](#)), I do not intend to justify the reliability of induction, but (merely) its *optimality* as a method of prediction. My proposal is to justify the optimality of induction by the method of *meta-induction*. The meta-inductivist applies the principle of induction at the level of all competing prediction methods that are accessible to her. She predicts an optimal combination of the predictions of those methods that have been observed to be most successful so far. Based on mathematical theorems, and supported by computer simulations, I could demonstrate that there exist meta-inductive prediction strategies whose predictive success is optimal in all possible worlds (or prediction games) among all finitely many prediction strategies which are accessible.

The explained justification of meta-induction is mathematical and "a-priori". However, this a-priori justification of meta-induction implies an a-posteriori justification of object-induction (i.e., induction at the level of events) in our world. For we know by experience that in our real world inductive prediction strategies have *so far* been more successful than non-inductive ones, whence it is meta-inductively justified to favor object-inductivistic strategies in the future. This argument is no longer circular, because a non-circular justification of meta-induction has been established independently.

For many philosophers the explained optimality result seems to be “too good to be true”. Let me give some replies to their skeptical worries:

1. My approach does not “prove the impossible”: it is compatible with Hume’s diagnosis that no non-circular argument can establish the *reliability* of induction—being “optimal” is compatible with “being the best of a bad lot”.
2. Ultimately, the optimality of meta-induction relies on its universal *learning* ability: whenever the meta-inductivist is confronted with a seemingly better strategy, she incorporates it into her own strategy.
3. Besides its epistemological significance, the account has applications to social epistemology and to the evolution of cognition: the imitation of successful survival strategies of one’s conspecifics is one major reason for the advantage of populations that are capable of cultural evolution.

GC: In this connection, an important theme of your recent research has been the notion of evolution and its epistemological, philosophical, and cultural aspects. Your approach to many problems in the philosophy of life and social sciences is based on “generalized evolution theory”. Can you give us an idea of this theory? How does it relate to other evolutionary approaches in the field, for example to approaches based on evolutionary game theory (by Axelrod, Skyrms and others)?

GS: I came to generalized evolution theory during my work on normic generalizations that have the form “normally As are Bs” (c.f., [Philosophy of Science 68, 2001](#)). Normic laws are virtually *omnipresent* in everyday life and in all ‘special’ sciences. What is the objective reason for this? I found this reason in the fact that all ‘higher’ sciences, from biology upwards, are concerned with evolutionary systems. What these systems have in common are capacities of *self-regulation* by which they maintain their normal states in the interest of their survival. These capacities have been gradually selected during their evolution.

Evolutionary systems are not only found at the level of biological organism, but also in culture or technology. Generalized evolution theory (c.f., [my 2011 book](#) published at Spektrum Akademischer Verlag) consists in the generalization of the following three abstract mechanisms of evolutionary dynamics from the level of genes to arbitrary ontological levels:

- (E1) a mechanism of *variation* which acts in larger populations of evolutionary systems that are in mutual competition,
- (E2) a mechanism of *reproduction* that reproduces also the variations and leads to consecutive generations of evolutionary systems, and
- (E3) an environment which *selects* the fittest among the variations, i.e., those variants with the highest reproduction rate.

The most important sub-field of generalized evolution theory is *cultural* evolution (which was developed, among others, by D. Campbell, F.A. von Hajek, L. Cavalli-Sforza, R. Dawkins, R. Boyd and P. Richerson, and S. Blackmore). Cultural evolution theory does explain the development of culture by the evolution of *genes*, but it assumes an independent level based on the evolution of the above-mentioned memes. Generalized evolution theory subsumes many further ontological levels on which the three modules operate, such as (i) the proto-evolution of cosmic structures (in the sense of Campbell’s “retention mechanisms”), (ii) the pre-biotic evolution of RNA-molecules, (iii) the evolution of cognition, including evolutionary epistemology, and most importantly (iv) evolutionary game theory, i.e., the study of the evolution of social interaction and cooperation.

GC: The debate between supporters of (neo-)Darwinian evolutionism and critics of the evolutionary “orthodoxy” is now a hot topic also among philosophers of science. You have recently discussed, from a Bayesian perspective, [evolutionism and creationism](#) in the light of the classical demarcation problem. Can you briefly summarise your views about the ongoing discussion?

GS: Creationists have used Bayesian confirmation criteria as a justification of their position (c.f., Swinburne 1979, Clarendon Press). Unwin (2004, Three Rivers Press) has calculated the posterior probability of God’s existence as 67%. Can arguments of this sort count as a serious confirmation of creationism? Creationisms that are falsifiable in virtue of their wrong empirical consequences are of course not problematic. What constitutes the methodological problem are *rationalized* versions of creationism that carefully avoid any conflict with established scientific knowledge, but nevertheless entail empirical consequences by way of *ad-hoc* and *ex-post* explanations of the following kind: our world has been created by a creator who has brought

about the following facts: ... (here follows a list of as many scientifically established facts as possible). Rationalized creationisms of this sort are found in recent argumentations of the *intelligent design* movement (Dembski 1998, Cambridge University Press).

Logically speaking, these explanations entail true empirical consequences. Therefore they are confirmed according to (naive) Bayesian confirmation accounts. What is wrong with them is that they are purely *ex-post* and result from fitting of empty creationist speculations to the facts found by natural science, whatever these facts are. Such *ex-post* pseudo-explanations can never figure as *predictions*. On this reason philosophers of science have developed, as a complementation of Bayesian confirmation accounts, the confirmation criterion of *novel* predictions. Especially apt is John Worral's account of use novelty, according to which an evidence *E* can only confirm a hypothesis *H* if *E* has not been used for the construction of *H*. Work on these criteria and their integration into a probabilistic account of confirmation that can be successfully applied to the demarcation problem is an important research agenda in the philosophy of confirmation.

GC: How do you judge the fact that many non-creationist or even atheist scholars—like Jerry Fodor and Massimo Piattelli-Palmarini, the authors of *What Darwin Got Wrong* (London, 2010), or Richard Lewontin, who wrote [a positive review of their book](#)—attack or plainly reject evolutionism?

GS: Most objections of these scholars against evolution theory are intensively discussed by evolution theorists themselves and have been solved, at least to a considerable extent. Especially Fodor and Piattelli-Palmarini's book is a collection of problems for which modern evolution theory has good solutions. Instead of a detailed treatment, I can only give some illustrations, *pars pro toto*. For example, no 'Panglossian' adaptationism in the sense of Gould and Lewontin is involved in the principles of evolution theory as they are contemporarily understood. Adaptive selection is merely a *comparative* process: better adapted organisms can be imperfect in many ways. Modern evolution theory leaves plenty of room for the work of selectively neutral random processes in evolution (etc.).

GC: What are, in your view, the most interesting and promising directions of research in philosophy of science? Are there any particular topics that you would recommend to young scholars starting out today?

GS: Some highly promising research agenda are found at the intersection of philosophy of science, logic

and formal epistemology. One example is the application of formal learning theory, decision and game theory to the investigation of empirical and theoretical progress in science, or related work on the relation between belief revision and progress in truthlikeness.

Fruitful and sustainable is also the ongoing debate on adequate concepts and criteria for confirmation. I have explained above why this debate becomes practically significant for the problem of demarcating science from pseudo-science in the context with recent debates on creationism and intelligent design.

Promising is also the recent research at the intersection of philosophy of science and social epistemology, concerning the effects of social learning processes on the belief dynamics of scientific communities. New methods of computer simulations have become especially important in this new domain of philosophy of science.

A fourth promising area are new accounts of the notion of causality and its use in science. Although the debate is old (and like the debate on induction goes back to David Hume), significant progress has been made. A fifth important research topic in philosophy of science is structural realism as a new position between a full-fledged realism and an empiricist position. In all these new areas plenty of so far unsolved problem are waiting and much work is to be done for young scholars of philosophy of science.

GC: Let me conclude with a "meta-methodological" question. Your approach to philosophical problems is characterised by the use of rigorous formal methods, including sophisticated tools from logic, mathematics, and Artificial Intelligence. However, as you noted above, many philosophers adopt much more informal and "narrative" approaches, even to philosophy of science. What are the advantages of a formal approach? Is there a "right" method to address problems within the discipline, or a plurality of positions is defensible, in your opinion?

GS: The application of formal (logical or mathematical) methods is clearly important for making progress in general philosophy of science. This can be seen at hand of some well-known developments in the field. For example, the deep problems involved in Popper's intuitive concept of verisimilitude were brought to daylight only after philosophers of science (notably Tichý and Miller) had attempted to give formal explications of this notion. The hidden incoherence of philosophical intuitions on confirmation were only revealed after these intuitions had been formally explicated (notably by Hempel). To

conclude with an example from my personal experience, in order to find out whether Hume's is-ought thesis is indeed valid in all reasonable philosophical logics I had to make intensive use of modal logics (c.f., my *The Is-Ought Problem*, Kluwer 1997).

Of course, just as physics does not only consist of mathematical but also of experimental physics, philosophy of science does not only have a formal but has also an empirical and historical side. Large parts of philosophy of science can be pursued informally without the need of formal models. However, for certain theoretical questions the use of formal models in philosophy of science is imperative (and just the same is true for theoretical physics). The practical consequence of my view is a *methodological pluralism* concerning formal versus informal methods. But a pluralism has to be taken seriously: it means that neither the formalists nor the informalists in philosophy of science should form isolated camps that ignore each other. They rather should respect each other, exchange their results and learn from each other: they should cooperate in the form of a smart division of labor (as this is the case in physics) in order to make philosophy of science a flourishing and epistemically progressive enterprise.

### **Understanding Scarcity and Our Obligation To Save Lives: A Reply to Frederick**

In our ongoing dialogue (*The Reasoner* 4.12, 5.1, 5.3) on the relationship between the right to life and the implementation of universal health care and a livable wage, Danny Frederick (*The Reasoner* 5.6) has recently restated his main point that scarcity means that the right to life doesn't entail any normative obligation to save lives; instead, it only entails the normative obligation not to take lives. His argument is basically this:

1. We have the normative obligation to do  $x$  only if it is possible for us to do  $x$ .
2. Scarcity means that we can't implement the social policies like universal health care or a livable wage.
3. Therefore, we don't have the moral obligation to implement these policies.

It seems to me, however, that Frederick hasn't demonstrated that (2) is true. Frederick seems to be employing a Hobbesian understanding of the human condition by defining scarcity to mean that there are not

enough resources available to meet everyone's (basic) needs at a global level. If it were simply an issue of redistributing resources from those communities/States that have abundant resources to those that do not then scarcity would not be an issue. However, even if we accept the global description as being an accurate description of the human condition, it does not explain our moral obligation regarding how we, as individuals and citizens of a State, should react to this situation and who, if anyone, we should save. Even if there is scarcity at a global level, Frederick needs to argue that there are no readjustments in resource development or redistribution that can have a positive impact on meeting the basic needs of all people that we are morally obligated to make.

Needless to say, this is a complex issue and would require a multi-pronged approach to solving the many issues related to resource distribution including population levels, ranges of income distribution, market mechanisms for distributing goods and harms, individual versus community rights and interests, etc. and well beyond the scope of this little paper. But, simply stating that scarcity is the inability to have sufficient resources to meet the basic needs of all is not an argument against our having a moral obligation to save lives within the conditions that exist. He needs to argue that we are not obligated to develop and implement social policies to create environments where resources are sufficient to meet everyone's basic needs, or that, minimally, we are saving as many lives as possible given some system of triage that is agreed upon. However, if it can be demonstrated that enough resources are available, or could become available given certain changes in social policy, and that we (and States) do have an obligation based on the right to life to implement such changes, then scarcity, in itself, can no longer serve as a justification for not saving lives because we would be able to satisfy the 'ought implies can' condition stated in (1).

Frederick then questions what he refers to as my "fallback position" (*The Reasoner* 5.3)—that, if my argument is correct, and we are obligated to save lives even if there is scarcity of resources, that we should have a system of triage to prioritize the lives to be saved according to 'an agreed upon system of resource distribution.' He argues that this position should be rejected because it would take away the right of a person to make his or her own important life decisions and place those decisions in the hands of some bureaucracy (*The Reasoner* 5.6 p. 89). The problem is that I haven't anywhere argued in favor of taking away important life de-

cisions from individuals and placing those decisions in the hands of a bureaucracy. Other than arguing that if one believes in a right to life then one must also believe in universal health care and a livable wage, I have made no substantive suggestions about how to settle issues that would result if there were a scarcity of resources other than that there would need to be an agreed upon process for doing so. It certainly does not follow from this that we, as individuals, have (should, must) agreed to give up the right to make important individual life decisions. Remember, that we would have to agree to the system of distribution. Even if people, utilizing some concept of autonomy and liberty, could decide to opt out of a specific distribution plan that would only imply that those operating within the plan would have no positive obligations to aid those that opt out. Furthermore, given that we would have universal health care and a livable wage, we would then have the means to act upon a wider range of options. This would have the positive affect of strengthening our ability to act upon our individual goals by not limiting us to a reduced set of options that would exist in a system without universal health care or a livable wage. Universal health care and a livable wage actually seem to be consistent with what Frederick wants—they respect and enhance autonomy.

I have argued that if we believe that we have a right to life then we must also believe that universal health care and a livable wage need to be implemented, and hope to have shown that Frederick hasn't successfully refuted the connection between the right to life and certain positive normative obligations. Of course, it is possible that we do not have a right to life and that our obligations towards others are grounded in some other moral principle. What is important to understand, however, is that if we believe in a right to life then we must also believe that universal health care and a livable wage must be implemented, as far as possible, to ensure that this right is respected.

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## An Ironic Paradox

In 1995, Alanis Morissette released the song "Ironic". Little did she suspect she would be walking into a semantic minefield. The song proved to be a lightning rod for those pedants who had long been railing against what they saw as rampant misuse of the term 'ironic'

in popular discourse. For comedians, possessed as they are with a heightened sense of irony, it proved a potent source of humour. What could be more ironic, they asked, than a song called "Ironic" being completely devoid of irony.

But is "Ironic" ironic, or isn't it? The joke, that "Ironic" is ironic because it isn't, seems to be arguing that it *is* ironic, but that this irony is conditional on it being *non-ironic*. Yet, if "Ironic" is ironic, then it *fails* to fulfil the condition of being non-ironic, so it *isn't* ironic. Under the principles of irony that seem to underlie the joke, "Ironic" is ironic if and only if it isn't ironic, clearly leading to paradox.

How did this paradox arise? At the risk of offending the same pedants who first attacked Morissette, I will attempt the following definition of (at least one kind of) irony.

An entity E is *ironic* if and only if there exists some property P such that E would be expected to possess P and E in fact possesses the *opposite* of P

This definition will cover concrete objects, abstract objects (like songs) and events, but not situations, which I believe will require a different definition. We can present this definition formally by defining a function *opposite* which will take a property and return its opposite (if it has one) or some arbitrary impossible property (if it doesn't have an opposite). In other words, for every pair of opposite properties P and Q, *opposite*(P) = Q (and *opposite*(Q) = P). We will also need the relation *expect* such that *expect*(E,P) will hold only where entity E is expected to possess property P. The definition above will then be equivalent to the following:

$$\text{ironic}(E) \leftrightarrow \exists P(\text{expect}(E, P) \ \& \ \text{opposite}(P)E) \quad (1)$$

This seems to be the definition that the joke above is using. A song named "Ironic" may reasonably be expected to be highly ironic, so for it to possess the property of being completely non-ironic would seem to make it very ironic. Let us, for the sake of argument, say that the only property P such that *expect*("Ironic",P) is the property *ironic*. As such, we can substitute "Ironic" for E and *ironic* for P into (1), giving us:

$$\text{ironic}(\text{"Ironic"}) \leftrightarrow (\text{expect}(\text{"Ironic"}, \text{ironic}) \ \& \ \text{opposite}(\text{ironic})(\text{"Ironic"})) \quad (2)$$

Now, assuming that anything called ‘ironic’ will be expected to be ironic,  $\text{expect}(\text{“Ironic”}, \text{ironic})$  will hold necessarily, so we can treat this conjunct as satisfied in every model. Let us take, as a first approximation for  $\text{opposite}(\text{ironic})$ , the property  $\neg\text{ironic}$ . So, from (2), we get the following thesis:

$$\text{ironic}(\text{“Ironic”}) \leftrightarrow \neg\text{ironic}(\text{“Ironic”}) \quad (3)$$

As such, “Ironic” is ironic if and only if it isn’t ironic. Parallels with the liar paradox should be clear. Irony can be understood as a form of negation—the (absolute) negation of expectation. Hence irony, like any form of negation, when applied to itself, will lead to paradox. We can generalise this result as the following, which may be called the *Morissette Paradox*:

An entity expected to be ironic (and only expected to be ironic) will be ironic if and only if it is not ironic

Now, of course, this discussion is highly simplified. For one,  $\text{opposite}(\text{ironic})$  would be better understood as contrary, rather than contradictory, to ironic. More importantly, the assumption that we made that the only property expected of “Ironic” was that it was ironic is almost certainly wrong. Indeed, the point that the joke is making could, perhaps, not be that “Ironic” is ironic because *it isn’t* ironic, but rather that it is ironic because it doesn’t *contain* any irony in its lyrics.

If a formal system of irony had as an axiom that no entity could only be expected to be ironic then the Morissette Paradox would not arise. Yet, even if “Ironic” is not such an entity, it isn’t clear that such an entity could not exist. If such entities could exist, then an axiom ruling them out would seem unjustified. Without such an axiom, a formal system of irony would need to resolve the paradox in some other fashion to avoid triviality.

In conclusion, a song by someone who didn’t know what irony was has actually told us a great deal about irony. And isn’t *that* ironic, don’t you think?

SIMON VAREY  
University of Melbourne

## Computing and Philosophy, 6–7 April

The 2011 Symposium on ‘Computing and Philosophy’ took place as part of the AISB Convention and was held at the University of York, UK. This year’s convention included symposia on: social networks and multi-agent systems; human memory for artificial agents; architectures for active vision; towards a comprehensive intelligence test; computational models of cognitive development; AI for games; machine consciousness; and computing and philosophy.

The computing and philosophy symposium is by now a well established event at the annual AISB convention. As a topic for philosophical investigation, computing has a long and well-established history, which includes work by such eminent figures as Leibniz and Turing, as well as contemporary philosophers including John Searle, Daniel Dennett and Luciano Floridi. With the rapid technological progress of electronic computing since the mid-20th century we have seen the emergence of deeper and broader interactions between computing and philosophy, albeit the scope, and need, for such interactions has perhaps not yet been widely recognised.

Professor Margaret Boden opened the Computing and Philosophy symposium with a short paper outlining the context to her new book: ‘Creativity and Art: three roads to surprise’. This was followed by a presentation from Simon Colton and Alison Pease which looked at computational creativity in the context of Simon’s seminal computer-artist ‘The Painting Fool’ and the Turing Test; specifically on the adequacy of the Turing Test for assessing computational creativity (e.g., the TT ‘does not take into account the importance of background and contextual information to a creative act’).

Subsequently Mohammad Majid described new research from the field of Swarm Intelligence that showed how a swarm of simple agents can improvise on a given artistic theme—the key point of Majid’s work being that the use of swarm intelligence enabled his system to demonstrate ‘controlled regulated difference’ (from the source theme) and not, for example, mere random Gaussian differences.

Paul Schweizer examined some central issues concerning the Computational Theory of Mind (CTM), with particular attention to computational formalism in the physical world. Within this Schweizer gave support for Bishop and Searle’s view that ‘computation is not an intrinsic property of physical systems’. Tom Froese

then presented a very stimulating paper demonstrating how the careful scientific use of, for example, novel sensory illusions (e.g., from his ‘Enactive Torch’; VR etc.) can be used to inform, and eventually form a science of first person phenomenology.

Kevin Magill and Yasemin J. Erden criticised the use of ordinary language terms such as ‘desire’ for the development of autonomous agent systems (as found in BDI models, for instance). In particular they presented arguments against reductionist accounts, which tend to over-simplify what are in fact complex ideas. In so doing, Magill and Erden showed in what ways this may pose a problem for the development of autonomous systems.

Jiri Wiedermann’s paper discussed some contemporary developments pertaining to the singularity theory. In so doing, Wiedermann offered insight into his investigation of the computational power of cognitive systems in relation to the so-called Extended Turing Machine Paradigm. On this, Wiedermann claims to have shown there to be ‘an infinite hierarchy’ of cognitive systems, within which are ‘systems achieving and trespassing the human intelligence level’.

In summary, the 2011 AISB Computing & Philosophy symposium proved to be the most successful yet, with a high volume of good quality of papers submitted (particularly those focusing on issues around autonomy and creativity), and leading to a special edition of ‘Cognitive Computation’ journal emerging from the symposium, being planned for publication in 2012.

MARK BISHOP

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YASEMIN J. ERDEN

School of Theology, Philosophy, and History,  
St Mary’s University College

## Conventional Principles in Science, 18–19 August

This conference addressed the historical and contemporary development of the concept of relativized a priori principles, from Poincaré’s conventionalism, and Reichenbach’s principles of coordination, to Michael Friedman’s work on the role of relativized a priori principles in spacetime theories.

In the first talk, “Einstein and the a priori”, Michael Friedman presented the evolution of the constitutive a priori and explained how the light principle and the principle of equivalence function as relativized a priori

principles in special and general relativity respectively, by defining the central terms of the theory and connecting the abstract mathematical formalism of the theory with its empirical content.

Flavia Padovani’s talk, “Measurement and the relativized a priori”, revived Reichenbach’s argument for the ‘mutuality of coordination’ and introduced a ‘double-layer’ account of relativized a priori, where in addition to the central constitutive a priori principles there is an intermediate level which connects concepts used in observations and measurements procedures.

In “Theoretical terms and the relativized a priori”, Hannes Leitgeb explicated the notion of relativized a priori principles in terms of Carnap’s understanding of theories as Ramsey and Carnap sentences, where theoretical terms are defined using an indefinite description operator. By incorporating the “Munich Structuralism” of Sneed, Leitgeb argued that this approach captures the central features Friedman attributes to the relativized a priori, principally providing empirical meaning to theoretical terms.

Eleanor Knox’s talk “Inertia and the a priori: a look at alternative spacetime theories” explored the role played by constitutive principles in the representation of physical geometric structure by mathematical geometric structure. Knox argued that a version of the equivalence principle, applicable to general relativity, connects the mathematical geometric structure to spacetime structure, and suggested how this approach could be applied to theories without fundamental geometric structure, e.g. quantum theories of gravity.

In “The constitutive a priori and the distinction between mathematical and physical possibility”, Jonathan Everett assessed whether Friedman’s account is closer to the Logical Positivists’ account, where mathematical possibility is equated to logical possibility, or Weyl’s account on which mathematical possibility coincides with physical possibility, and discussed whether the constitutive a priori can function on the latter account.

Finally, in “Symmetries, interpretation and the constitutive a priori”, Adam Caulton argued that analytic symmetries function as relativized a priori principles since they constrain a theory’s representation relation; they are necessary for the theory to have empirical content, but are not themselves empirical. Caulton discussed methodological principles that can identify whether a symmetry is analytic, and illustrated this with the example of permutation symmetry in quantum mechanics.

This conference was supported the Analysis Trust,

BIRTHA, and the Bristol Alumni Foundation.

MILENA IVANOVA

MATT FARR

Department of Philosophy, University of Bristol

## Varieties of Representation, 5–9 September

This year, Maria Curie University of Lublin and Centre for Philosophical Research organized another yearly workshop. The topic was varieties of representation in cognition, and the notion of representation in cognitive science and philosophy. The keynote speakers were Paco Calvo (Murcia), Edouard Machery (Pittsburgh), and Huw Price (Sydney/Cambridge).

During the first day, we discussed the notion of representation in cognitive science. Calvo started the workshop with a strong, anti-representationalist message, claiming that systematicity of behavior does not (always) require representations. Wayne Christensen and John Michael, on the other hand, took a representationalist stance, and criticized radical enactivist critique of mindreading theories (exemplified by Hutto). At the same time, they discarded two-system accounts as implausible, and proposed model-based representation (MBR) as alternative. Andrzej Kapusta, drawing from the phenomenological and Heideggerian tradition, suggested a radically non-Cartesian account of mental capacities. Pawel Gladziejewski focused systematically on the notion of representation and contrasted the explanatory functions of representation in cognitive science with their role in folk psychology. Christopher Martin, taking a Bickhardian perspective on representation, analyzed the organization of processes of teamwork and their cognitive presuppositions.

The second day of the workshop was devoted to the use of the notion of representation in more philosophical context. Price defended a dualist account of representation, instead of anti-representationalism or monism; that is, he claimed that there should be place for conceptual-role, inferentialist dimension of representation (i-representation), as well as for the link of representation with the external world (e-representation). Jonathan Knowles argued that perception can be conceptualized in an anti-representational manner, and that representationalism requires that the cognitive agent knows everything about what it represents. Timo Vuorio, drawing from the work of Richard Rorty, talked on the role of representation in philosophy and why it seems to be a genuine problem. We closed

the day with Robert Clowes who presented a virtualist account of representation in cognitive science and defended representationalism.

On the third day, we discussed various uses of representation in cognitive science. Machery presented various objections offered to his eliminativist account of concepts in *Doing without Concepts* (OUP 2009). Fredrik Stjernberg claimed that various kind of cognition might require different kinds of representation, and that a single account might be not forthcoming. Piotr Wilkin, taking a perspective of philosophy of language, talked about two functions of linguistic utterances: representational and simulationist, the latter one being linked to human abilities of mind-reading. According to Krystyna Bielecka, a social component is important in representational abilities: social coordination makes at least public representations fully meaningful, and it might be important in dealing with misrepresentation of mental representations as well. Marcin Milkowski sketched an account of explanatory roles of representation in computational theories of cognition. Konrad Talmont-Kaminski gave a talk about functions of religious and ideological representation that are quite independent from their truth value. Pawel Grabarczyk closed the discussion with his account of cognition as computation.

The final discussion and some presentations from the workshop will be available [here](#).

MARCIN MILKOWSKI

Institute of Philosophy and Sociology,  
Polish Academy of Sciences, Warsaw

## Calls for Papers

**20 YEARS OF ARGUMENT-BASED INFERENCE:** special issue of the *Journal of Logic and Computation*, deadline 1 October.

**RE-THINKING CREATIVITY:** special issue of *Tropos: Journal of Hermeneutics and Philosophical Criticism*, deadline 15 October.

**AILACT ESSAY PRIZE:** to the best paper on teaching/theory of informal logic, critical thinking, or argumentation theory, with publication on *Informal Logic*, deadline 31 October.

**THE ALAN TURING YEAR:** special issue of *Philosophia Scientiae*, deadline 1 November.

**BETWEEN TWO IMAGES. THE MANIFEST AND THE SCIENTIFIC UNDERSTANDING OF MAN, 50 YEARS ON:** special issue of *Humana.Mente*, deadline 30 November.

**PSYCHOLOGICAL MODELS OF (IR)RATIONALITY AND DECISION MAKING:** special issue of *Synthese*, deadline 1 December.

**SCOPE OF LOGIC THEOREMS:** special issue of *Logica Universalis*, deadline 24 December.

**STRUCTURE OF SCIENTIFIC REVOLUTIONS: 50 YEARS ON:** special issue of *Topoi*, deadline 15 January.

**IMPRECISION IN STATISTICAL DATA ANALYSIS:** special issue of *Computational Statistics & Data Analysis*, deadline 30 January.

**FORMAL AND INTENTIONAL SEMANTICS:** special issue of *The Monist*, deadline 30 April.

**THE MIND-BODY PROBLEM IN COGNITIVE NEUROSCIENCE:** special issue of *Philosophia Scientiae*, deadline 1 May.

**THE AIM OF BELIEF:** special issue of *Teorema*, deadline 15 September 2012.

## WHAT'S HOT IN . . .

### ... Logic and Rational Interaction

The tools for sharing and disseminating the results of academic research are changing, and last month's posts on [LORIWEB](#), the platform for news relevant to the Logic and Rational Interaction community, reflect this in several ways. With the proliferation of high-speed internet access and the ready availability of distribution channels such as YouTube or Vimeo, the web has rapidly become the predominant way to access video content; and with the equipment for producing video becoming ever more widely available, more and more high-quality content is produced by non-professionals, with small budgets, or both. Two examples from our field: as reported earlier in this column, the Munich Center for Mathematical Philosophy has started to distribute its talks as video podcasts via iTunes University; now, this year's invited ESSLLI evening lectures are [available on Videolectures.net](#), and so are the lectures of the "Logic in Action" course taught at the summer school in Ljubljana.

With distribution no longer being a bottleneck, and content increasingly made available in a variety of formats, a sort of converse problem arises: finding the signal despite the noise, or getting to relevant information without drowning in it. Google Scholar and Wikipedia offer solutions, the first algorithmically driven, the second integrating the "wisdom of the crowd". Still, Oxford University Press felt that there was a need for another, more traditional approach to the problem, and in

2010, the press launched Oxford Bibliographies Online (OBO), a service that provides peer-reviewed literature surveys on a variety of topics, compiled and annotated by leading experts in the field. While OUP is certainly not the first to start a project like this, it will be interesting to see if the service evolves into a default destination for academics searching entry points to new topics. An OBO entry on Formal Epistemology by Vincent Hendricks and Jeffrey Helzner has recently been [made accessible](#) to subscribers (editor-in-chief of the Philosophy section of OBO is Duncan Pritchard).

LORIWEB invites everyone to submit news relevant for the Logic and Rational Interaction community, such as workshop announcements, reports about past events, or published papers. Please contact [Rasmus Rendsvig](#), our web manager or write to the [loriweb address](#).

BEN RODENHÄUSER

Artificial Intelligence, Groningen

### ... Mind and Cognition

It's the beginning of a new term here at Edinburgh, and as a new member of staff I'm slowly learning about the ways in which the smooth and unified running of a philosophy department emerges from a complex and dynamic system of intertwined people, procedures, meetings and memos. Just as unified, adaptive departmental phenomena emerge from this densely integrated web of informational and interpersonal interactions, a key question in the philosophy of mind and cognition is how the apparent unities of our perceptions, actions and thoughts emerge from the messy tangle of processes and properties that supports them.

Some classical approaches to the study of the mind might shun this question, holding that perception, action and thought are essentially distinct capacities, interrelated only causally, which might profitably be studied and understood independently of each other. The same goes, the classicist holds, for our study and understanding of the material bases of those capacities. This month's hot topic, Enactivism, is a currently thriving research programme that eschews this approach, instead embracing a view of mind and its underpinnings as essentially dynamic entanglements. Enactivist work on the mind can be situated with respect to two poles. The first ('top-down') focuses on the interrelations between the high-level mental capacities to be explained, providing phenomenological or conceptual analyses aimed at

showing that certain capacities can't intelligibly be possessed in the absence of others. Hence, Alva Noë argues that perception can be directed toward its objects only in virtue of a perceiver's understanding of their current agential relationship with the perceptible scene. The second ('bottom-up') focuses on the physical or biological dynamics of natural systems, and aims to show how stable and apparently discrete mental phenomena can arise from the underlying Gordian flux. Hence Humberto Maturana and Francisco Varela attempt to account for perception, agency, understanding and evaluation using biological concepts of autopoietic organization, operational closure and adaptivity. Most current work on enactivism lies somewhere between these poles, striving for a reflective equilibrium between such top-down and bottom-up considerations. The multidisciplinary focus of the work of many enactivists (such as Evan Thompson and Ezequiel Di Paolo) stems from this quest for equilibrium.

This emphasis on constructive dialogue between multiple disciplines is what makes enactivism such a fertile and exciting research area. The ESMCs ('Extending Sensorimotor Contingencies to Cognition') project is a multi-million EU funded research programme spanning six universities. At its wonderful summer school in San Sebastian earlier this month, researchers in philosophy, robotics, psychopathology, neurophysiology, developmental systems theory and many other disciplines spent a productive week furthering this dialogue. Evidence from all these disciplines continues to inform and enrich an increasingly sophisticated enactivist conceptual toolkit. The extent to which these tools can be used to deepen and transform our understanding of the mind is, for my money, the hottest topic around.

DAVE WARD  
Philosophy, Edinburgh

### ... Uncertain Reasoning

The Bayesian galaxy revolves about the concept of coherence. Despite its relatively long history, this notion continues to be the object of careful foundational scrutiny and keeps lending itself to new, exciting formal developments. Both feature in the talk "Three contrasts between two senses of coherence" delivered by Teddy Seidenfeld on 29 July 2011 at LMU Munich, and whose video has been posted to the [Choice&Inference](#) blog on 25 August 2011.

Bayesians owe the notion of coherence to Bruno de Finetti (1906–1985) who put forward its first systematic characterization in the 1931 paper, "Sul significato soggettivo della probabilità", *Fundamenta Mathematicae*, 17. The paper was published in Italian by a Polish journal, two circumstances which probably account for the fact it has been read far less than its 1937 companion, originally written in French, and subsequently translated into English by Henry Kyburg in 1964, under the title "Foresight: its Logical Laws, Its Subjective Sources". The 1937 and, in a much clearer way, the 1931 papers, illustrate in detail how, *in a suitably-defined betting scenario*, coherence reduces to avoiding the blatantly irrational choice behaviour of being willing to lose no-matter-what. Key to this reduction is the interpretation of probability as *fair price* which led to de Finetti to formulate and prove his "coherence theorem". The result establishes that sure loss is avoided if and only if betting odds are chosen in conformity with the basic laws of probability (normalisation and finite additivity). De Finetti's characterization of coherence therefore plays a fundamental role in providing a justification as to *why* uncertainty should be measured with probability, for doing otherwise may result in clearly irrational choice behaviour. This is the essence of what has become known as the "Dutch book argument". A variation on this line of argument, which had been informally anticipated by Frank P. Ramsey in 1926, finally culminated in the well-known representation theorem proved by Leonard J. Savage – a result which eventually established the "Bayesian orthodoxy" in decision theory and a number of related fields.

The criterion of coherence underlying the Dutch book argument is very well known and has been intensely debated over the past four decades. Much less attention, however, has been devoted to an alternative criterion which de Finetti developed in response to the problem of improving the way in which people assess probabilities. During 1960-62, that is two years before the publication of the English translation of his 1937 paper, de Finetti conducted an experiment with 30 subjects who were asked to publicly announce their forecasts for the outcomes of the Italian *Serie A* football matches (Win, Draw, Lose for the home team) subject to *Brier's rule*. This is a quadratic loss function named after the meteorologist who first put it forward, during the early 1950s, as a method for eliciting probabilities in weather forecasts. Brier's rule qualifies as a *proper* scoring rule because, as de Finetti elegantly shows with a simple geometric argument, under its application, it

is irrational for the individual to announce probabilities which diverge from their own “honest” evaluation. For example, if you think that the probability of Obama winning the next Presidential election is  $p$ , then choosing  $p' \neq p$  under Brier’s rule would increase your expectation of penalisation by  $(p - p')^2$ . By appealing to Wald’s concept of *admissibility*, de Finetti argues (see, e.g., Chapters 1 and 3 of de Finetti (1972: *Probability, Induction and Statistics*, Wiley)) that it is certainly incoherent to be willing to face a *greater* expectation of loss. This decision-theoretic line of reasoning led de Finetti to formalise coherence as the minimisation of the prevision of loss under Brier’s rule.

Whilst the Dutch book argument rests on a very natural and intuitive *interpretation* of probability as fair price, Brier’s rule provides, in de Finetti’s words, a “more efficient and more operational” device for *measuring* subjective probability. Yet, as he proved in Chapter 3 of his two-volume monograph de Finetti (1974: *Theory of Probability*, Wiley), *under the assumptions* which characterise the betting scenario and the application of proper scoring rules, coherence as “avoidance to incur sure loss” and coherence as “minimisation of the prevision of penalisation”, are logically equivalent.

Is this equivalence robust under reasonable variations on de Finetti’s foundational assumptions? Teddy Seidenfeld’s talk tackles this extremely deep question. The lecture, which is based on joint work with Teddy’s long-time co-authors Jay Kadane and Mark Schervish of Carnegie Mellon University, builds on the distinction between coherence<sub>1</sub> (as in Dutch books) and coherence<sub>2</sub> (as in proper scoring rules) and illustrates how under three distinct variations on de Finetti’s assumptions, the two notions of coherence cease to be equivalent and can therefore be compared on somewhat substantial grounds. The first such variation consists in assuming *countable* rather than finite additivity. This is clearly a major departure from de Finetti’s framework, and an important one which has been vastly debated in the literature. With the second variation, *moral hazard* is allowed to enter the formalisation of the decision problem which is used to define coherence. Finally, coherence<sub>1</sub> and coherence<sub>2</sub> are compared against the background of state-dependent utility, a long-time challenger of classical bayesian decision theory.

The formal results of this three-fold analysis, and the related examples which illustrate very nicely the main ideas, clearly suggest that some pluralism is bound to emerge when we depart from de Finetti’s foundational

framework. Coherence<sub>2</sub> is shown to be preferable if we drop the finite additivity restriction. On the other hand, coherence<sub>1</sub> appears to be more justified if moral hazard is contemplated in the modelling of the decision problem underlying the definition of probability. Perhaps unsurprisingly, *both* criteria of coherence are shown to perform rather badly when state-dependent utilities are taken into account. Though I disagree with Teddy on some foundational aspects of his reading—a disagreement that I should articulate elsewhere—I believe that the line of research outlined in this talk is invaluable in bringing back to the foreground a slightly neglected aspect of de Finetti’s work. I most warmly recommend this viewing also to the non-specialist, as it contains, as a very generous bonus, a terse 28 minute introduction to the core notion(s!) of Bayesianism. Many thanks indeed, on behalf of the uncertain reasoning community, to all those who contributed to making this content so widely accessible.

HYKEL HOSNI

Scuola Normale Superiore, Pisa

## EVENTS

### OCTOBER

**PT-AI:** Philosophy and Theory of Artificial Intelligence, Thessaloniki, Anatolia College/ACT, 3–4 October.

**DKB:** Dynamics of Knowledge and Belief, Workshop at KI-2011, Berlin, Germany, 4–7 October.

**NIT:** Natural Information Technologies, Madrid, Spain, 4–7 October.

**ALT:** 22nd International Conference on Algorithmic Learning Theory, Aalto University, Espoo, Helsinki, Finland, 5–7 October.

**DS:** 14th International Conference on Discovery Science, Aalto University, Espoo, Finland, 5–7 October.

**EPSA:** 3rd Conference of the European Philosophy of Science Association, Athens, Greece, 5–8 October.

**EUROPEAN WORKSHOP ON EXPERIMENTAL PHILOSOPHY:** Eindhoven University of Technology, The Netherlands, 7 October.

**YES:** 5th Young European Statisticians Meeting, Eindhoven, The Netherlands, 10–12 October.

**EPIA:** 15th Portuguese Conference in Artificial Intelligence, Lisbon, 10–13 October.

**THE NATURE OF SOCIAL REALITY:** University of Calabria, Arcavacata di Rende, Italy, 13–14 October.

- TPRAG:** Theoretical Pragmatics, Berlin, Germany, 13–15 October.
- CASE STUDIES IN BAYESIAN STATISTICS AND MACHINE LEARNING:** Carnegie Mellon University, Pittsburgh, PA, 14–15 October.
- CONSCIOUSNESS: CAN SCIENCE EXPLAIN IT?:** Centre for Bioethics and Emerging Technologies, St Mary’s University College, 20 October.
- ALVIN GOLDMAN AND SOCIAL EPISTEMOLOGY:** Saint Louis University Philosophy Graduate Student Conference, 20–21 October.
- CSIS:** International Conference on Computer Science and Intelligent Systems, Coimbatore, Tamilnadu, India, 21–22 October.
- PSX:** 2nd International Workshop on the Philosophy of Scientific Experimentation, University of Konstanz, 21–22 October.
- URSW:** 7th International Workshop on Uncertainty Reasoning for the Semantic Web, Bonn, Germany, 23–27 October.
- ADT:** Algorithmic Decision Theory, DIMACS, Rutgers University, 26–28 October.
- QPL:** Quantum Physics and Logic, Nijmegen, 27–29 October.
- EPISTEMIC FEELINGS AND METACOGNITION:** Ruhr-Universität Bochum, 28–29 October.
- IUKM:** International Symposium on Integrated Uncertainty in Knowledge Modelling and Decision Making, College of Computer Science and Technology, Zhejiang University, Hangzhou, China, 28–30 October.
- THE EPISTEMOLOGY OF LOGIC:** Arché Research Centre, St Andrews, 29–30 October.
- IDA:** 10th International Symposium on Intelligent Data Analysis, Porto, Portugal, 29–31 October.
- SASA:** South African Statistical Association Pretoria, South Africa, 31 October–4 November.
- NOVEMBER**
- PHILOSOPHY OF MEDICINE ROUNDTABLE:** University of the Basque Country, Donostia-San Sebastian, Spain, 2–3 November.
- LATIN MEETING IN ANALYTIC PHILOSOPHY:** Universidade de Lisboa, 2–4 November.
- THE PLURALITY OF NUMERICAL METHODS IN COMPUTER SIMULATIONS AND THEIR PHILOSOPHICAL ANALYSIS:** IHPST, University of Paris 1, 3–5 November.
- CETERIS PARIBUS LAWS AND REASONING:** Department of Philosophy, University of Lund, Sweden, 4–5 November.
- CAS:** Complex Adaptive Systems: Energy, Information, and Intelligence, Arlington, VA, 4–6 November.
- SEMANTIC CONTENT:** University of Barcelona, 4–6 November.
- BIOLOGICALLY INSPIRED COGNITIVE ARCHITECTURES:** Arlington, Virginia, 5–6 November.
- ICTAI:** 23rd IEEE International Conference Tools with Artificial Intelligence, Boca Raton, Florida, USA, 7–9 November.
- HISTORY AND PHILOSOPHY OF COMPUTING:** Celebrating the 75th anniversary of the famous 1936 Papers by A. Church, E.L. Post and A.M. Turing, Ghent University, Belgium, 7–10 November.
- IDEAS OF OBJECTIVITY:** Tübingen, 7–11 November.
- SPR:** ILCLI International Workshop on Semantics, Pragmatics, and Rhetoric, Donostia, 9–11 November.
- M4M:** 7th Methods for Modalities workshop, Osuna, Spain, 10–12 November.
- EPISTEMIC NORMS:** University of Sherbrooke, Quebec, Canada, 11–12 November.
- EVOLUTION AND NORMS: CONCEPTS, MODELS, CHALLENGES:** Bucharest, Romania, 11–12 November.
- REASONING WITH CASES IN THE SOCIAL SCIENCES:** Center for Philosophy of Science, University of Pittsburgh, 11–12 November.
- ACML:** 3rd Asian Conference on Machine Learning, Taoyuan, Taiwan, 13–15 November.
- RISK AND RELIABILITY MODELLING OF ENERGY SYSTEMS:** Senate Suite, Durham Castle, 24 November.
- ATAI:** 2nd Annual International Conference on Advances Topics in Artificial Intelligence, Singapore, 24–25 November.
- ICIIC:** International Conference on Information and Intelligent Computing, Hong Kong, China, 25–27 November.
- ICNI:** International Conference on Networks and Information, Chengdu, China, 25–27 November.
- MICAI:** 10th Mexican International Conference on Artificial Intelligence, Puebla, Mexico, 26 November–4 December.
- WELLINGTON WORKSHOP IN PROBABILITY THEORY AND MATHEMATICAL STATISTICS:** Victoria University, Wellington, 28–30 November.
- ICDEM:** 1st International Conference on Decision Modeling, Kedah, Malaysia, 29 November–1 December.
- SOLOMONOFF MEMORIAL CONFERENCE:** Melbourne, Australia, 30 November–2 December.

## DECEMBER

**CT&IT:** International Workshop on Computation Theory and Information Technology, Macau, China, 1–2 December.

**LENLS:** Logic and Engineering of Natural Language Semantics, Takamatsu-shi, Kagawa-ken, Japan, 1–2 December.

**NATURAL ROOTS OF HUMAN COGNITION AND COMMUNICATION: SENSORY-MOTOR CONCEPTS IN LANGUAGE AND SCIENCE:** University of Düsseldorf, Germany, 1–3 December.

**ICCCI:** International Conference on Computer and Computational Intelligence, Bangkok, Thailand, 2–4 December.

**INDEFINITE EXTENSIBILITY AND LOGICAL PARADOXES:** Arché Research Centre, St Andrews, 2–4 December.

**MINDGRAD:** University of Warwick, UK, 3–4 December.

**PT-AI:** Philosophy and Theory of Artificial Intelligence, Thessaloniki, Anatolia College/ACT, 3–4 October.

**NCMPL:** International Conference on Non-classical Modal and Predicate Logics, Guangzhou (Canton), China, 5–9 December.

**ACAL:** 5th Australian Conference on Artificial Life, Perth, Murdoch, Australia, 6–8 December.

**ICIRA:** 4th International Conference on Intelligent Robotics and Applications, Aachen, Germany, 6–9 December.

**MIWAI:** 5th Multi-Disciplinary International Workshop on Artificial Intelligence, Hyderabad, Andhra Pradesh, India, 7–9 December.

**THE COLLECTIVE DIMENSION OF SCIENCE:** Nancy, France, 8–10 December.

**COPENHAGEN LUND WORKSHOP IN SOCIAL EPISTEMOLOGY:** University of Lund, Sweden, 9 December.

**ICACM:** 1st International Conference on Advanced Computing Methodologies, Hyderabad, Andhra Pradesh, India, 9–10 December.

**ICDM:** 11th IEEE International Conference on Data Mining, Vancouver, Canada, 11–14 December.

**IICAI:** 5th Indian International Conference on Artificial Intelligence, Tumkur (near Bangalore), India, 14 December.

**NIPS:** 25th Annual Conference on Neural Information Processing Systems, Granada, Spain, 13–15 December.

**AAL:** Australasian Association of Logic, Wellington, New Zealand, 14–15 December.

**STATISTICS AND SCIENTIFIC METHOD I: THE CONTROVERSY ABOUT HYPOTHESIS TESTING:** Universidad Nacional de Educación a Distancia (UNED), Madrid, 15–16 December.

**ALC:** Asian Logic Colloquium, Wellington, New Zealand, 15–20 December.

**INTERNALISM VERSUS EXTERNALISM:** Institute for Logic, Language and Computation, Department of Philosophy, Universiteit van Amsterdam, 16–17 December.

**ICISME:** International Conference on Information Management and Systems Engineering, Nanjing, China, 16–18 December.

**COMPUTING & STATISTICS:** Senate House, University of London, UK, 17–19 December.

**AMSTERDAM COLLOQUIUM:** ILLC, Department of Philosophy, University of Amsterdam, 19–21 December.

**CAR:** 3rd International Asia Conference on Informatics in Control, Automation and Robotics, Shenzhen, China, 24–25 December.

## JANUARY

**ISAIM:** 12th International Symposium on Artificial Intelligence and Mathematics, Fort Lauderdale, Florida, 9–11 January.

**UNIVERSITY OF MIAMI GRADUATE STUDENT CONFERENCE IN EPISTEMOLOGY:** Miami, FL, 12–14 January.

**PERSPECTIVALISM WORKSHOP:** Ghent, 19–20 January.

**MATHLOG:** 5th Annual Cambridge Graduate Conference on the Philosophy of Logic and Mathematics, Cambridge, 21–22 January.

## FEBRUARY

**COLOMBIAN CONFERENCE ON LOGIC, EPISTEMOLOGY, AND PHILOSOPHY OF SCIENCE:** Bogota, Colombia, 8–10 February.

**CONFERENCE ON COMPUTER SCIENCE & COMPUTATIONAL MATHEMATICS:** Melaka, Malaysia, 9–10 February.

**PERSPECTIVES ON STRUCTURALISM:** Center for Advanced Studies (CAS) and Munich Center for Mathematical Philosophy (MCMP), LMU Munich, Germany, 16–18 February.

**THEORETICAL COMPUTER SCIENCE:** Auckland, New Zealand, 21–24 February.

## MARCH

**FOIKS:** 7th International Symposium on Foundations of Information and Knowledge Systems, Kiel, Germany,

5–9 March.

**LATA:** 6th International Conference on Language and Automata Theory and Applications, La Coruna, Spain, 5–9 March.

**NOTHING BUT THE TRUTH:** Vienna Forum for Analytic Philosophy, University of Vienna, 9–11 March.

**LPAR:** 18th International Conference on Logic for Programming, Artificial Intelligence and Reasoning, Merida, Venezuela, 11–15 March.

**&HPS4:** Integrated History and Philosophy of Science, Department of Philosophy and History of Science, University of Athens, 15–18 March.

**EMPIRICAL PHILOSOPHY OF SCIENCE. QUALITATIVE METHODS:** Sandbjerg, Denmark, 21–23 March.

## COURSES AND PROGRAMMES

### Courses

**EMBODIED AND EMBEDDED APPROACHES TO THE SELF IN PSYCHIATRY AND PSYCHOSOMATIC MEDICINE:** University of Heidelberg, 24–28 October.

**FSFLA:** International Fall School in Formal Languages and Applications, Tarragona, Spain, 31 October–4 November.

**SPR:** ILLI International Workshop on Semantics, Pragmatics, and Rhetoric, Institute for Logic, Cognition, Language, and Information, University of the Basque Country at Donostia, 9–11 November.

**LI:** Logic and Interactions, Winter School and Workshops, CIRM, Luminy, Marseille, France, 30 January–2 March.

**ESSLLI:** 24th European Summer School in Logic, Language and Information, Opole, Poland, 6–17 August.

### Programmes

**APHIL:** MA/PhD in Analytic Philosophy, University of Barcelona.

**DOCTORAL PROGRAMME IN PHILOSOPHY:** Language, Mind and Practice, Department of Philosophy, University of Zurich, Switzerland.

**HPSM:** MA in the History and Philosophy of Science and Medicine, Durham University.

**LoPhSC:** Master in Logic, Philosophy of Science & Epistemology, Pantheon-Sorbonne University (Paris 1) and Paris-Sorbonne University (Paris 4).

**MASTER PROGRAMME:** Philosophy and Economics, Institute of Philosophy, University of Bayreuth.

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

**MA IN COGNITIVE SCIENCE:** School of Politics, International Studies and Philosophy, Queen's University Belfast.

**MA IN LOGIC AND THE PHILOSOPHY OF MATHEMATICS:** Department of Philosophy, University of Bristol.

**MA IN LOGIC AND THEORY OF SCIENCE:** Department of Logic of the Eotvos Lorand University, Budapest, Hungary.

**MA IN METAPHYSICS, LANGUAGE, AND MIND:** Department of Philosophy, University of Liverpool.

**MA IN MIND, BRAIN AND LEARNING:** Westminster Institute of Education, Oxford Brookes University.

**MA IN PHILOSOPHY:** by research, Tilburg University.

**MA IN PHILOSOPHY OF BIOLOGICAL AND COGNITIVE SCIENCES:** Department of Philosophy, University of Bristol.

**MA IN RHETORIC:** School of Journalism, Media and Communication, University of Central Lancashire.

**MA PROGRAMMES:** in Philosophy of Language and Linguistics, and Philosophy of Mind and Psychology, University of Birmingham.

**MRES IN COGNITIVE SCIENCE AND HUMANITIES: LANGUAGE, COMMUNICATION AND ORGANIZATION:** Institute for Logic, Cognition, Language, and Information, University of the Basque Country, Donostia, San Sebastian.

**MRES IN METHODS AND PRACTICES OF PHILOSOPHICAL RESEARCH:** Northern Institute of Philosophy, University of Aberdeen.

**MSc IN APPLIED STATISTICS:** Department of Economics, Mathematics and Statistics, Birkbeck, University of London.

**MSc IN APPLIED STATISTICS AND DATAMINING:** School of Mathematics and Statistics, University of St Andrews.

**MSc IN ARTIFICIAL INTELLIGENCE:** Faculty of Engineering, University of Leeds.

#### MA IN REASONING

An interdisciplinary programme at the University of Kent, Canterbury, UK.  
Core modules provided by Philosophy and further modules from Psychology, Computing, Statistics, Social Policy, Law, Biosciences and History.

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

**MSc IN COGNITIVE SCIENCE:** University of Osnabrück, Germany.

**MSc IN COGNITIVE PSYCHOLOGY/NEUROPSYCHOLOGY:** School of Psychology, University of Kent.

**MSC IN LOGIC:** Institute for Logic, Language and Computation, University of Amsterdam.

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

**MSC IN MIND, LANGUAGE & EMBODIED COGNITION:** School of Philosophy, Psychology and Language Sciences, University of Edinburgh.

**MSC IN PHILOSOPHY OF SCIENCE, TECHNOLOGY AND SOCIETY:** University of Twente, The Netherlands.

**MRES IN COGNITIVE SCIENCE AND HUMANITIES: LANGUAGE, COMMUNICATION AND ORGANIZATION:** Institute for Logic, Cognition, Language, and Information, University of the Basque Country (Donostia San Sebastian).

**OPEN MIND:** International School of Advanced Studies in Cognitive Sciences, University of Bucharest.

**PHD SCHOOL:** in Statistics, Padua University.

## JOBS AND STUDENTSHIPS

### Jobs

**POST-DOC POSITIONS:** in Robot Learning and Reinforcement Learning, Intelligent Autonomous Systems Group, Darmstadt University of Technology / Technische Universitaet Darmstadt, Germany, to be filled asap.

**POST-DOC POSITION:** in the area of developmental robotics and robot learning, INRIA, Bordeaux, until filled.

**TWO POST-DOC POSITIONS:** in Machine Learning, in the project “Composing Learning for Artificial Cognitive Systems”, INRIA Lille, until filled.

**POST-DOC POSITION:** in Machine Learning, University of California, Irvine, until filled.

**ASSISTANT PROFESSOR:** in epistemology, Department of Philosophy, University of Pennsylvania, until filled, review of applications begins 1 November.

**FULL PROFESSOR:** in philosophy of science, Department of Philosophy, University of South Carolina, Columbia, deadline 1 October.

**CHAIR:** in Theoretical Philosophy, Department of Philosophy, Uppsala University, deadline 3 October.

**LECTURER/SENIOR LECTURER:** in Statistics, Department of Mathematics and Statistics, University of Otago, deadline 5 October.

**PROFESSOR/READER:** of Knowledge and Data Engineering, School of Electronics, Electrical Engineering and Computer Science, Queen’s University Belfast, deadline 7 October.

**TWO LECTURERS:** in Statistics, Department of Statistical Science, UCL, deadline 12 October.

**LECTURER:** in History and Philosophy of Science, Unit for History and Philosophy of Science (HPS), University of Sydney, deadline 16 October.

**ASSOCIATE PROFESSOR:** in logic and contemporary philosophy, Institute of Philosophy. University of Neuchâtel, deadline 22 October.

**ASSISTANT PROFESSOR:** in the area of Cognitive Science, broadly understood to include philosophy of psychology and empirically informed philosophy of mind, Department of Philosophy, York University, Ontario, Canada, deadline 31 October.

**INVITED PROFESSOR:** for a one to three month visit, in the field of Probabilistic Graphical Models, Knowledge and Decision team (KOD) of the Nantes Atlantique Computer Science Lab (LINA), deadline 1 November.

**PROFESSOR:** in Philosophy of Science, AOS: Philosophy of biology and environmental sciences, Université du Québec à Montréal, Montreal, Canada, deadline 14 November.

**VISITING FELLOWSHIPS:** Sydney Centre for the Foundations of Science, University of Sydney, deadline 14 November.

**ASSISTANT PROFESSOR:** AOS: metaphysics, epistemology, and logic, Department of Philosophy, Union College, Schenectady, NY, deadline 15 November.

**ASSISTANT OR ASSOCIATE OR FULL PROFESSOR:** AOS: Analytic Epistemology, Department of Philosophy and Classics, University of Texas at San Antonio, deadline 30 November.

**EIGHT 3-YEAR RESEARCH FELLOWSHIPS:** within the project “The Turing Centenary Research Project: Mind, Mechanism and Mathematics”, John Templeton Foundation, deadline 16 December.

**FULL PROFESSOR:** in High-Dimensional Data Analysis, Department of Statistics, University of South Carolina, deadline 31 December.

**PROFESSOR AND TIER I CANADA RESEARCH CHAIR:** in Epistemology and Metaphysics, Department of Philosophy, University of Alberta, deadline 15 January.

### Studentships

**PHD POSITIONS:** in Robot Learning and Reinforcement Learning, Intelligent Autonomous Systems Group, Darmstadt University of Technology / Technische Universitaet Darmstadt, Germany, to be filled asap.

**THREE DOCTORAL TRAINING GRANTS:** School of Computing, Faculty of Engineering, University of Leeds, until filled.

**ONE DOCTORAL RESEARCHER POSITION AND ONE STUDENT RESEARCH ASSISTANT:** to work in the intersection of philosophy, psychology and cognitive science, Munich Center for Mathematical Philosophy, LMU Munich, until filled.

**PHD POSITION:** in the area of developmental robotics and robot learning, INRIA, Bordeaux, until filled.

**PHD STUDENTSHIP:** In Functional Programming, School of Computer Science, University of Nottingham, until filled.

**PHD STUDENTSHIP:** “Preference Elicitation, Modelling and Analysis under Evidential Reasoning Paradigm for New Product Development”, Manchester Business School, University of Manchester, deadline 1 September.

**PHD POSITION:** in multi-objective reinforcement learning, Informatics Institute, University of Amsterdam, deadline 30 September.

**SEVEN PHD STUDENTSHIPS:** in Statistics, Department of Statistical Sciences, University of Padova, Italy, deadline 7 October.

**PHD POSITION:** in Theoretical Philosophy, Department of Philosophy, Stockholm University, deadline 14 October.

**PHD POSITION:** “Explanatory Reasoning: Normative and Empirical Considerations”, Tilburg Center for Logic and Philosophy of Science (TiLPS), University of Tilburg, deadline 15 October.

**TWO FULLY FUNDED FOUR-YEAR PHD POSITIONS:** one PhD student in Natural Logic and Linguistic Semantics and one PhD student in Computational Logic and Natural Reasoning, Tilburg Center for Logic and Philosophy of Science (TiLPS), deadline 15 October.

**PHD POSITION:** within the research project “Epistemology and the Regress Problem: A Probabilistic Approach”, Faculty of Philosophy, University of Groningen, The Netherlands, deadline 31 October.

**ALAN MUSGRAVE MASTER’S SCHOLARSHIP:** in Philosophy, University of Otago, New Zealand, deadline 1 November.