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Contents

Editorial

I am delighted to be guest editor for the new issue of *The Reasoner*, and I want to thank very much all the editors, and particularly Jon, for this opportunity. For the interview you are going to read, I chose to ask some questions to Annalisa Coliva, who has a particular interest in the areas of epistemology, philosophy of mind and history of analytic philosophy. I am sure Annalisa's answers will encounter the areas of interest of many *reasoners* and readers. Furthermore, Annalisa is co-founder and Principal Investigator in the **COGITO Research Centre in Philosophy** at University of Bologna. The affinity between the Cogito group and the Reasoning Club is more than merely in the name. It was a great pleasure to meet her and talk about her work.

Irene Binini
Scuola Normale Superiore, Pisa

Features

Interview with Annalisa Coliva

Irene Binini: Hi Annalisa. Thank you very much for accepting to be interviewed by *The Reasoner*!

Annalisa Coliva: Thank you for asking me to do this interview!

IB:Could you tell us something about your philosophical and professional background?

AC: I studied at the University of Bologna, where I got my degree with a Master's thesis on the philosophy of Moore and Wittgenstein, which at the time had been judged worthy of publication, and which I transformed later in the monograph *Moore and Wittgenstein. Scepticism, Certainty and Common Sense* (Palgrave 2010). A fundamental turning point in my education and career has been the possibility to participate in an Erasmus research project at the University of St. Andrews, in the UK. There, I had the chance to study and work with Crispin Wright, and there I returned after

my Master's degree, first with a scholarship and eventually to complete my PhD. Thanks to this experience, and also today as a researcher and teacher, I've always had a special interest in Erasmus and exchange study programs because I think that—if properly used—they represent a unique opportunity for students. Today I am an associate Professor at University of Modena and Reggio Emilia, but I will soon move to the USA, where I am about to take a Full Professor position at the University of California, Irvine.

IB: Which were the motivations that first led you to take interest in your field of research? Did you feel any affinity with some philosopher in particular that influenced your choice?

AC: Wittgenstein was certainly the author I immediately felt a strong affinity with, since the period of my University studies. The choice of him as "my author" has been determined both by biographical and philosophical reasons. I say "biographical" since both my supervisors at the University of Bologna—Roberto Dionigi and Eva Picardi—and then my advisor at St Andrews—Crispin Wright—had a common philosophical attitude, a sort of "Wittgensteinian antirealism". Both Wright and Picardi had studied with Michael Dummett, who combined his interest in Frege's philosophy with an antirealist perspective which was very close to Wittgenstein's way of conceiving philosophy. This common element in my mentors surely influenced me and led me to take interest in Wittgenstein. Apart from these "biographical" reasons, I chose Wittgenstein as my author also because I've always found stimulating, exciting—and fun—the intellectual challenge at the basis of his work, that is the effort to think and reason while challenging *common sense*. Force yourself to set aside what common sense tells us about—for example, the external world, the existence of physical objects, the reality of the past, the validity of some basic logical laws—and try to reason about things as if what is given by the insight of common sense wasn't true. Maybe, in the end, it is impossible to completely set common sense aside. But the challenge of calling it into question is something that always inspired me as a philosopher, and I owe this to Wittgenstein.

IB: One of your research projects concerns epistemology. Could you present in brief the thesis you defend in your new book *Extended Rationality* (Palgrave Macmillan 2015). In what sense you refer to and make use of Wittgenstein's concept of "hinge certainty" or "hinge epistemology"?

AC: *Extended Rationality* is the theoretical development of the same themes I dealt with in a historical perspective in my monograph on Moore and Wittgenstein. In the last 18 months of his life, despite being already ill, Wittgenstein was incessantly thinking about the epistemological status of special kinds of propositions that are accepted and said to be *known* although they are indemonstrable and not susceptible of being justifiably said to be true or false. These are propositions such as *"Here is one hand, and here is another"* when you have your hands clearly in view, or *"The earth existed for a long time before my birth"*. In a sense, these propositions cannot be said to be *empirical propositions*, inasmuch as their truth could not be non-circularly warranted by some empirical data. This is the problem that grips Wittgenstein in the last 18 months of his life, a period during which he writes continuously night and day, and all his hesitation and perplexity are well represented in his last work *On Certainty*. These propositions are the ones he calls *hinge propositions*, and function in some sense similarly to the axioms of a theory. Their epistemological status is in question, because we can't consider them as necessarily true propositions. Nevertheless, they function as *hinges*, and even if they can't be considered true in themselves or inasmuch as they are demonstrable, they are to be accepted and firmly maintained as grounds of our basic epistemic practices because their acceptance is *what allows us to reason*. They are in this sense constitutive of our *rationality*.

IB: You defend the idea that this sort of epistemology could offer a philosophical answer to the old and manifold problem of skepticism. To which form of skepticism in particular?

AC: The skeptical challenge can be set and considered at two different levels. A "first order" skepticism, which questions, for example, the very existence of physical objects or of the past history, and a "second order" skepticism, which does not argue against the existence of such things and accepts the existence of an external reality, but asks how we could theoretically give reasons and justify this belief to ourselves. That is, how we could affirm and confirm that we are not within a skeptical scenario, and how we can ground this belief, given that we cannot provide any empirical justification to warrant it. Moore, in his famous "Proof of an external world", advances the thesis that all our proofs rest on some unjustified commitment to some sort of propositions, of which we could not provide a proof or a demonstration but that we nonetheless accept, just as we accept but do not demonstrate axioms. These propositions are indemonstrable; it would be wrong in a sense to say that they are *true*. At any rate, such a claim would be dogmatic, as we cannot non-circularly prove these propositions. But because they are constitutive and an integral part of our rationality, it would be unfair to reiterate the skeptical doubt against them, and to ask in which way we can justify and warrant them. I propose that a skeptic, then, cannot call this sort of proposition into question by challenging its validity. Because they are constitutive of what we call "epistemic rationality"—and because the skeptic move is relevant and applicable only within a rational setting—these propositions would be *beyond* any possible skeptical challenge, and it is therefore legitimate to count on them even if they are not justified.

IB: You have another book which is about to be published: *The varieties of Self Knowledge*. Could you tell us something about that too?

AC: My interest in the philosophy of mind is also linked to my general interest in epistemology and in the theory of knowledge. The problem that concerns me in this book is the following: How can we *know* our own mental states? In my book, I support the idea that we have two different kinds of knowledge towards our own mental states: *first person* knowledge and *third person* knowledge. I also support the idea that there is an *asymmetry* between these two ways of knowing (or two kinds of knowledge), and I try to offer a series of criteria that help us to distinguish between the two. As the title of the book suggests, there is also a variety of possible ways in which we actually know, in the first or third person,

our mental acts, depending for example on the mental state itself. In the book, I try to offer a taxonomy of this variety of possible ways of knowledge. One way of knowledge is, for example, an inference to the best explanation, another method is the one for which we are able to simulate a possible scenario and "test ourselves", imagining how we would react if we were in such a situation. In some cases, the knowledge of our mental states results from an inferential process and our reflection is sustained by psychological concepts and theories which are already available to us. At other times, we obtain new psychological concepts and we subsume under them our behaviour or some of our attitudes. These are, of course, fallible methods of knowledge, but which have in many cases good predictive results.

IB: Analytic philosophy is sometimes seen as "dehistoricised"—or at least as not very interested in the history of philosophical theories and concepts. Do you think it is a stereotype or (it is) a truthful depiction of this philosophical tradition? How do you reconcile your historical and philosophical interests? Are they intertwined or separate works?

AC: I am pretty convinced that the interest in the history of philosophy is a surplus value and an essential aspect of philosophical research. I do not agree with the attitude that many scholars have nowadays, in Italy and abroad, which opposes theoretical philosophy to history of philosophy, and emphasizes the distinction between the historical approach and the analytical approach. In my view, a good education should leave room for a continuous interaction of theoretical and more technical (e.g., logical) skills along with historical ones. The awareness of certain historical developments and traditions allows for a more sophisticated, refined philosophical competence, and it is of great use for the contemporary philosophical debate. The knowledge of philosophy in a historical perspective is useful because it offers sparks and ideas that could be used to approach contemporary issues. My historical interest is focused mainly on Moore and Wittgenstein; I consider them as philosophical "classics" not because they already solved or gave an exhaustive depiction of problems which concern us today, but because they were the first to raise determinate issues and ask questions which were not perceived as problematic before, at least not with the same urgency. In doing this, they established the birth of many debates that are still troubling us today. But they also initiated certain philosophical paradigms within which much contemporary literature is developed.

IB: Apart from your many individual research projects, you are also Principal Investigator in the **COGITO Research Centre in Philosophy**, Bologna University. Could you tell us how the project was born, how it is structured and what are its main purposes? In your personal experience, how much were "team work" and the research Lab important as opposed to individual philosophical research?

AC: *Cogito* is a research center in philosophy whose aim is to foster research and internationalization on specific projects. The current areas researched are the history of analytic philosophy, the philosophy of language, epistemology and the philosophy of logic and mathematics. The group is born following a need I had when I returned to Italy after being abroad for a long time: the need of conducting my philosophical research not only individually but, as I observed in foreign universities, as a part of a group of research and together with other philosophers. Sebastiano Moruzzi (University of Bologna) and I started an informal discussion group which then became officially recognized as a research center and as a part of the *Institute for Advanced Studies* at the University of Bologna. The main strength of the group, I think, is the fact that it promotes a close interaction between permanent staff, postdoctoral, PhD and Master's students. In doing so, it also fulfills a strong educational mission. Another strength is the presence in the group of different philosophical competences and skills, and the fact that it offers, thanks to frequent meetings, a continuous feedback both on the individual and group works of the components. During the *Cogito Days*, for example, junior and senior researchers have the opportunity to present their work in front of all the other members of the group.

IB: One last question: could you list for the readers of *The Reasoner* three philosophical books which were important in your philosophical education and that you would recommend?

AC: I would recommend, as you may guess, two works by Wittgenstein: *On Certainty* and *Philosophical Investigations*. And I would add Kant's *Critique of Pure Reason*.

Terms are not formulas!

In Ed Zalta's paper 'The Tarski T-scheme is a tautology (literally)', (2014: *Analysis* 74.1, 5–11) Zalta is driven to suppose there is a term that is also a formula, and because of that wants to say that the propositional truth scheme ('It is true that ϕ if and only if ϕ') is a tautology. Moreover in doing so he is driven to believe that there is no need for a truth predicate in the formalisation of his preferred version of the schema: 'That ϕ is true if and only if ϕ'. Clarifying the matter has far wider repercussions.

Somewhat like William and Martha Kneale (1962: *The Development of Logic*, OUP, 539, 602–3) Zalta uses an extension of the lambda calculus to formulate 'that', and says (Zalta 2014, 6):

> The expression $[\lambda\phi]$ is a 0-place relation term that denotes a 0-place relation (i.e. a proposition), just as the expression $[\lambda xy\phi]$ is a 2-place relation term that denotes a 2-place relation. The expression $[\lambda\phi]$ however is also a *formula*. That is why it can stand on the left hand side of the biconditioinal sign $\equiv$. The simultaneous definition of *terms* and *formulas* classifies $[\lambda\phi]$ as both. Since the λ binds no variables in $[\lambda\phi]$ the locution we used for reading the relation term ... reduces to the locution 'that'. So we read the term $[\lambda\phi]$ as the proposition-denoting noun phrase *that-*ϕ. Since truth is the 0-place case of exemplification, we read the formula $[\lambda\phi]$ as 'that-ϕ is true'. Given these facts ... $[\lambda\phi] \equiv \phi$, asserts: that-$\phi$ is true iff ϕ.

Even Arthur Prior, who was no friend of propositions, knew better than this (1971: *Objects of Thought*, OUP, 34). For Prior, although he preferred an operator theory of truth based on the locution 'It is true that ϕ', allowed that, if one were to have

terms referring to propositions of the form '$\lambda\phi$', then T$\lambda\phi \equiv \phi$ (where 'T' is the predicate 'is true'). So how did Zalta come to equate 'T$\lambda\phi$' with '$\lambda\phi$' and get instead '$[\lambda\phi] \equiv \phi$'? He went wrong, of course, in his 'simultaneous definition of terms and formulas', and specifically in his assertion (in note 1) that if 'Π', for instance, is an n-place relation term, then 'Π' followed by n individual terms is a formula. Taking this to hold when n = 0, yields the result that '$[\lambda\phi]$' is both a term and a formula. For '$[\lambda\phi]$' is a zero-place relation sign, but followed (as it is) by no arguments, it would also count as a formula on Zalta's definition. But having got this result from his definition, how did the predicate 'is true' come into it, to (somehow) *separate* the two things that were supposed to be the same: the term and the formula? Zalta, at the end of the above quote (and see also below), is prepared to say that that-ϕ is true if and only if ϕ. So that is the propositional truth schema in one way that Zalta wants to write it, as well as Prior. But there is no reason to formalise it then as '$[\lambda\phi] \equiv \phi$', and so every reason not to extend the definition of formulas to when n = 0.

Getting that piece of grammar straight leads to further corrections of Zalta (now amongst many others). For at the end of his paper Zalta claims to have had a precursor in Frege, first quoting Frege as saying 'It is also worth noticing that the sentence "I smell the scent of violets" has just the same content as "it is true that I smell the scent of violets". So it seems, then, that nothing is added to the thought by my ascribing to it the property of truth'. On this Zalta comments:

> Of course, Frege didn't have the concept of *tautology* as we know it today, though it looks as though Frege might have said that if 'that-ϕ is true' and 'ϕ' have identical content, then 'that-ϕ is true iff ϕ' is a tautology.

The critical point to be made against Zalta here is that in the more grammatical account of the matter in Prior presented above 'That-ϕ is true' and 'ϕ' do *not* have the same content. For the propositional truth scheme is an *equivalence* not an *identity*, since identities are expressed between *terms* not *formulas*. Thus we say 'x = y' but 'p ≡ q'. So there is no implication from the propositional truth scheme 'T$\lambda\phi \equiv \phi$' that λT$\lambda\phi = \lambda\phi$, and Zalta's confusion of the relevant terms and formulas cannot make this further difference clear.

Without a proper understanding of the propositional truth scheme the identity of propositions has more generally been quite a mystery, with logical equivalence being touted quite commonly as grounds for propositional identity, despite the evident problems with it. For then any proposition is identical with any conjunction of that proposition and a necessary truth, and all necessary truths are identical. Also some distinct contingent remarks, such as 'it is a triangular plane figure' and 'it is a trilateral plane figure', come to express the same proposition. Clearly it is synonymy rather than logical equivalence that determines the identity of propositions, i.e., two sentences express the same proposition if and only if they are inter-translatable. So while the proposition that it is true that ϕ is logically equivalent to the proposition that ϕ (i.e., they necessarily have the same truth value), the proposition that it is true that ϕ is not the same as the proposition that ϕ, since any translation of 'it is true that ϕ' would be different from the corresponding translation of 'ϕ'.

Hartley Slater
University of Western Australia

News

Calls for Papers

Agent-Directed Simulation: special issue of *International Journal of Modeling, Simulation, and Scientific Computing*, deadline 1 January.

Methodologies for Research on Legal Argumentation: special issue of *Informal Logic*, deadline 14 February.

Weighted Logics for Artificial Intelligence: special issue of *International Journal of Approximate Reasoning*, deadline 22 February.

Logical Pluralism and Translation: special issue of *Topoi*, deadline 30 April.

Experimental Philosophy: special issue of *Teorema*, deadline 30 April.

What's Hot in . . .

Uncertain Reasoning

Induction and analogy have long been considered indispensable items in the uncertain reasoner's toolbox, and yet their formal relation to probability has never been less than puzzling. One of the first mathematically well-informed attempts at gripping the problem can be found in the penultimate chapter of Laplace's Essai philosophique sur les probabilités. There, a key contributor to the construction of the theories of mathematical probability and statistics argues that analogy and induction, along with a "happy tact", provide the principal means for "approaching certainty" in situations in which the probabilities involved are "impossible to submit to calculus". Laplace then hastens to warn the reader against the subtleties of reasoning by induction and the difficulties of pinning down the right "similarity" between causes and effects which is required for the sound application of analogical reasoning.

Two centuries on, reasoning about the kind of uncertainty which resists clear-cut probabilistic representations remains, theoretically, pretty much uncharted territory. I. Gilboa, L. Samuelson and D. Schmeidler (2015: *Analogies and Theories: Formal Models of Reasoning*, Oxford University Press) is the attempt of three leading economic theorists to put those vexed epistemological questions on a firm decision-theoretic footing. Indeed this book can be seen as a manifesto encouraging economic theorists to boldly go where probability does not apply. For—the authors argue—Bayesian rationality, with its insistence on probability, has many shiny merits, but it is far from telling us the last word on rational reasoning and decision-making under uncertainty. In particular, when it comes to understanding the processes leading to the formation of (more or less) rational beliefs, not only does the Bayesian approach fail to have the last word, but it is intentionally silent on how those beliefs should be arrived at. In the authors' opinion, the formal

investigation of *analogical reasoning* is a promising way to fill this "cognitive" gap in the formal analysis of rationality.

The ambitiousness of the goal and the fact that the volume collates six papers which have appeared in mathematically oriented economic journals, make the reading both rewarding and demanding for the non-specialist audience, including formal epistemologists and scholars in artificial intelligence. Since the book is not quite self-contained, in spite of a brief Introduction pointing out the multi-disciplinarity of the contents, non-specialists will have to be prepared to make a substantial effort to map the intended goals of the chapters to their actual development. Occasionally appendices do help readers to frame the authors' contribution in the bigger picture. A case in point is certainly Appendix B in chapter 4, where a nice representation theorem for Dempster-Shafer Belief Functions is given in terms of qualitative monotone capacities.

Hykel Hosni
Department of Philosophy, University of Milan

Evidence-Based Medicine

Last month a paper on the role of pigeons as trainable observers of pathology and radiology breast cancer images was published in *PLOS ONE*. Among other things, the authors of the paper, Richard M. Levenson , Elizabeth A. Krupinski, Victor M. Navarro, and Edward A. Wasserman, were interested to find out whether pigeons could be trained to discriminate between benign and malignant pathology and radiology images. The objective is not to rely on pigeons for clinical diagnostic support, but rather to promote the use of pigeons as an appropriate animal model for human observers in medical image perception studies. In particular, the constantly updated medical image recognition and display technologies must be validated by sometimes expensive and hard-to-reach trained observers. The authors of this paper suggest that trained pigeons could be used as a cost-effective, tractable, relevant, informative, and statistically interpretable surrogate for human observers in order to help determine the reliability of these new technologies.

The research was in part motivated by other recent studies reporting that pigeons are pretty comparable to humans at discriminating in other areas. For example, studies have reported that pigeons can distinguish the paintings of Monet from Picasso. Also, studies have reported that pigeons can distinguish human male from female faces. The results of this paper are consistent with these findings. After training, the pigeons were able to distinguish benign from malignant human breast histopathology and the presence of microcalcifications on mammogram images but had difficulty evaluating the malignant potential of detected breast masses. The pigeon performance here corresponds closely to human performance. The authors maintain that this 'indicates that birds may be relatively faithful mimics of the strengths and weaknesses of human capabilities when viewing medical images'.

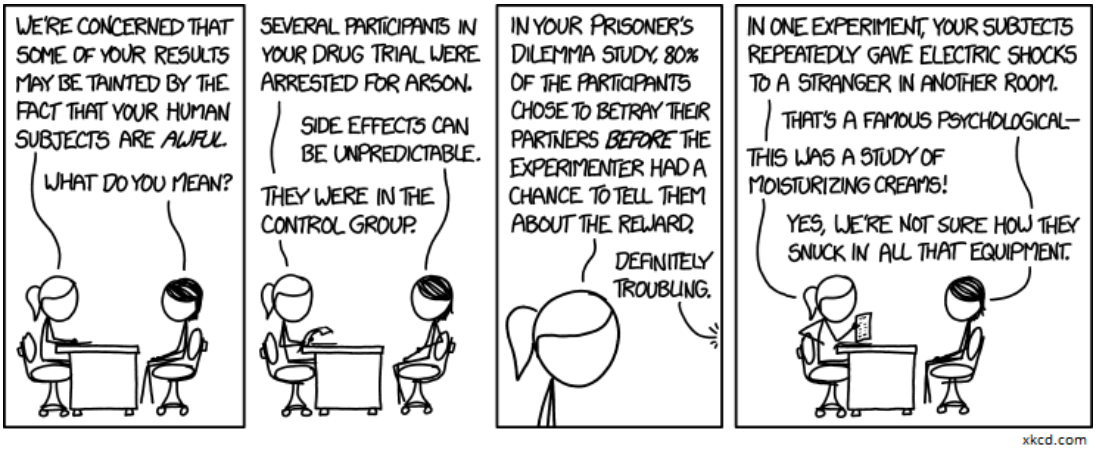
Granting these results, however, pigeons might still not be very good models for human observers in these areas, since pigeons might be achieving comparable results to humans here but by entirely different means. For example, it seems that the way in which pigeons discriminate human male and female faces is largely texture-based. The authors acknowledge this problem and try to alleviate it by offering some evidence of mechanisms. In particular, they argue that '[t]he specific underlying mechanisms of visual learning appear to be similar between avians and primates' and that 'the anatomical (neural) pathways that are involved . . . appear to be functionally equivalent to those in humans'. The authors conclude that 'on balance, it appears that pigeons' visual discrimination abilities and underlying neural pathways are sufficiently similar to those of humans when challenged by medical image evaluation tasks as to have potential practical significance'. Because of considerations such as these, this paper seems to highlight quite nicely the role of different sorts of evidence in determining whether a particular animal model is appropriate for a particular task. In order to argue that the pigeon is an appropriate model for human observers here, the authors provide both evidence that the pigeon performs similarly to humans in the relevant observation tasks and evidence that this similar performance is attributable to similar underlying mechanisms.

Michael Wilde
Philosophy, Kent

Events

December

MEGF: The Metaphysics and Epistemology of Grounding and Fundamentality, New York, New York, 10–11 December.
MBJ: Mathematical Aims Beyond Justification, Brussels, Belgium, 10–11 December.
R&R: Rationality and its Rivals, University of Macau, 10–12 December.



ABC: Approximate Bayesian Computation, Montréal, Canada, 11 December.
PI: Workshop on Probabilistic Integration, Montréal, Canada, 11 December.
OML: Workshop on Optimization for Machine Learning, Montréal, Canada, 11 December.
BNNG: Bayesian Nonparametrics: The Next Generation, Montréal, Canada, 12 December.
LI&CMAS: Workshop on Learning, Inference and Control of Multi-Agent Systems, Montréal, Canada, 12 December.
NTMW: New Trends in Metaphysics of Science, Paris, France, 16–18 December.
KRD: Workshop on Knowledge, Reasoning, and Discourse, The University of the Basque Country, 17–18 December.

January

BHM: Bayesian Hierarchical Models with Applications, University of Manchester, 14–15 January.
PoM&L: Graduate Conference on the Philosophy of Mathematics and Logic, University of Cambridge, 16–17 January.
PoL: Workshop in Philosophy of Logic, University of Salento, Italy, 21–22 January.

Courses and Programmes

Programmes

APhil: MA/PhD in Analytic Philosophy, University of Barcelona.
Master Programme: MA in Pure and Applied Logic, University of Barcelona.
Doctoral Programme in Philosophy: Language, Mind and Practice, Department of Philosophy, University of Zurich, Switzerland.
HPSM: MA in the History and Philosophy of Science and Medicine, Durham University.
Master Programme: in Statistics, University College Dublin.
LoPhiSC: Master in Logic, Philosophy of Science & Epistemology, Pantheon-Sorbonne University (Paris 1) and Paris-Sorbonne University (Paris 4).
Master Programme: in Artificial Intelligence, Radboud University Nijmegen, the Netherlands.
Master Programme: Philosophy and Economics, Institute of Philosophy, University of Bayreuth.
MA in Cognitive Science: School of Politics, International Studies and Philosophy, Queen's University Belfast.
MA in Logic and the Philosophy of Mathematics: Department of Philosophy, University of Bristol.
MA Programmes: in Philosophy of Science, University of Leeds.
MA in Logic and Philosophy of Science: Faculty of Philosophy, Philosophy of Science and Study of Religion, LMU Munich.
MA in Logic and Theory of Science: Department of Logic of the Eotvos Lorand University, Budapest, Hungary.
MA in Metaphysics, Language, and Mind: Department of Philosophy, University of Liverpool.
MA in Mind, Brain and Learning: Westminster Institute of Education, Oxford Brookes University.
MA in Philosophy: by research, Tilburg University.
MA in Philosophy, Science and Society: TiLPS, Tilburg University.
MA in Philosophy of Biological and Cognitive Sciences: Department of Philosophy, University of Bristol.
MA in Rhetoric: School of Journalism, Media and Communication, University of Central Lancashire.
MA programmes: in Philosophy of Language and Linguistics, and Philosophy of Mind and Psychology, University of Birmingham.
MRes in Methods and Practices of Philosophical Research: Northern Institute of Philosophy, University of Aberdeen.
MSc in Applied Statistics: Department of Economics, Mathematics and Statistics, Birkbeck, University of London.
MSc in Applied Statistics and Datamining: School of Mathematics and Statistics, University of St Andrews.
MSc in Artificial Intelligence: Faculty of Engineering, University of Leeds.

MSc in Cognitive & Decision Sciences: Psychology, University College London.
MSc in Cognitive Systems: Language, Learning, and Reasoning, University of Potsdam.
MSc in Cognitive Science: University of Osnabrück, Germany.
MSc in Cognitive Psychology/Neuropsychology: School of Psychology, University of Kent.

MSc in Logic: Institute for Logic, Language and Computation, University of Amsterdam.
MSc in Mind, Language & Embodied Cognition: School of Philosophy, Psychology and Language Sciences, University of Edinburgh.
MSc in Philosophy of Science, Technology and Society: University of Twente, The Netherlands.
MRes in Cognitive Science and Humanities: Language, Communication and Organization: Institute for Logic, Cognition, Language, and Information, University of the Basque Country (Donostia San Sebastián).
Open Mind: International School of Advanced Studies in Cognitive Sciences, University of Bucharest.

Jobs and Studentships

Jobs

Post-doc: in Scientific Inferences, Tilburg University, deadline 1 December.
Assistant Professor: in Philosophy of Science, University of Hannover, deadline 1 December.
Post-doc: in Machine learning, The Arctic University of Norway, Deadline 14 December.
Lecturer: in Probability and its Applications, University of Cambridge, deadline 15 December.
Post-doc: in Probability, University of Oxford, deadline 16 December.
Research Associate: in Probability, University of Cambridge, deadline 18 December.
Lecturer: in Philosophy of Mind, Kings College London, deadline 21 December.
Assistant Professor: in Statistics, University of Nottingham, deadline 29 January.
Assistant Professor: in Artificial Intelligence & Machine Leaning, University of California, Irvine, deadline 15 March.

Studentships

PhD position: in History and Philosophy of Science, University of Cambridge, deadline 2 December.