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§1

EDITORIAL

It is a pleasure to return as guest editor for this month's issue of *The Reasoner*. Not that I really left the headquarters, since I continue as Features Editor. It is indeed rewarding to see how much the gazette is appreciated among several types of scholars—from

the logician to the general philosopher of science to the computer scientist. It is also a good sign that people from outside 'reasoning' technically conceived (i.e., logic or philosophy of language) are engaging with our interdisciplinary and (to some extent) popular project. Thus I, for one, was delighted to see debate on the 'right to life' issue, for instance. I would therefore encourage those working in e.g. politics, policy making, or applied ethics to try their hands at writing a piece for us.

This is clearly a critical moment for university. The British system is undergoing major changes, as did the Italian system. There is also an enduring debate about the vices and virtues of various research assessment systems. In a previous issue (*The Reasoner* 4(11)) Isabelle Drouet interviewed Jacques Dubucs and asked him several questions about the French system, the status of analytic philosophy in France, etc. This month, in my interview with Jan Faye, I also decided to devote some questions to the general academic situation in Denmark and about the specific situation of philosophy. I also asked what Jan thinks the role of philosophy of science is, or ought to be, today.

It seems to me that *The Reasoner* is an ideal place to set up a dialogue between academics, so that they learn from each other's experience. This is especially important because the job market requires high mobility. But on what grounds should I decide to start a career in Denmark (or Great Britain, or Germany, or ...)? Hopefully not just for the salary. Hopefully, if we make an effort to learn the specific virtues and vices of our academic systems, there is a chance we can contribute to improving them. Having myself tasted four academic environments (the Italian, Belgian, British and US), I feel particularly concerned about this issue and I wonder to what extent I will be able, myself, to make the most of this experience. I don't have a clear and definite answer yet, so to make a start I try to learn more from other people's experience, such as Jan's.



FEDERICA RUSSO
Philosophy, Kent

Interview with Jan Faye

[Jan Faye](#) is associate professor at the University of Copenhagen. His research interests are multifaceted, spanning from philosophy of physics, realism in science, explanation, time and causation, to general methodological issues in humanities.

Federica Russo: Thanks Jan for agreeing to be my interviewee for this month. Could you tell us about your intellectual history, how you got into philosophy and how you chose your main topics of research?

Jan Faye: Well, I didn't study philosophy right away, although I was interested in philosophy already as a teenager. I read Kierkegaard, Freud, Einstein and this kind of stuff. In fact, you can say that my problem was that I was attracted by too many different fields such as astronomy, physics, biology, archeology, history, literature, art, film and music. Also I was bird-watcher at a professional level and for some time worked as a ringer at a bird-station. As a boy I collected eggs, stuffed birds, frogs etc. and at that time I wanted to become a biologist. In our small apartment my brother and I had more than fifty birds and animals. Later I wanted to become a psychiatrist. However, before entering highschool I made a trip to Japan working on a ship. After I returned from this trip I began highschool. I took part in the youth revolution in the late Sixties and dropped out of highschool because I wanted to become an artist and a film-maker. But eventually I realized that I wanted to study philosophy at the university because it would give me a nice entrance to many of those fields I was interested in. So after a couple of years, when I had realized that I wanted to dedicate myself to philosophy, I had to qualify myself for the university by attending a one year evening course in order to receive a highschool certificate. This gave me the possibility of attending philosophy lectures at the university during the day time without yet being enrolled.

Because of my many interests it was obvious to me that I had to specialize myself in philosophy of science: Unfortunately, I was not very impressed by my teachers. Only one of them was what you may call a philosopher of science. But he was not up-to-date with modern science. In fact he was a specialist in Newton, Kant and Marx ... and had written his habilitation on Eddington's philosophy. We had to teach ourselves. We didn't



write papers and attended only one of two lectures per week. My education was very different from the way we educate our students today. I also began to follow courses in physics where I had the chance to perform experiments. When I finished university there were no jobs in philosophy. We had just seen the first oil crisis. Instead I wrote my doctor habilitation on time, causation and backwards causation. I survived by getting grants from the National Research Foundation and the Carlsberg Foundation which is a scientific foundation financed by the Carlsberg breweries and controlled by the Royal Academy of Sciences and Letters in Denmark. Every time you drink a Carlsberg or Tuborg a little bit of the profit goes into the Danish sciences and arts. Isn't that great?

FR: I am curious to know more about Danish academic and especially philosophical environment. Is Denmark more analytic or more continental? Or some blend of the two?

JF: Let me start by answering your last question. I'll say that distribution among analytic and continental philosophers is fifty-fifty. When I was young there were not many philosophers who were interested in continental philosophy—partly because Jørgen Jørgensen, who was a leading logical empiricist in Scandinavia, had played a very dominant role in virtue of his teaching and as an outstanding Danish philosopher for four decades. But all this has changed; it began when I was still a student. And I'll say that among the students of today continental philosophy is more hot than not. Of those who are interested in analytic philosophy the majority focuses on practical philosophy. I think this is a result of a general tendency in our society where it comes more and more difficult to recruit students for the natural science disciplines. However, I myself have sometimes taught continental philosophy ... I mean I have given lectures on Husserl, Heidegger, Gadamer, Ricoeur, and Foucault. Indeed, I have learned something new by doing this teaching. These philosophers address different topics than what analytic philosophers usually do. I like their scope so to say. But in continental philosophy I don't find the rigor of argumentation which for me is essential to philosophical thinking. A topic I find interesting from the study of hermeneutics is a scientific understanding of the practice of the humanities. Here I think analytic philosophers of science can contribute with important insight and new perspectives.

You also asked me about the general academic situation in Denmark. It's dreadful, I think. Our parliament passed a new university law in 2003 which changed the status of the universities from being self-governed public institutions to being professionally managed corporations where the minister of research selects the governing board of the university which then hires the university rector who hires the deans who again hire the chairpersons/heads of the departments. This is the result of what is called 'new public management'. Merely neo-liberal ideology. Everything has to be registered and controlled—research as well as teaching. Competition seems to be the only value behind all this because the government wants research taking place at the universities to be in the service of private companies and their contribution the global economy. So there is the perception that there is little need for philosophy and other humanistic sciences. From being cultural institutions our universities have become service centers for the private corporations and businesses. I think that modern politicians are thinking only in economical terms and entirely oversee how important the universities also are for a continuous development of culture and democracy. These days politicians are more

interested in ideas we can live by than those ideas we live on.

FR: You are part of the European Science Foundation Network 'Philosophy of Science in a European Perspective'. Do you think there really is such a distinct perspective? Or, perhaps, should we create one?

JF: It's a difficult question. The most obvious answer is to reply that there are no differences. Philosophy of science is international because science is international. Philosophy of science, as an academic discipline within philosophy, began with the logical positivist; then many positivists moved to America where their views became blended with American pragmatism. In this form it returned to Europe in the Sixties under the influence of Thomas Kuhn and his generations. It affected Popper, Lakatos and many others. Kuhn's influence gave rise to the sociology of knowledge and social constructivism, and I think the Edinburgh school was the first. I would say that social constructivism was European wine in an American bottle before it again landed on the shores of America.

I'll also say that the current trend among philosophers of science for arguing for a structural view on scientific theories is more a less a European insight which was then imported to America. However, if there is a difference between philosophers of science on each side of the Atlantic I'll say that philosophers of science in America are more pragmatically oriented in their approach than the people in Europe. I think this is especially true if you consider philosophers of science coming from Germany and the Eastern parts of Europe. Here you can still find a strong orientation towards different transcendental forms of argumentation. But I myself have strong naturalistic and pragmatic inclinations.

Philosophy of science is indeed influenced by science itself, and it changes if science changes. The future I see for philosophy of science moves in two opposite directions, and it is most fascinating to imagine how these directions can meet again. On the one hand, we begin to recognize that the practice of natural science shares some general cognitive and methodological features with the practice of social science and humanistic science in spite of their ontological differences, simply because knowledge and understanding have a biological and cognitive origin. Here I think that cognitive science and evolutionary biology can help philosophers to replace what is left of transcendental philosophy. On the other hand, I think that philosophers will start to see that the sciences are a much more contextual phenomenon than what philosophers and scientists usually consider them to be. We cannot, not even in a discipline like physics, give a unifying and reductive perspective. I am in favour of a moderate form of theoretical pluralism. As I mentioned before, I am personally interested in the philosophy of the humanistic sciences and how humanistic science can be described as an integrated form of scientific knowledge. Perhaps this could be an area in which European philosophers may make a distinguished contribution. I'll at least do what I can. I published a book *Rethinking Science* about the unity of the natural sciences, the social sciences and the humanities but not many seem to have noticed it. And I have just finished another book called *After Postmodernism* in which I attempt to make a naturalistic reconstruction of the humanistic sciences.

FR: I'd like to change subject slightly. During a recent conference in London, we had a conversation about explanation that I very much enjoyed. It would be interesting

to our reasoners, I think, if you could briefly present your view on explanation and interpretation.

JF: That's true. I call this approach a pragmatic-rhetorical theory of explanation. Two roads brought me to this view. First, as I have already pointed out, I became interested in the philosophy of the humanities. I realized by looking into the humanities that you find many examples of explanation which could not be accounted for by the usual models of explanation. Neither what we may call formal models, like Hempel's covering law-model, nor ontic models, like Salmon's causal-process model, give us any insight into explanation outside the context of nature. The only analysis of explanation which could cope with this problem was various types of epistemic models. Of those I find the pragmatic ones formulated by Bas van Fraassen or Peter Achinstein most promising. Here Achinstein's approach is closer to mine. But I was not entirely satisfied with either of them, nor any of the other epistemic models. But the basic idea behind a pragmatic view on explanation is that explanation is a response to an explanation-seeking question. You try to understand an explanation not in terms of its form or content but in terms of its function. Hence explanation, regardless of whether it is an ordinary or a scientific one, takes part in a specific discourse in which it has a certain function, namely to provide particular information which was requested by the questioner.

My second road to explanation was that I met a rhetorician, who is now my wife, who told me about rhetorical discourses and how much the actual situation means for our understanding of the speaker's message. I then realized that if one took the rhetorical dimension of the scientific discourse into consideration, it would be possible to develop a neat theory of explanation which also could handle explanation within the social sciences and the humanistic sciences.

FR: The literature on explanation had ups and downs with peaks of optimism in finding the solution to the issue and peaks of negligence. Why do you think your approach is able to open a new path of research? How does it stand with respect to the recent trend of 'mechanistic explanation'?

JF: Yes, it's correct that many philosophers have invested a lot of intellectual effort to come up with a model of explanation. The reason that a pragmatic approach is superior to any other model is because it enables us to say why we in fact have so many different types of explanation. It does not focus on nomic explanations or causal explanations and then claims that this sort of explanation is the real scientific type of explanation. In the sciences we have nomic, causal, functional, structural, intentional, or what have you, explanation, and each fulfills different sorts of cognitive interests. A pragmatic-rhetorical approach is also open for explanations which are not responses to why-questions. And it can give a philosophical account of explanation outside the natural sciences. It even tells us that the old distinction between description and explanation merely rests on the context. All explanations are context-dependent.

There is nothing wrong with mechanistic explanation if this is what you request in your search for explanation. It depends on the cognitive exigence of the audience which kind of explanation they are asking for. Mechanistic explanation is just one form of explanation. There may be alternative explanations, and which one you prefer is determined by your cognitive interest.

When it comes to interpretations I think you can divide them into two different sorts: Interpretation in the sense of construction of a system of classifications, of concepts, of theories, of models, etc., and interpretation in the sense of explanation of meaning. What does this mathematical symbol represent, what do these data mean, or what does this novel mean? You see why we need a much broader view on explanation than what philosophers of science normally believe?

FR: One last question. You have been working on many big topics in philosophy of science, such as causation, the interpretation of quantum mechanics, explanation and interpretation in the natural and social science. What is, in your view, the role of philosophy of science nowadays?

JF: Sometimes I think that philosophers of science have lost track of their own strengths. Philosophers of science are not scientists. Physicists do much better physics than philosophers do. But philosophers should be much better philosophers than physicists. And usually they are. You may say that the role of philosophers of science is to look into all the different questions concerning the scientific practice where the answers (for the time being) are empirically underdetermined. Their aim is to come up with explanations in terms of ontological, semantic and epistemological considerations. These aspects may touch upon metaphysical issues or methodological issues. For instance, the concept of causation is used in all sciences including the social sciences and the humanistic sciences. Thus, a particular science cannot provide us with one common notion of causation. Neither can it decide whether it makes sense to talk about different notions in relation to the various sciences. There is nothing empirical in these sorts of questions. It is up to philosophers to bring some light to these issues.

Similarly, when it comes to the interpretation of quantum mechanics, namely what does quantum theory tell us about the real world apart from giving us true empirical predictions, the question is not one that can be settled empirically. Which one of the various interpretations is the correct one is not something physics itself can answer. It is a question which involves semantics, general ontology, and epistemology, and their priorities with respect to one another. Again we cannot appeal to experience to determine these kinds of questions. They are genuinely philosophical. You may say that the sciences have overtaken many philosophical questions in the past because these questions were concerned with items which eventually could be answer by the experience. This same will happen in the future. But there has and always will be questions whose answers are empirically underdetermined. These are the philosophical questions. So we will never be out of work.

A rose by any other name?

Two recent discussions in *The Reasoner* have taken up the issue of appropriate names. First, there is the question posed by Martin Cooke, “Did Euler’s ‘2’ refer to ZFC’s $\{\emptyset, \{\emptyset\}\}$? (*The Reasoner* 4 (11), pp. 162-163), and Hartley Slater’s spirited answer, “Numbers are not sets!” (*The Reasoner* 4(12), pp. 175-176). Then we have Chris Mortensen on whether we should say that mathematics in paraconsistent logic is ‘inconsistent’ or ‘paraconsistent’ (4(10), pp. 151-153). I’d like to comment on both these ideas in turn.

First, what hinges on the question, “Are numbers sets?”

As a way of testing the import of the question, we could turn it around. There is a sense, for example, in which Zermelo-Fraenkel-sets are not even sets; they are ZF-sets; they are *iterative* sets, as George Boolos put it. Arguably, the same qualification would go for *any* formal theory of sets—that the objects of the theory are always formal, and hence can never be taken to be identical with the hopelessly informal notion of ‘set’. The same goes for number. The numeral ‘1’ is not the number 1. The concept of oneness is not the number 1. Those are numerals and concepts, not numbers. Only the *number 1* is the number 1, and no other reduction or replacement will do—as Slater so plangently urges. But if this is all we are debating, then why are we debating it?

I do not think this is all we are debating. In a sense, we are really wondering whether there *is* a hopelessly informal notion of number, which cannot be completely reduced, or whether, contrawise, number concepts are grounded in some formal theory. That is an interesting question, and worth debating. If there is a formal notion of set that captures ‘the real idea’, I would like to know more about how to make that intuition precise. If the gulf between formal and informal notions cannot be bridged, I would like to know more about why.

But these questions are not discussed by Slater. He instead appears to beg the question, insisting that “no natural number is a set of any kind” is some kind of brute fact about grammar. For example: “It is *the number of elements in the empty set* that is zero, not the empty set itself. A grammatical confusion is therefore involved . . .” This claim simply balks at anything interesting that is at issue, and insinuates that a well established mathematical theory rests on a grammatical mistake. Bald assertions do not advance the dialectic.

The conversation can develop when we look at the *point* of taking some sets to be numbers: to give us perspective that we decidedly did not have from the unreduced concept. For example, set theorists use the membership relation, ‘ \in ’ to define numerical ordering, not a primitive ‘ $<$ ’. The set theoretic reduction is purposely not defined in terms of antecedently understood mathematical relations. Nor is a set theoretic *reduction* the same as an item-by-item *replacement* of non-sets by sets (as Slater unfairly demands: “one can replace mentions of the one with mentions of the other wherever they occur”). Exactly not. As Lewis Carroll observed in *Sylvie and Bruno*, a map that has “the scale of a mile to the mile” is not much of a ‘map’ at all. As one character remarks, “We now use the country itself, as its own map, and I assure you it does nearly as well.”

Turning, then, to Mortensen’s interesting note, we (some of us “who should know better”) have been making similar grammatical mistakes “On Terminology in the Theory of Inconsistency”. Paraconsistency, we learn, is a property of a *logic*, while inconsistency is a property of a *theory*. Thus it is wrong to talk about paraconsistent theories. I take this to be a question about representation of a different kind—how a discipline represents itself, by way of terminology and apt names. Staying with our set/number analogy, what if Zermelo, von Neumann, et al had not claimed that set theory has anything to do with ‘numbers’ or even foundations? Instead suppose they offered a theory of 0, as independently interesting?

I think that even the possibility that this *could* have happened is very slim. The

founders of set theory were concerned with arithmetic and analysis—theories of *numbers*. What about mathematicians of a non-classical bent, then? Are mathematicians who use non-bivalent logics ‘incomplete mathematicians,’ as an analogue to Mortensen’s terminology would suggest? It would be, I think, technically correct: Bishop’s logic was constructive, his theories (negation) incomplete. But calling it ‘incomplete mathematics’, I also think, pretty clearly fails to express what Bishop was doing. No one was aiming for a failure of excluding the middle just for the sake of it; the aim was more reliable proof methods.

And so in ‘inconsistent mathematics,’ the aim is not *per se* to produce theorems that express contradictions (although this does emerge as an intriguing goal later on), nor are all inconsistent theories worthy of study. Rather the aim is to enter into well-known paradoxical territory, like the set of all sets or infinitesimal numbers, and to reason through with reliable means, without threat of *ex contradictione quodlibet*. And so: *paraconsistent* mathematics.

These considerations suggest that saying what we *intend* to be doing can sometimes be more expressively robust than saying *exactly* what we are doing. Whether or not numbers *really are* sets, treating numbers as sets gives us great purchase on foundational questions in mathematics. And so too for non-classical mathematics—whether or not the theory is inconsistent, the *logic* is what gives us rational access to its theorems. The better names for mathematical entities—numbers, logics, theories—are the ones that capture the intent. Compare an explicit description against an irreducible explanation:

There are a mob of people banging into each other, with loud noises!

No. They are dancing to music.

ZACH WEBER

Philosophy, Melbourn & Sydney

English Numbers

Hartley Slater in *The Reasoner* 4(12), 175–6, tried to show, from the fact that the number of elements in the empty set is zero, that zero is not, as a matter of English grammar, the empty set—and in general, that numbers are not sets—because we don’t say that the number of elements in the empty set is the empty set. But things aren’t quite that simple.

To begin with, Slater’s example of zero—which is often defined to be the empty set in pure mathematics—was unfortunate, because mathematicians introduced zero relatively recently. Consequently English remains rather ambivalent about its status. There being no elephants in this room, for example, it’s false that there are a number of elephants here. So from it being true that there are zero elephants here, surface grammar might seem to indicate that zero isn’t even a number (a cardinal number). But zero is of course a number (the number of elephants in this room, the number of elements in the empty set).

For another example, the numbers one, two, three etc. correspond to the positions first, second, third and so forth. And since no sequence has an element before the first

one—that’s what ‘first’ means—so, in that ordinary sense, there’s no zeroth element, and so again, surface grammar seems to indicate that zero isn’t a number (an ordinal number). Nonetheless, there’s a more mathematical sense in which whenever an element is indexed by 0, it’s a zeroth element.

In many mathematics textbooks there’s a Chapter 0, for example, containing the set-theoretic basics. Of course, such chapters don’t amount to much evidence that mathematicians take numbers to be nothing more than sets. Mathematicians make the standard identification of numbers with sets in order to prove theorems from set-theoretic axioms. They are thereby following in the footsteps of those who did geometry by proving theorems from Euclid’s axioms. And surely few if any geometers thought that there was nothing more to space than Euclid’s axioms. Space was rather the obvious space around us, of which Euclid’s axioms were taken to be true (and obvious enough to be the premises of proofs).

Now, even if the space that we see around us is Euclidean—having been constructed as such by our brains from our sensory input—it’s surely not unlikely that what Aristotle meant by ‘space’ is non-Euclidean. So, similarly, even if our concept of zero comes (for example) from reifying the definitive property of an absence, it doesn’t follow that it’s impossible that Euler’s ‘0’ referred to an empty set. Indeed, the standard empty set can be an urelement—can be anything that has no members (where membership is an axiomatic primitive)—because its job within standard set theory is simply to have no members, and so in that sense (at least) zero can be an empty set.

But more to the point, Slater’s argument may beg the question. That’s because if ‘the empty set’ was a definite description of zero then we *could* say that the number of elements in the empty set is the empty set (for all that we wouldn’t usually). After all, we can say that the number of ones in zero is zero. In general, for natural numbers n , the number of ones in n is n . Perhaps it would be more natural for us to say that two twos are four (for example), and hence that the number of twos in four is two. But such equations all follow from the natural numbers—most obviously those greater than 1—being essentially sums of ones, which seem to be *some* sort of collection, perhaps not unlike sets of points in that, while their elements are in obvious ways identical, they are distinguished in ways that derive from their origins (as positions in space, in the case of points).

Two twos are four because any two things plus another two things are four things. And in English, there being *a number of things* of some kind is just there being *some things* of that kind. So again, surface grammar indicates that numbers—most obviously those greater than 1—are some sort of collection. And we might expect mathematicians to be the experts on what exactly numbers are. So, since mathematicians prove theorems about numbers from set-theoretic axioms, we’ve some evidence that numbers are sets.

Still, such evidence is compatible with numbers being axiomatic sets only in a rather abstract way (cf. how the integers with addition are an abelian group). Slater’s argument was based on surface grammar, so it was presumably that numbers are not sets in some more obvious sense. So note that collections in the usual, informal sense can be variable, like a stamp collection, or non-variable, like a chess set. A fundamental question in this area is therefore whether mathematicians have *discovered* that numbers behave like sets—at least to the extent that the natural numbers are, collectively, non-variable—

or whether they've just tended to assume that (even though we can't so easily assume that cardinal or ordinal numbers are non-variable, in light of the famous set-theoretic paradoxes).

Mathematicians don't prove the standard Axiom of Infinity—which asserts the existence of a set containing one element for each natural number (amongst other axioms giving such sets the properties one would expect of non-variable collections)—but rather prove theorems from that axiom (along with the others), or work from some other foundation. Philosophical arguments are therefore needed, to assess whether the standard axioms are giving us a scientifically adequate description of the natural numbers or not. But arguments based on surface grammar are unlikely to be of much help in this area. After all, they can't even show zero to be a number. (For a more apposite sort of argument, see my 2003: Infinite Sequences: Finitist Consequence, *The British Journal for the Philosophy of Science* 54, 591–9, and my 2010: Two Envelopes, two paradoxes, *The Reasoner* 4(5), 74–5.)

MARTIN COOKE

Reasoning from paradox

Gödel's and Tarski's theorems were inspired by paradoxes: the Richard paradox, the Liar. Gödel, in the 1951 Gibbs lecture, argued from his metatheoretical results for a metaphysical claim: the impossibility of reducing both mathematics to the knowable by the human mind and the human mind to a finite machine (e.g., the brain). So Gödel reasoned indirectly from paradoxes for metaphysical theses. I present four metaphysical theses concerning mechanism, reductive physicalism and time for the only purpose of suggesting how it could be argued for them *directly* from paradoxical sentences.

A sentence is paradoxical iff, as usually read, it expresses no proposition. I regard propositions as the ultimate truth bearers. Sentences inherit their truth values from the propositions they express. Hence, a sentence is paradoxical iff, as usually read, it has no truth value.

The reader should recall that a paradoxical sentence (e.g. the Liar) is not a contradiction (e.g. ' p and not p '); while the latter is always false, the former has no truth value as usually read; though some authors have proposed *special* readings of some paradoxical sentences, we will take them at face value.

We assume that mathematical and physical states of affairs are always well-defined states of affairs to which Excluded Middle applies, so that all sentences about them have a definite truth value.

Thesis 1. There is no correct formal system or algorithm proving precisely the true sentences of English; that is, truth in English is not mechanizable.

Assume that such a system exists, call it S and let L = 'this sentence is not true'.

L is paradoxical because there is no way to consistently assign it a truth value, and **L is not paradoxical** because it is equivalent to ' L is not a theorem of S ', which

expresses a well-defined mathematical state of affairs. Contradiction.

Therefore, S does not exist.

Thesis 2. The truth of sentences cannot be reduced to traits of physical systems.

This argument is suggested by the Pinocchio paradox (Eldridge-Smith, Peter and Eldridge-Smith, Veronique, “The Pinocchio Paradox”, *Analysis* 70(2): 212-216, 2010). Suppose Pinocchio’s nose grows just while Pinocchio is saying a lie. If Pinocchio utters ‘my nose is growing just now’, his statement is true iff he’s lying, which is a contradiction. The point is that Pinocchio’s utterance should be both paradoxical, because it is a *physicalized* version of the Liar, and not paradoxical because it is about a physical fact.

More generally, assume that for any sentence s there is a trait T_S of a physical system P_S such that s is true iff P_S has T_S . Let $s^* = ‘P_{S^*}$ doesn’t have $T_{S^*}’$. Just as above, s^* **would be paradoxical and not paradoxical**. Contradiction.

Therefore, the truth of sentences cannot be reduced to traits of physical systems.

Thesis 3. Human cognitive capability is equivalent to no formal system, algorithm or physical system.

Let $H = ‘\text{Smith cannot know this sentence to be true}’$, where Smith is some human with the average cognitive abilities. We first prove that if H expresses a proposition, then it is both true and false.

Assume H expresses a proposition. Then H is true iff Smith cannot know H to be true. And in fact Smith *cannot know H to be true for if he did, he would be making it false and nobody can know a falsity*. So, if H expressed a proposition, **H would be true**. But Smith can make the reasoning in italics above, for he is supposed no less smart than you or me. So Smith can know that Smith cannot know H to be true. If H expressed a proposition, it would say exactly what we have proved Smith can know; then, since Smith can know what H expresses just as any other apt speaker, Smith could know H to be true; but then **H would be false**. Contradiction.

Thus H expresses no proposition; hence it is about no mathematical or physical state of affairs though it is about an average man’s knowledge. Therefore, human knowledge is equivalent to no formal system, algorithm or physical system.

Thesis 4. If time is irreversible, so that events in the past are determinate and Excluded Middle applies to them, there is no infinite past.

The argument is based on a compound of Benardete’s paradox (Benardete, José, *Infinity: An Essay in Metaphysics*, Oxford, Clarendon Press, 1964) and Yablo’s paradox (Yablo, Stephen, “Paradox without self-reference”, *Analysis* 53: 251-252, 1993). See also (Luna, Laureano, “Ungrounded causal chains and beginningless time”, *Journal of Logic and Logical Philosophy*, 18(3-4): 297-307).

Assume there’s an infinite irreversible past and locate in any time unit in that past some subject uttering just ‘no previous utterance is true’. This yields an infinite queue

of identical utterances. It is impossible to assign any truth value to any of the utterances: assume one of them, say t , is true; then all utterances prior to t are untrue, but then also all utterances prior to the predecessor t_{-1} of t are untrue, and t_{-1} is true; contradiction; so t is not true; since t was arbitrary, no utterance is true; now assume t is false; then some prior utterance is true, which has been shown impossible. So, **all utterances are paradoxical**.

But, as time is irreversible, each utterance must have a definite truth value: each utterance refers to a state of affairs in the irreversible past, hence to an irreversibly determinate state of affairs; the truth value of an utterance about the future could perhaps be indeterminate and an utterance in a reference loop could be paradoxical but neither is the case for utterances *ultimately* about past utterances; then, by Excluded Middle, for each utterance, either all previous utterances were false or some was not; this renders each utterance either true or false: **no utterance is paradoxical**. Contradiction.

Therefore, there is no infinite irreversible past.

These examples propose the study of the metaphysical implications of paradoxes as a promising line of research.

LAUREANO LUNA

I.E.S. Doctor Francisco Marín, Philosophy, Siles, Spain

§3

NEWS

Benelux Conference on Artificial Intelligence, 25–26 October

The 22nd edition of the Benelux Conference on Artificial Intelligence took place in Luxembourg on October 25-26, 2010. This was the first time that BNAIC had been held in the Grand Duchy. The conference was hosted jointly by the University of Luxembourg and the Centre de Recherche Public Henri Tudor. Despite larger travel costs than usual for participants, the turnout was good, and the atmosphere was convivial. A total of 99 participants registered for the conference, with the biggest contingent (50 people) coming from the Netherlands. As might be expected, this year there was also a sizeable contingent (22) affiliated to institutes in the host country of Luxembourg, while 18 participants made the journey from Belgium. The other attendees came from France, Italy, Germany, Sweden and the United States.

This year's two invited speakers were Jerome Lang (CNRS and Universite Paris-Dauphine) and Michael Mateas (University of Southern California, Santa Cruz, USA). The title of Jerome's talk was "Voting, Incomplete Knowledge and Communication", which was mainly about one of the key problems in the area of Computational Social Choice, namely the determination of a winning alternative in an election when knowl-

edge about voters' preferences is incomplete. Michael is one of the best-known researchers in the area of AI in Videogames. In his talk, titled "The Algorithm is the Message: AI as an Expressive Medium", he explored the possibility of using game AI to enable new forms of interactive experiences, describing the research and design challenges that arise from a focus on AI as an expressive medium.

Regarding the contributed papers, as in previous years, submissions were invited for papers in three categories: original papers (category A), "compressed contributions" (category B), which were papers which had already been accepted or published in other AI-related conferences or journals after June 1, 2009, and demonstrations (category C). A total of 76 submitted papers were received, breaking down into 36 category A, 34 category B and 6 category C. Out of these, a total number of 67 papers were accepted: 30 from category A, 31 from category B and all 6 demonstration papers from category C. 50 of the accepted category A and B papers were accepted for oral presentation, with the remaining 11 accepted for poster presentation. Quite a few papers were presented on reasoning-related topics. For example there were sessions devoted to Argumentation, Game Theory and Strategic Reasoning, and Multi-agent Systems, which in fact was the area which received more submissions than any other.

There were two awards at this year's BNAIC. The award for Best Original Paper (open to all category A papers) was won by "Fast Bayesian people detection", by Gwenn Englebienne and Ben J.A. Krose (Universiteit van Amsterdam), while the Best Demonstration award went to "Bonaparte accident victim identification system", by Willem Burgers, Wim Wiegerinck and Bert Kappen.

RICHARD BOOTH

Computer Science and Communications,
University of Luxembourg

Italian Society for Logic and Philosophy of Science, 15–17 December

The triennial conference whose scientific committee is formed by Giovanni Boniolo, Mauro Ceruti, Marcello D'Agostino, Enzo Di Nuscio, Mauro Dorato, Vincenzo Fano, Enrico Giannetto, Giulio Giorello, Roberto Giuntini, Simone Gozzano, and Corrado Sinigaglia was held at the University of Bergamo from 15th to 17th December 2010. Invited talks by Samson Abramsky, Amit Hagar, Peter Janich and Samir Okasha were accompanied by short presentations in 6 parallel sessions in the following areas: Logic and Applications, Philosophy of Mathematics and Physical Sciences, Philosophy of the Life Sciences and Cognitive Sciences, Methodology of the Sciences, Philosophy of the Social Sciences and Epistemology and History of Sciences. The conference was rounded off by panel discussions on the topics "Science and Democracy" and "Education and Innovation".

Samson Abramsky (Wolfson College, University of Oxford) confronted problems of fundamental physics that started to be reexamined with the advent of quantum information and computation and might have profound implications for philosophical realism. Bell's Theorem, expressing the claim that quantum mechanics predicts correlations between spatially distributed particles which cannot be reproduced by any theory of local

hidden variables, challenges also the conception of locality in the context of distributed and parallel computing. Abramsky showed how the main paradoxes that gave rise to the theorem and that have been mainly presented in a framework of complex probabilistic models can be reformulated in terms of a rather simple logical framework that preserves the main structure and results of the theory. More specifically, probabilistic notions of independence should be replaceable by strictly logical ones, and this again has consequences for the notions of logical dependence and independence and for (quantum) computational issues.

Amit Hagar (Indiana University) proposed a new non-frequentist interpretation of physical probability. In contrast to two main interpretations of objective physical probability—Humean regularities and deterministic (statistical mechanical) chances—it is supposed to escape the problem of justification of the measure imposed on the space of all possible states. The new notion is instead based on physical computational complexity, quantifying how hard it is to realize a physical state. As a consequence, this finite and discrete interpretation of the probability space might serve as a viable alternative to the current epistemic interpretation of probability in statistical physics.

Peter Janich (Philipps-Universität Marburg) presented a methodical and linguistic approach to emergence in the biological and cognitive sciences. If shifts substantial focus to the explication of the ‘descriptive access’ the acting scientist has to explain how an original phenomenon becomes described as “emergent”. Besides his reasoning according to a means-ends rationality, the artificiality of the laboratory context, particular norms of scientific language etc. have to be considered. These ideas were defended as an appropriate representation of important historical cases such as Darwin’s modeling of selection in analogy to a human breeder and Wilhelm Wundt’s “principle of heterogeneity of ends” in his “*Voelkerpsychologie*”. In an analysis in relation to different types of emergence (ontological/ methodological, weak/ strong, logical/ causal, synchronic-diachronic), the methodical approach should avoid categorical gaps between these types by limiting itself to the descriptive access the scientist can employ in a given context.

Samir Okasha (University of Bristol) examined the question as to whether Darwin’s theory of evolution has any special meaning for philosophy, more than other scientific theories. After pointing out some traditional issues in areas such as metaphysics, epistemology and philosophy of mind that have been deeply influenced by Darwinian themes (debate about essentialist notions of species and organism; natural and historical kinds; species as individuals; relations between individuals, parts and wholes; teleosemantic theory of intentionality), he discussed some seemingly genuine new questions and types of understanding particularly in evolutionary psychology and evolutionary economics as well as political and social philosophy (theory of rational choice and optimization, social evolution theory). A unifying theme of these developments in the latter area seems to be the evolutionary mechanisms to align individual and group interests. These might also point to an answer to the first question: perhaps the fruitfulness of Darwinian topics in philosophy lies in bringing a particular type of explanation to the forefront: adaptive

explanations.

BETTINA SCHMIETOW
European School of Molecular Medicine,
IFOM-IEO, Milan

Philosophy of Science Colloquium, 18 February

The second Philosophy of Science Colloquium, organized by the University of Johannesburg on February 18th, took place in Salt Rock Beach, Kwa-Zulu Natal, South Africa.

The keynote paper of the colloquium was given by Professor Ian Hacking (Collège de France & University of Toronto). In his paper, entitled *Why is There Philosophy of Mathematics at All?*, he argues that Kant's question, 'How is pure mathematics possible', should be carefully interpreted given the 19th century distinction between pure and applied mathematics, which means—as Russell pointed out—that the issue is to explain “the apparent power of anticipating facts about things of which we have no experience”, which in its turn means that the general philosophical question is how is it that pure mathematics is so rich in applications. Hacking identifies seven types of application, each with its own philosophical problems.

The contributed papers broadly fall into four groups:

1. Papers on the role and nature of experiments and observation in science were presented by Jan-Willem Romeijn (University of Groningen), and Vincent Israel-Jost (IHPST, Paris). Romeijn shows how probabilistic models of experimental intervention confirm the “intuition that observations following interventions are more informative than observations *per se*”, but cautions that applying probabilistic models to other problems in the philosophy of experiment “obscures” aspects of experimentation to do with the “externalist character of experimental knowledge and the notion of agency involved in framing experimental findings”. Israel-Jost applies Gupta's (2006) discussion of the “rational contribution of experience to knowledge” to scientific observation. He argues that Gupta's work may help to “conciliate two seemingly incompatible (...) aspects of experience that also pertain to observation”—the epistemic authority of observation in theory formulation and change, and the theory-ladenness of observation reports.

2. Papers on the status of theories and the metaphysics of science were presented by Marion Vorms (IHPST, Paris), Emma Ruttkamp (University of Johannesburg), and Jack Ritchie (University of Cape Town). Vorms argues against both traditional logical empiricist and also Kuhnian paradigmatic analyses of the content of theories, for an agent-orientated depiction of theories which enables us to understand what she sees as the two functions of theories, namely representation and drawing of inferences. Ruttkamp argues for a revision of traditional no-miracles accounts of realism. In her view we cannot be realists about anything except the progress affected by myriad science-reality interactions that are constantly moving on an evolutionary continuum. This is progress not towards anything but according to constant adaptation to current empirical (and theoretical) practices. Ritchie argues for analysing Nancy Cartwright's claims about the dappled world as a functioning metaphor. He explains his view by making

use of Hilary Putnam's discussion of senseless propositions in his paper 'Rethinking Mathematical Necessity'.

3. Papers on inference and causality in science were presented by David Harker (East Tennessee State University) and Alex Broadbent (University of Johannesburg). Harker suggests that IBE can be "preserved" as a "model of confirmation" if we "understand explanatory likeliness in terms of a non-probabilistic notion of confirmation" and interpret IBE "as a guide to the representative strengths of our models and theories". Broadbent suggests that general causal claims contain exceptions (specifically important to epidemiologists) that philosophers in general and probabilistic theorists in particular have consistently overlooked. He turns to contrastive approaches to causal explanation (Lipton 2004) and to singular causation (Schaffer 2005) to solve these problems.

4. Papers in philosophy of biology were presented by John Collier (University of Kwa-Zulu Natal) and Russell Grant (University of Kwa-Zulu Natal). To overcome the difficulties of creating a dual level control system for a particular control problem suggested in Second Order Cybernetics, Collier argues, building on Peirce's triadic account of signs, that autonomy "involves not just a dual level form of control, but integration into an organization that increases the likelihood of survival of the thing that has it". Grant advocates a view of metaphysics in Biology that is similar to the naturalized view of metaphysics presented in Ladyman and Ross (2007). Specifically he suggests a cohesion concept for species based on Brooks and Wiley's (1986) account of evolution as information flow.

EMMA RUTTKAMP

Department of Philosophy, University of Johannesburg

Calls for Papers

CLASSICAL LOGIC AND COMPUTATION: special issue of *Annals of Pure and Applied Logic*, deadline 15 February.

PRAGMATISM AND THE SOCIAL SCIENCES: A CENTURY OF INFLUENCES AND INTERACTIONS: Special issue of the *European Journal of Pragmatism and American Philosophy*, deadline 15 February.

FROM PRACTICE TO RESULTS IN LOGIC AND MATHEMATICS: special issue of *Philosophia Scientiae*, deadline 1 March.

CUSHING MEMORIAL PRIZE: to the best paper in the History and Philosophy of Physics, deadline 15 March.

ENTERTAINMENT COMPUTING: Special Issue on Games and AI, Elsevier, deadline 30 March.

ADVANCED METHODOLOGIES FOR BAYESIAN NETWORKS: Special issue of *New Generation Computing*, deadline 1 April.

HILARY PUTNAM INTERNATIONAL YOUNG SCHOLARS CONTEST: to the best two essays on any aspect of Hilary Putnam's latest views, deadline 15 April.

EXPERIMENTAL PHILOSOPHY: special issue of *The Monist*, deadline 30 April.

QUANTUM CORRELATIONS: ENTANGLEMENT AND BEYOND: (Special issue of *International Journal of Quantum Information*, deadline 15 May.

[C. L. HAMBLIN AND ARGUMENTATION THEORY](#): special issue of *Informal Logic*, deadline 30 June.

[THE PROBLEM OF THE CRITERION](#): special issue of *Philosophical Papers*, deadline 30 June.

[MODALITIES: SEMANTICS & EPISTEMOLOGY](#): special issue of *Philosophia Scientiae*, deadline 1 July.

[EXTENDED COGNITION AND EPISTEMIC ACTION](#): Special issue of *Philosophical Exploration*, deadline 15 September.

[THE ALAN TURING YEAR](#): special issue of *Philosophia Scientiae*, deadline 1 November.

[FORMAL AND INTENTIONAL SEMANTICS](#): special issue of *The Monist*, deadline 30 April 2012.

§4

WHAT'S HOT IN . . .

...Logic and Rational Interaction

In November 2010, the Annual Meet of Calcutta Logic Circle (CLC) on logic-related issues was held in Kolkata, India. On LORIWEB, Soma Dutta [reported](#) on the contributions of the participants, including talks on strategies, expressivity, coalgebra and modal logic and vagueness, to name a few of a variety of topics.

In December, the workshop “From cognitive science and psychology to an empirically-informed philosophy of logic” took place in Amsterdam. Logicians, philosophers, psychologists and cognitive scientists discussed the interface between cognitive science and psychology, and perspectives for the philosophy of logic. Catarina Dutilh Novaes wrote a [workshop report](#) for LORIWEB.

Hybrid logic extends modal logic with capabilities for making explicit reference to individual points in a model. Recently, Torben Braüner's [new book](#) on hybrid logic and its proof theory has appeared in the Applied Logic Series at Springer.

LORIWEB is always happy to publish information on topics relevant to the area of Logic and Rational Interaction—including announcements about new publications and recent or upcoming events. Please submit such news items to [Rasmus Rendsvig](#), our web manager or to the [loriweb address](#).

BEN RODENHÄUSER
Philosophy, Groningen

§5

EVENTS

FEBRUARY

[SOCIAL NORMS IN SOCIAL SCIENCES](#): Department of Philosophy, University of Bristol, 14 February.

AIA: 11th International Conference on Artificial Intelligence and Applications, Innsbruck, Austria, 14–16 February.

PHDs IN LOGIC: Graduate Conference and Winter School, Brussels, 17–18 February.

CICLING: 12th International Conference on Intelligent Text Processing and Computational Linguistics, Tokyo, Japan, 20–26 February.

MORE TOO FUNKY CAUSATION: Department of Philosophy and Moral Sciences, Ghent University, Belgium, 23–24 February.

WORKSHOP IN SOCIAL EPISTEMOLOGY: University of Lund, Sweden, 25 February.

ICLICC: International Conference on Logic, Information, Control and Computation, Gandhigram, Tamil Nadu, India, 25–26 February.

NOVEL PREDICTIONS: Heinrich-Heine Universität Düsseldorf, Germany, 25–26 February.

PRODi: Proof and Dialogues, University of Tübingen, Germany, 25–27 February.

ICMLC: 3rd International Conference on Machine Learning and Computing, Singapore, 26–28 February.

MARCH

CICC-ITOE: International Conference on Innovative Computing and Communication and Asia-Pacific Conference on Information Technology and Ocean Engineering, Macao, China, 5–6 March.

ISHPS: Israeli Society for History & Philosophy of Science, Bloomfield Science Museum, Jerusalem, 6 March.

THEORY-LADENNESS OF EXPERIENCE: Heinrich-Heine Universität Düsseldorf, Germany, 10–11 March.

SOUTHERN SOCIETY FOR PHILOSOPHY AND PSYCHOLOGY: New Orleans, Louisiana, 10–12 March.

STACS: 28th International Symposium on Theoretical Aspects of Computer Science, Dortmund, Germany, 10–12 March.

MODEL UNCERTAINTY AND SELECTION IN COMPLEX MODELS: University of Groningen, The Netherlands, 14–16 March.

THE BOUNDARIES OF THE MENTAL: Institut für Philosophie, Ruhr-Universität Bochum, Germany, 14–16 March.

THINKING ABOUT ANIMAL COGNITION: Institut für Philosophie, Ruhr-Universität Bochum, Germany, 17–18 March.

EUROPEAN EPISTEMOLOGY NETWORK: Lund, Sweden, 17–19 March.

EDINBURGH GRADUATE CONFERENCE IN EPISTEMOLOGY: University of Edinburgh, 18–19 March.

NAFIPS: 30th North American Fuzzy Information Processing Society Annual Conference, El Paso, Texas, USA, 18–20 March.

AI AND HEALTH COMMUNICATION: Stanford University, California, 21–23 March.

DISCOVERY IN THE SOCIAL SCIENCES: TOWARDS AN EMPIRICALLY-INFORMED PHILOSOPHY OF SOCIAL SCIENCE: University of Leuven, Belgium, 22–23 March.

THE PROBLEM OF RELATIVISM IN THE SOCIOLOGY OF (SCIENTIFIC) KNOWLEDGE: University of Siegen, 22–23 March.

TRUTH TO BE TOLD: WORKSHOP ON PHILOSOPHICAL AND FORMAL THEORIES OF TRUTH: Department of Philosophy, Institute for Logic, Language and Computation, Universiteit van Amsterdam, 23–25 March.

EMBODIED, DISTRIBUTED AND EXTENDED COGNITION: Philosophy Department, Universitat Autònoma de Barcelona, 24–25 March.

ICDDM: International Conference on Database and Data Mining, Sanya, China, 25–27 March.

EXPERIMENTAL PHILOSOPHY WORKSHOP: New York City, 26 March.

LEXICAL RESOURCES IN PSYCHOLINGUISTIC RESEARCH: Berlin, 28 March.

RETHINKING REASON: Philosophy Department, Saarland University, Saarbrücken, 28–31 March.

HIGHER-ORDER LOGIC VERSUS SET THEORY: Institute of Philosophy, London, 29–30 March.

SOCIAL COMPUTING, BEHAVIORAL-CULTURAL MODELING, & PREDICTION: College Park, Maryland, United States, 29–31 March.

HACKING'S STYLES OF THINKING: University of Cape Town, 30–31 March.

APRIL

EPISTEMOLOGY OF MODELING & SIMULATION: BUILDING RESEARCH BRIDGES BETWEEN THE PHILOSOPHICAL AND MODELING COMMUNITIES: University of Pittsburgh, 1–3 April.

PARADOX AND LOGICAL REVISION WORKSHOP: Arché Research Centre, St Andrews, Scotland, 2–3 April.

AISB: UK Society for the Study of Artificial Intelligence and Simulation of Behaviour, University of York, York, 4–7 April.

COMPUTING AND PHILOSOPHY: University of York, UK, 4–7 April.

RESEARCH STUDENT CONFERENCE IN PROBABILITY AND STATISTICS: Cambridge, 4–7 April.

SPRINGSIM: Spring Simulation Multi-conference, Boston, MA, USA, 4–9 April.

BIOLOGY AND SUBJECTIVITY: University of Navarra, Pamplona, Spain, 6–8 April.

COMPARATIVE EPISTEMOLOGY OF INFORMATION & COMMUNICATION IN SCIENTIFIC DISCIPLINES: Jean Moulin University, Lyon, France, 8 April.

ICNCS: International Conference on Network and Computer Science, Kanyakumari, India, 8–10 April.

THE AUTHORITY OF SCIENCE: University of Sydney, Australia, 8–10 April.

AIML: ICGST International Conference on Artificial Intelligence and Machine Learning, Dubai United Arab Emirates, 11–14 April.

ICANNGA: International Conference on Adaptive and Natural Computing Algorithms, Ljubljana, Slovenia, 14–16 April.

ICKD: International Conference on Knowledge Discovery, Chengdu, Sichuan, China, 15–17 April.

MAICS: 22nd Midwest Artificial Intelligence and Cognitive Science Conference, Cincinnati, Ohio, USA, 16–17 April.

NFM: 3rd NASA Formal Methods Symposium, Pasadena, California, USA, 18–20 April.

ICI: 23rd International Conference on Informatics, Canakkale, Canakkale, Turkey, 27–29 April.

IGCC: 3rd annual Interdisciplinary Graduate Conference on Consciousness, Boston University, 29–30 April.

MAY

AAMAS: 10th International Conference on Autonomous Agents and Multiagent Systems, Taipei, Taiwan, 2–6 May.

EBL: 16th Brazilian Logic Conference, Laboratório Nacional de Computação Científica, Petrópolis (RJ), Brazil, 9–13 May.

ICCS: 4th International Conference of Cognitive Science, Tehran, Iran, 10–12 May.

METAPHOR AND COMMUNICATION: Faculty of Education Sciences Department of Pedagogical and Philosophical Sciences, University of Cagliari, 12–14 May.

PHILANG: 2nd International Conference on Philosophy of Language and Linguistics, University of Lodz, Poland, 12–14 May.

METAPHYSICS & THE PHILOSOPHY OF SCIENCE: University of Toronto, 13–15 May.

LPNMR: 11th International Conference on Logic Programming and Nonmonotonic Reasoning, Vancouver, BC, Canada, 16–19 May.

ARGUMENTATION: COGNITION & COMMUNITY: Ontario Society for the Study of Argumentation (OSSA), University of Windsor, 18–21 May.

WOLLIC: 18th Workshop on Logic, Language, Information and Computation, University of Pennsylvania, Philadelphia, USA, 18–21 May.

PHILOSOPHY AND ORDINARY LANGUAGE: Louvain, 19–20 May.

RECENT ADVANCES IN STATISTICS AND PROBABILITY: Hasselt University, Diepenbeek, Belgium, 19–20 May.

FEW: 8th annual Formal Epistemology Workshop, University of Southern California, 19–21 May.

SYSTEMATICITY AND THE POST-CONNECTIONIST ERA: TAKING STOCK OF THE ARCHITECTURE OF COGNITION: San Jose, Andalucia, Spain, 19–21 May.

EUROPEAN CONFERENCE ON COGNITIVE SCIENCE: Sophia, Bulgaria, 21–24 May.

SLACRR: St. Louis Annual Conference on Reasons and Rationality, St. Louis, MO, 22–24 May.

TAMC: 8th Annual Conference on Theory and Applications of Models of Computation, Tokyo, Japan, 23–25 May.

PAKDD: 15th Pacific-Asia Conference on Knowledge Discovery and Data Mining, Shenzhen, China, 24–27 May.

AI: 24th Canadian Conference on Artificial Intelligence, Saint John's, Newfoundland and Labrador, Canada, 25–27 May.

NORMATIVITY OF MEANING: SELLERSIAN PERSPECTIVES: Department of Logic, Institute of Philosophy, Prague, Czech Republic, 25–27 May.

LATA: 5th International Conference on Language and Automata Theory and Applications, Tarragona, Spain, 30 May–3 June.

JUNE

TICTTL: 3rd International Congress on Tools for Teaching Logic, Salamanca, Spain, 1–4 June.

PERCEPTION, ACTION, AND TIME: Department of Philosophy, Universitat Autònoma de Barcelona, 2–3 June.

XPRAG: Experimental Pragmatics, Barcelona, 2–4 June.

PHILOSOPHY AND MODEL THEORY: Paris, 2–5 June.

CHURCH'S THESIS: LOGIC, MIND AND NATURE: Krakow, Poland, 3–5 June.

UC: 10th International Conference on Unconventional Computation, Turku, Finland, 6–10 June.

ASSC: Association for the Scientific Study of Consciousness, Kyoto, Japan, 9–12 June.

WSOM: 8th Workshop on Self-organizing Maps, Espoo, Finland, 13–15 June.

THE EPISTEMOLOGY OF PHILOSOPHY: University of Cologne, 13–17 June.

BW7: 7th Barcelona Workshop on Issues in the Theory of Reference, Special Topic: Paradoxes of Truth and Denotation, 14–16 June.

ICANN: International Conference on Artificial Neural Networks, Espoo, Finland, 14–17 June.

LOGICISM TODAY: Besse-en-Chandesse, France, 14–17 June.

CSR: 6th International Computer Science Symposium in Russia, St. Petersburg, 14–18 June.

PNSE: International Workshop on Petri Nets and Software Engineering, Kanazawa, Japan, 20–21 June.

DEFENDING REALISM: ONTOLOGICAL AND EPISTEMOLOGICAL INVESTIGATIONS: University of Urbino, Italy, 20–23 June.

LOGICA: Institute of Philosophy, Academy of Sciences of the Czech Republic, Hejnice, Northern Bohemia, 20–24 June.

LICS: Logic in Computer Science, Toronto, Canada, 21–24 June.

SPSP: Society for Philosophy of Science in Practice, University of Exeter, Exeter, UK, 22–24 June.

ORDINARY LANGUAGE, LINGUISTICS, AND PHILOSOPHY: Arché Research Centre, University of St Andrews, 23–25 June.

EPISTEME: Social Epistemology Meets Formal Epistemology: Recent Developments and New Trends, Center for Formal Epistemology, Department of Philosophy, Carnegie Mellon University, 24–26 June.

EVOLUTION, COOPERATION AND RATIONALITY: PHILOSOPHICAL PERSPECTIVES: University of Bristol, 27–29 June.

QI: 5th International Symposium on Quantum Interaction, Aberdeen, UK, 27–29 June.

ERSHOV INFORMATICS CONFERENCE: Novosibirsk, Akademgorodok, Russia, 27 June–1 July.

JOURNÉES ARITHMÉTIQUES: Vilnius, Lithuania, 27 June–1 July.

MODELS OF COMPUTATION IN CONTEXT: Sofia, Bulgaria, 27 June–2 July.

ICML: 28th International Conference on Machine Learning, Bellevue, WA, USA, 28 June–2 July.

MODELS AND MECHANISMS IN COGNITIVE SCIENCE: School of Philosophy, Psychology, and Language Sciences, University of Edinburgh, 29 June.

ECSQARU: 11th European Conference on Symbolic and Quantitative Approaches to Reasoning with Uncertainty, Belfast, Northern Ireland, UK, 29 June–1 July.

JULY

AAHPSSS: Australasian Association for the History, Philosophy and Social Studies of Science, Christchurch, New Zealand, 1–3 July.

PERCEIVING OTHERS' MINDS: University of Manchester, 1 July.

COGNITIO: Nonhuman Minds: Animal, Artificial or Other Minds, Montreal, Qc., Canada, 3–5 July.

ICMC: 2nd International Choice Modelling Conference, Leeds, UK, 4–6 July.

THE COMPUTATIONAL TURN: PAST, PRESENTS, FUTURES?: International Association for Computing and Philosophy, Aarhus University, 4–6 July.

TABLEAUX: Automated Reasoning with Analytic Tableaux and Related Methods, Bern, Switzerland, 4–8 July.

LGS7: 7th International Conference on “Logic, Games Theory and Social Choice”, National School of Political Studies and Administration, Bucharest, Romania, 6–9 July.

ICLP: 27th International Conference on Logic Programming, Lexington, Kentucky, USA, 6–10 July.

SOCIETY FOR PHILOSOPHY AND PSYCHOLOGY: Université du Québec à Montréal , Montreal, Canada, 6–10 July.

DGL: 5th Workshop in Decisions, Games & Logic, Maastricht University, The Netherlands, 7–9 July.

IWSM: 26th International Workshop on Statistical Modelling, Valencia, 11–15 July.

TARK: Theoretical Aspects of Rationality and Knowledge, Groningen, the Netherlands, 11–15 July.

AUSTRALASIAN APPLIED STATISTICS CONFERENCE: Palm Cove, Tropical North Queensland, Australia, 12–15 July.

UAI: 27th Conference on Uncertainty in Artificial Intelligence, Barcelona, Spain, 14–17 July.

ARCOE: Automated Reasoning about Context and Ontology Evolution, Barcelona, Spain, 17–18 July.

CLIMA: 12th International Workshop on Computational Logic in Multi-Agent Systems, Barcelona, Spain, 17–18 July.

ICIAM: 7th International Congress on Industrial and Applied Mathematics, Vancouver, British Columbia, Canada, 18–22 July.

IJCAI: 22nd International Joint Conference on Artificial Intelligence, Barcelona, Spain, 19–22 July.

CLMPS: 14th Congress of Logic, Methodology, and Philosophy of Science, Nancy, France, 19–26 July.

SING: 7th Spain-Italy-Netherlands Meeting on Game Theory, Paris, 18–20 July.

WORLDCOMP: World Congress in Computer Science, Computer Engineering, and Applied Computing, Las Vegas, Nevada, USA, 18–21 July.

DAVID LEWIS ON LANGUAGE AND MIND: 3rd Graduate International Summer School in Cognitive Sciences and Semantics, University of Latvia, Riga, 18–21 July.

ICMSA: 7th IMT-GT International Conference on Mathematics, Statistics and its Applications, Bangkok, Thailand, 21–23 July.

ISIPTA: 7th International Symposium on Imprecise Probability: Theories and Applications, University of Innsbruck, Austria, 25–28 July.

ICCS: 19th International Conference on Conceptual Structures, Derby, England, UK, 25–29 July.

IJCNN: International joint Conference on Neural Networks, San Jose, California, 31 July 31–5 August.

CADE: 23rd International Conference on Automated Deduction, Wroclaw, Poland, 31 July–5 August.

AUGUST

THE CLASSICAL MODEL OF SCIENCE II: The Axiomatic Method, the Order of Concepts and the Hierarchy of Sciences from Leibniz to Tarski, Vrije Universiteit Amsterdam, The Netherlands, 2–5 August.

ICFOCS: International Conference on Frontiers of Computer Science, Bangalore, Karnataka, India, 7–9 August.

LOGICAL CONSTANTS: Ljubljana, Slovenia, 8–12 August.

EPISTEMIC INCLUSIVENESS AND TRUST: 3rd Copenhagen Conference in Epistemology, University of Copenhagen, 15–17 August.

ECAI: 19th European Conference on Artificial Intelligence, Lisbon, Portugal, 16–20 August.

KDD: 17th ACM SIGKDD Conference on Knowledge Discovery and Data Mining, San Diego, CA, 21–24 August.

FCT: 18th International Symposium on Fundamentals of Computer Theory, Oslo, Norway, 22–25 August.

AIML: 8th International Conference on Advances in Modal Logic, Moscow, 24–27 August.

CONFERENCE ON THE PHILOSOPHY OF THE SOCIAL SCIENCES: University of Copenhagen, 25–26 August.

SEPTEMBER

ECAP: 7th European Conference in Analytic Philosophy, Milan, Italy, 1–6 September.

ECML PKDD: European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases, Athens, Greece, 5–9 September.

WPMSIIP: Workshop on Principles and Methods of Statistical Inference, University of Ljubljana, Slovenia, 5–10 September.

PROGIC

The fifth workshop on Combining Probability and Logic, Columbia University, New York, 10–11 September

CSL: 20th Annual Conference of the European Association for Computer Science Logic, Bergen, Norway, 12–15 September.

CP: 17th International Conference on Principles and Practice of Constraint Programming, Perugia, Italy, 12–16 September.

PLM: Philosophy of Language and Mind, Stockholm University, 16–18 September.

STATISTICAL COMPUTATIONAL & COMPLEX SYSTEMS: University of Padua, 19–21 September.

COMPUTER SIMULATIONS AND THE CHANGING FACE OF SCIENTIFIC EXPERIMENTATION: Stuttgart, Germany, 21–23 September.

SOCIAL ONTOLOGY: METAPHYSICAL AND EMPIRICAL PERSPECTIVES: Workshop of the European Network on Social Ontology (ENSO), Luiss Guido Carli, University, Rome, Italy, 21–23 September.

§6

COURSES AND PROGRAMMES

Courses

THE PHILOSOPHY OF TIME: PhD Course / Training School, Human Centered Communication and Informatics (HCCI), Aalborg University, Denmark, 15–17 February.

SPRING SCHOOL ON BELIEF FUNCTIONS THEORY AND APPLICATIONS: Autrans, France, 4–8 April.

COST-ADT: Doctoral School on Computational Social Choice, Estoril, Portugal, 9–14 April.

LOGIC SCHOOL: Instituto de Matemática/UFF, Niterói (RJ), Brazil, 7–8 May.

REASONING AND ARGUMENT: COMPUTER AND COGNITIVE SCIENCE PERSPECTIVES: 2nd Summer Institute on Argumentation, Centre for Research on Reasoning, Argumentation and Rhetoric, University of Windsor, Ontario, Canada, 9–27 May.

INTERACTIVIST SUMMER INSTITUTE: University of the Aegean, Syros, Greece, 29 July 29–1 August.

ESSLLI: European Summer School in Logic, Language and Information, Ljubljana, Slovenia, 1–12 August.

NETWORK DYNAMICS: Groningen, the Netherlands, 29 August–6 September.

ANALYSIS METHODS FOR CROSS-NATIONAL COMPARISONS: Leuven, Belgium, 28 August–4 September.

Programmes

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

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

MASTER PROGRAMME: 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 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 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).

JOBS AND STUDENTSHIPS

Jobs

ASSISTANT PROFESSOR: AOS: possibly one among History of Philosophy, Metaphysics, Philosophy of Mind, Philosophy of Science, and Philosophy of Language, Department of Philosophy, Western Michigan University, Kalamazoo, MI, until filled.

TENURE-TRACK ASSISTANT PROFESSOR: AOS: philosophy of science, Ripon College, Wisconsin, review of applications begins January 10 until filled.

PROFESSOR: of Applied Stochastics, Institute of Mathematical Statistics and Actuarial Science, University of Bern, deadline 1 February.

RESEARCH FELLOW: “Intuitions and Philosophical Methodology Project”, Department of Philosophy, University of St Andrews, deadline 3 February.

3 TENURE TRACK OR TENURED POSITIONS: in Information and Computer Science, Department of Information and Computer Science, Aalto University School of Science, Helsinki, Finland, deadline 4 February.

LECTURESHIP: Department of Philosophy, King’s College London, deadline 7 February.

5 JUNIOR RESEARCH SCIENTISTS POSITIONS: INRIA, France, deadline 14 February.

3 EXPERIENCED RESEARCH SCIENTISTS POSITIONS: INRIA, France, deadline 14 February.

10 SENIOR RESEARCH SCIENTISTS POSITIONS: INRIA, France, deadline 14 February.

FITZJAMES RESEARCH FELLOWSHIP: in Philosophy, Merton College, Oxford, deadline 2 March.

BRITISH ACADEMY MID-CAREER FELLOWSHIPS: to mid-career scholars, to pursue research in any field of study within the humanities or social sciences, deadline 9 March.

ASSISTANT OR ASSOCIATE PROFESSOR: of Computer Science, for research on Foundations and Machine Learning, Faculty of Science, Radboud University Nijmegen, The Netherlands, deadline 15 March.

VISITING RESEARCH FELLOWSHIPS: in the Arts and Humanities, Trinity College Dublin, deadline 18 March.

VISITING FELLOWSHIP: Rotman Institute of Philosophy, University of Western Ontario, deadline 31 March.

Studentships

PHD SCHOLARSHIP: “Rating and ranking sports players and teams using Minimum Message Length”, Clayton School of Information Technology, Monash University, to be filled asap.

10 PHD STUDENT POSITIONS: within the doctoral program “Mathematical Logic in Computer Science”, Vienna University of Technology (TU Wien), until filled, closes 15 March.

PHD STUDENTSHIP: “Hyper-heuristics for Grouping Problems”, School of Computer Science, University of Nottingham, until filled.

FULLY FUNDED STUDENTSHIP: “Multivariate Methods of Meta Analysis”, Computing Sciences, University of East Anglia, deadline 4 February.

AICML MERIT RESEARCH AWARD: for graduate studies in Machine Learning , Artificial Intelligence or Data Analytics, Department of Computing Science, University of Alberta, Edmonton, Canada, deadline 15 February.

LAKATOS SCHOLARSHIP: MSc in Philosophy of Science, Department of Philosophy, Logic and Scientific Method, LSE, deadline 15 February.

PHD POSITION: within the project “Partial Least Squares for Serially Dependent Data”, Institute for Mathematical Stochastic at the Georg-August-University Göttingen, deadline 20 February.

3-YEAR FACULTY PHD STUDENTSHIP: in Statistics/Probability, Department of Mathematics and Statistics, Lancaster University, deadline 25 February.

3 PHD POSITIONS: Institute for Logic, Language and Computation, University of Amsterdam, deadline 15 March.

PHD SCHOLARSHIP: in the History of Modality, Department of Philosophy, Victoria University of Wellington, New Zealand, deadline 4 April.

2 PHD POSITIONS: in a research project on the notion of chance and its connection to statistical method, Faculty of Philosophy, University of Groningen, deadline 15 April.