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Editorial

Many thanks to *The Reasoner* for giving me the opportunity to guest-edit this issue. I am especially glad to have had the occasion to interview Mariam Thalos, Professor of Philosophy at the University of Utah. Thalos obtained her PhD at the University of Illinois (Chicago) and before joining the University of Utah, she was at the State University of New York at Buffalo. During the Spring and Fall term of this year, Mariam was Visiting Professor at the Academy of Finland Centre of Excellence in the Philosophy of Social Sciences (TINT), here in Helsinki. Just a few days before she left, we organised an informal Author-meets-Critics session on her recent book *Without Hierarchy: The Scale Freedom of the Universe* (Oxford University Press, 2013). The commentators were Jaakko Kuorikoski, Samuli Pöyhönen, and myself. As you'll see below, the book proposes quite a radical departure from old and current conceptions of what the universe is like: Thalos' universe is a scale-free universe; not a hierarchy of levels bottoming out at the one most fundamental scale.

At the Author-meets-Critics session, my comments focused on the implications that Mariam's metaphysical views have for the debate on the unity and disunity of science. I find this theme fascinating. First, because I share with Mariam and others what Ian Hacking describes as a *metaphysical sentiment*: the world is one and hence science must be one, in some sense—this "oneness" need not be "singleness", he says, but a more mundane "interconnectedness" (Hacking 1996: The Disunities of the Sciences, in Galison, P. and Stump, D.J. (eds) *The Disunity of Science: Boundaries, Context, and Power*, Stanford University Press: 37–74). Furthermore, because I am interested in the scientific enterprise as a whole, in how different sciences are connected to one another both in principle and in practice. So, allow me a short detour into the latter point.

In practice, science is organized into disciplines. Sure, disciplines are defined by their subject matter and methods, but they are also the product of historical, social and institutional mechanisms, and of bureaucratic and administrative demands. Philosophers often leave these aspects aside, to be dealt with by sociologists of science, and prefer to talk of fields rather than disciplines. Fields in this sense are disciplines stripped of their social and institutional aspects. This is an excellent choice for many questions, including those Mariam is concerned with in her book. However, other types of question might demand that we take disciplines as our units of analysis. Disciplines in fact also determine which questions are asked, how they are to be addressed, what makes certain ways of explaining phenomena better than others, or what makes certain kinds of evidence more relevant. Hence, they are bound to affect how uni-

fied or disunified science is at a given point in time—driving an even larger wedge between what we observe in science (its unity or lack thereof) and what the world is like (its unity or lack thereof). Consider this short digression as a reminder to philosophers and methodologists of science to let go, at least once in a while, of the idealization that science is organized into fields, not disciplines.

To be clear, this is one of my concerns, and it will appear in some of my questions, but it's not a central theme in Mariam's book or in her wide-ranging philosophical work. So, in our conversation we will only briefly touch upon the unity of science debate, about which we might ponder on some other occasion.

Caterina Marchionni
Philosophy, University of Helsinki

Features

Interview with Mariam Thalos

Caterina Marchionni. I wish to welcome Professor Mariam Thalos and warmly thank her for having agreed to this interview. To properly introduce you to our readers, let us begin with a description of your academic background.

Mariam Thalos. Thank you so much for inviting me. And once again, many thanks for participating in the Author-meets-Critics session on my book. I came to Philosophy rather later in life than most who do. I originally meant to be a physicist. But after I completed the undergraduate degree, I found myself no longer interested in pursuing the life of a physics researcher, nor indeed in practicing physics outside the confines of an academic context. So I floundered for a bit, unwilling (or just ill-equipped) to leave academic life. I'd been given a strong liberal arts background, thankfully, and I'd taken some philosophy. So after a few years of graduate study, but not study of anything that engaged all of me, I found my way to philosophy through taking first one philosophy course, then another. I then enrolled in a PhD program in philosophy and moved subsequently into the area of philosophy of physics—and so put my original undergraduate studies to very good use!

CM Indeed. And since then you have not only worked in philosophy of physics, but you have engaged with an impressive range of topics such as collective agency, feminism, metaphysics of causation, social epistemology, logical paradox, decision theory, risk assessment, freedom and practical reasoning (and I am sure I have left something out). Is there a common thread or an underlying motivation that brings these diverse interests together?

MT I don't think there's a unifying element or key to all my work. But there is a general concern in it for resisting a tendency (in philosophy and elsewhere) to oversimplify—especially via a reductionist program, a "nothing-but-ery". That concern runs through my work like a golden thread.

CM One of the antagonist doctrines to reductionism is pluralism. Would you describe yourself as a pluralist of some sort?

MT I conceive of the antithesis to reductionism rather differently. And that's fundamentally what my recent book *Without Hierarchy* is all about. I conceive of the antithesis to reductionism as a positive view about the plurality of scales at which action occurs in the universe—it's simply not true that all "activity" (as I call it) transpires at the most minute scale (if there is even such a thing). The antithesis of reductionism is thus adherence to the scale-freedom of the universe—that is the subtitle to my book. Scale freedom asserts that interactions of macro are not to be viewed as a cipher or code for interactions among micro instead.

CM In *Without Hierarchy* you argue for a gestalt switch about our metaphysical picture of the universe: from a one scale-many levels universe to a scale-free one, in which causes and effects are supplanted by leaders and followers, which need not satisfy the principle of locality. Could you tell us more about how the universe looks from where you stand?

MT Ha! That's the beauty of it: the universe looks to me exactly the same way as to those whose metaphysics I oppose. It's just that my opponents don't properly apprehend what they're seeing! I like to reply to questions such as this one by relating a conversation that Elizabeth Anscombe had with Ludwig Wittgenstein as his student (and which I learned about from Barry C. Smith). She once said, "You can see why people thought the sun went around the earth." "Really? Why?" he probed. Anscombe said, "Well, it looks that way." To which the teacher replied: "Well, and how would it look if the earth went around the sun?" The point being this: we need to start parsing what we see differently.

CM Does this imply that much of philosophy of science and metaphysics has simply got it all wrong?

MT Guilty as charged. I would be an unworthy interview subject if my view were that philosophers and metaphysicians of science had it all right!

CM Fair enough! So, what is it that convinced you that "the earth circles around the sun" (meaning: that the universe is scale-free)?

MT Ultimately what has to convince is the failure of the dominant view—the one-scale universe. Time and again, efforts to show that some phenomenon is "nothing but" the things "at the lowest level interacting with one another in the usual ways" have failed to pan out. These are really spectacular failures: failures to explain fundamental phenomena like entangled particles, thermodynamic behaviour, and bulk behaviour of matter in such contexts as lasers and superconductors, among others. (But really, all it takes is one good failure and the one-scale view has to give way to something less reductive.) Such failures are invitations to consider a different conception of the relationship between "big" and "little"—and even between "little" and "little".

CM This metaphysical picture also entails a different conception of the unity of science. What kind of unity is that?

MT In my view, the sciences are not united so much by their methods or confirmation strategies or mathematical languages (though I'm under no illusions that there are no commonalities on these scores), as they are united by the fact that their subject matters are not cleanly parcelled out: the fields of inquiry are not divided into nice rectangular plots with clear boundaries. Principles and truths of the world must therefore "travel" across disciplinary lines. And if we don't allow untrammelled passage to our thinking about them, most importantly in our philosophy, our understanding of the world will be much the poorer for it.

CM Oppenheim and Putnam's layered-cake model had clear

implications for methodology, namely, it promoted theoretical reduction across all sciences lying at levels above the most fundamental one. What implications does the scale-free universe have for scientific methodology? Since you also claim that causation has no special status in science except in the applied domains, does this mean that methodologies for finding causes, which are so central in many sciences and the object of attention of much philosophy of science, are after all misplaced?

MT The implications of a scale-free conception of the universe are many indeed. Most profoundly, the scale-free conception warns against asymmetrical reasoning about the ways entities at different scales interact. Prevalent nowadays is the idea that laws (or processes) governing the micro "constrain" what may transpire at macro "levels", but that the reverse is not true. I think this is a huge error. Constraints are simply scale-insensitive; the way entities occupy space very often just doesn't matter. (It's well known, for instance, that laws regulating energy don't discriminate between scales of measurement). And principles are not restricted to domain or scale—they too cross-disciplinary boundaries. Disciplines, such as network science, are actually founded on this reality (the generality of such sciences are almost equal to that of mathematics, and their methods very similar). So the scale-free conception has many methodological lessons to teach.

This is not, however, to say that hunting for causes has no place. But that the cause-hunting enterprise must be seen as a strategy for identifying ways that the universe can be manipulated and bent to the wills of middle-size, slow-moving beings like ourselves, rather than as a strategy for identifying what holds the universe together. It is a strategy for practical life—for engineering sciences. It is not a strategy for pure sciences.

CT You enlist network science as one of the fields founded on the presence of general principles that are neither scale nor domain-specific. Let me challenge you on this. I happen to have had a close look at network science and my impression is that there isn't as much similarity across disciplines as one might expect. On the one hand, there are some very general models (developed by physicists or mathematicians) that are applicable to very different kinds of systems. On the other hand, there are applications of the tools of network theory in many disciplines (including economics, sociology, biology), which are remarkably different. But, and here comes the challenge, why would the applicability of a method or a model across different subject matters, or disciplines, tell us anything about common principles, instead of just telling us something about the method or the model?

MT I am in no way contending that all the domains or subject matters will in the end share *all* explanatory principles. It's enough for my purposes that *some* principles will be shared. Because my view is *not* that there is only one "real" science. My view is that there are many sciences, but that there are significant areas of overlap. And I am furthermore asserting that this overlap is not in the *epistemology* of inquiring into the corresponding subject matters, but it is rather in the subject matter itself—in the governing principles of action in the relevant (overlapping) areas of inquiry. So just for an example, the areas of biology and psychology overlap inasmuch as both deal with features of brains. Both also quantify phenomena about behaviours that are understood as dependent upon the activities of brains. And one does not have to look very hard to see similarities in the principles that seem to apply in both areas: principles of selection are brought to bear by researchers in each area.

CM What's your next intellectual project?

MT I've recently finished a book on freedom that seeks (uncharacteristically) to identify a single thread to our human concerns with the concept of freedom. I argue that an existential framework does a much better job of this than a metaphysical one. Again: uncharacteristic, but nonetheless I believe true to the phenomenon. And now I'm working on a project that seeks to offer a more embracing (but still normative) theory of decision than the one that has come down to us in classical decision theory. It is meant to go beyond the failures of Expected Utility, without losing the ground (smaller than that to which it is usually applied) that EU covers brilliantly.

CM These seem very different projects. However, I suspect that in both *degrees of freedom* is a central concept, one that also appears in several previous publications of yours. Am I right? If so, what are degrees of freedom, and what is the added value of thinking of different things such as decision-making, the social world, and physical systems as all having degrees of freedom?

MT When one adopts the concept of *degree of freedom*, one is implicitly employing a systems-theoretic framework in connection with the phenomenon one is studying. So if one is studying decision-making or some feature of a social system, one is trying to identify the quantities or features of the decision-making entity (in the first example) or the group context (in the second example) that are relevant to the outcomes one observes and is trying to explain or predict. Let's just take the group context. If one is trying to explain something about the behaviour of a group, one might identify various features of *group leaders*—their commitments, or their ability to win over other group members to their way of seeing things; or you could pick instead some feature of the group's history or traditions. These could be the degrees of freedom in the relevant case. But there's no guarantee that degrees of freedom in one case will automatically be degrees of freedom in another case. That lack of guarantee is what makes a systems approach so different from a reductionist approach—because a reductionist approach always looks at the *same* degrees of freedom (namely, features of the smallest physical entities). In social science, the ability to identify degrees of freedom in a less restrictive fashion allows you both to go to "group" features and also to go to "sub-personal" features: you might wish to explain certain behaviour by appealing to "habits" for instance, where that is construed as operating at a sub-personal scale of measurement.

CM Perhaps then we have come full circle! Could we say that the concept of degrees of freedom, associated to a systems-theoretic framework, is a unifying element to some of your work—the positive side of your antireductionist concern?

MT That idea certainly does crop up rather often in the work of mine that is characterizable as *philosophy of science* (verging on other things). It doesn't appear in all my work, however—not even veiled (or *resheathed*, as I say in my book).

CM Finally, a curiosity. The charming epigraphs appearing in your books are lines by Leonard Cohen, Herbert Simon, Ntozake Shange, Robert Sokolowski, and Italo Calvino. How does this work? You draft a chapter and then search the web for just the right quote, or do you own a small notebook with the most inspiring pieces of text you encounter?

MT Like many people, I am omnivorous: I consume a vast quantity of published material that spans a wide range of intellectual territories and genres. And I find myself drawn to good

metaphors and images. Such things are very powerful aids to persuasion. I'd like to give my memory all the credit for coming up with fitting epigraphs from the vast melting pot of things I've devoured. But that would simply be a lie—my memory is quite appalling. The truth is that I am also quite good at performing metaphorical readings of passages that are suggestive—I'm good at seeing how certain passages I'm engaging with in the present moment can be read as supporting ideas I am wanting to advance in my own scholarly work. And so far I've been lucky enough to stumble across epigraph-ready material at fortuitous moments in the creative process. But maybe it's not all luck, maybe it's just a matter of playing the odds. My success at identifying those lovely epigraphs betrays rather a lot about how often I take breaks from the task of writing!

CM Many thanks Mariam for sharing your secret with me and for the very stimulating conversation!

A Paradoxical Challenge

If you share our love for Raymond Smullyan's logical puzzles, you will probably remember the remarkable epilogue of *Satan, Cantor, and Infinity* (1992: A.A. Knopf, 264–270; also published in 1985: *The College Mathematics Journal* 16(2), 118–121).

Satan sets up his usual challenge: he writes down a description of a set of natural numbers and puts it in an envelope. His challenger has to find out which set the description refers to. Each day, the challenger can name just one set.

There are some additional rules for the challenge, but only one is relevant to our discussion. The challenger can ask Satan to open the envelope: if it turns out that Satan's description fails to characterize a unique set, Satan loses; otherwise, the challenge ends and the challenger incurs eternal damnation.

What is memorable in the epilogue of Smullyan's book is that, this time, Satan tries to use Cantor's diagonal technique to secure himself victory. So the description in the envelope reads:

The set of all numbers n such that n does not belong to the set named on the nth day.

Let us call the set so named, if any, *Satan-set*. The idea is that Satan-Set must differ from any set named by the challenger: the set named on the nth day contains n if and only if Satan-set does not. Seemingly, then, Satan cannot be beaten.

But Smullyan proposes two strategies to beat Satan. The simplest is not to name any set on the first day and immediately challenge Satan to open the envelope. According to Smullyan, in that event, the description of Satan-set fails to really refer to a set, so Satan loses. Perhaps Smullyan thought that the description of the Satan-set should be understood as $\{n : n \notin f(n)\}$, where f is the function mapping each natural number n to the set named on the nth day. Arguably, such a definition makes sense only if f is defined for every n. But there are strong reasons to doubt that this is Satan's intended reading. For in that case he is bound to lose, provided on any day the challenger asks him to open the envelope (recall that the challenge ends on the day the envelope is opened, and so no set will be named on any successive day). Can you believe Satan is *so* dumb?

It is much more natural to understand Satan's definition as:

The set of all numbers n such that there is a unique set named on the nth day and n does not belong to it.

Let us assume that the Satan-set has been so defined. Now consider any number n, and suppose that the challenger does not name any set on the nth day. Does n belongs to the Satan-set? Arguably, it does not. For n is not such that there exists a unique set named on the nth day to which n does not belong. More generally, if the challenger does not name any set on any day (as in Smullyan's story), then for any n, n does not belong to Satan-set. This means that Satan-set = $\emptyset$, the empty set.

Another possible understanding of Satan's original definition is:

The set of all numbers n such that no unique set named on the nth day has n as member.

If this alternative definition is adopted, we have a symmetric case: every natural number belongs to the Satan-set, which becomes $\mathbb{N}$, the set of all natural numbers.

Either way, we have a losing strategy for the challenger. We discuss this strategy first because its simplicity highlights what seems to be a weakness of Smullyan's discussion: the presupposition that Satan's description fails to name any set if there is no set named on each day.

In the other strategy devised by Smullyan, on the first day the challenger provides the same set description as Satan's, that is:

The set of all numbers n such that n does not belong to the set named on the nth day.

and then, again, immediately challenges Satan to open the envelope. Let us call the set named by the challenger, if any, the *Challenger-set*. If the Challenger-set existed, it would be different from any set named on any day, including the set named on the first day, i.e., itself. Thus, there is no Challenger-set. But the description of the Challenger-set and that of the Satan-set are identical, so it is natural to assume that each denotes a unique set if and only if the other does. Therefore, there is no Satan-set as well, and the challenger wins. This is how Smullyan's story ends.

It is far from obvious, however, that the story *should* end this way. For maybe Satan can still claim victory—and if he can, he will. We have just seen that the challenger has named no set on the first day (nor on any successive day). But then the situation parallels the case previously considered, and the same reasoning applies again: the Satan-set is $\emptyset$ (or $\mathbb{N}$). The challenger loses.

But wait a minute. Given that the description of the Satan-set is identical to that of the Challenger-set, the latter description names a set as well, namely, $\emptyset$ (or $\mathbb{N}$). We previously proved, however, that it couldn't name any set: contradiction.

So the first move proposed by Smullyan results in a victory for Satan and the second one ends up in paradox. As they say, we are left between the devil and the deep blue sea.

Giuseppe Spolaore
University of Padua
Matteo Plebani
University of Basilicata

News

Deontic Logic and Normative Systems, 12–15 July

The 12th International Conference on Deontic Logic and Normative Systems (in short, DEON) was held during July 12–15, 2014, at Ghent University, Belgium. Deontic logic concerns the formal study of normative reasoning. The subject looks back at a tradition of over 60 years and is actively investigated in various domains such as computer science, artificial intelligence, philosophical logic, ethics, linguistics, organization theory and law. The biennial DEON conferences are intended to promote and strengthen the interdisciplinary exchange and the cooperation among scholars from these different backgrounds. Previous DEON conferences took place in Amsterdam (1991), Oslo (1994), Sesimbra (1996), Bologna (1998), Toulouse (2000), London (2002), Madeira (2004), Utrecht (2006), Luxembourg (2008), Fiesole (2010), and Bergen (2012).

This year, the conference has been renamed from "International Conference on Deontic Logic in Computer Science" to "International Conference on Deontic logic and Normative Systems", the acronym DEON being kept. The DEON Steering Committee decided to change the name, in order to reflect the broadened scope of the conference series that originated from within computer science. Accordingly, the special theme of this year's edition of DEON was "Deontic Modalities in Natural Languages". This theme was addressed in all four of the invited talks and many of the contributed papers. Both the change in scope and the special theme were applauded by the participants of the conference series, and they were conducive to accomplishing links between current work in linguistics and deontic logic.

At the opening ceremony of the conference, a brief commemoration of Ingmar Pörn (1936–2014) was held. Pörn is most known for his work in deontic logic and its relations to legal theory, actions and multi-agent interaction. He was very active within the DEON community and participated in several previous editions of the conference.

Below, a list is given of all the speakers and their talks at the conference. All the lectures have been video-recorded, with the help of the Multimedia-Lab of Ghent University. They are publicly available here. This novelty was much appreciated by the participants. The conference was also remarkable in another way: the ratio of female participants was higher than ever at a DEON conference, and it was higher than at average logic conferences. This was also the first DEON conference with a female invited speaker.

Invited talks were given by: Sven Ove Hansson on Deontic Diversity, Brian Skyrms on Emergence of Meaningful Signals, Paul McNamara on Toward a More Fine-Grained Conceptual Scheme for Moral Statuses and Magdalena Kaufmann on Fine-tuning Natural Language Imperatives. Contributed talks were given by Gunnar Björnsson and Robert Shanklin, Nathan Howard, Alessandra Marra, Martin Rechenauer and Olivier Roy, Justin Snedegar, Peter Vranas, Eugenio Orlandelli, Christian Straßer and Ofer Arieli, Justin Bledin, Dov Gabbay, Xin Sun, Leon van der Torre and Zohreh Baniasadi, Erica Calardo, Guido Governatori and Antonino Rotolo, Catharine Saint Croix, Robert Trypuz and Piotr Kulicki, Federico Faroldi, Melissa Fusco, Albert Anglberger and Olivier Roy, Xavier Parent and Leon van der Torre, Xin Sun and Leon van der Torre, Regis Riveret, Alexander Artikis, Didac Busquet and Jeremy Pitt, and Silvano Colombo Tosatto, Guido Governatori and Pierre Kelsen.

Frederik Van De Putte
Christian Strasser
Joke Meheus
Centre for Logic and Philosophy of Science, Ghent

Decisions, Groups, and Networks, 8–9 September

The application of simulation techniques, network analysis, and experimentation to the study of human decision-making, which is common to the social sciences, is becoming increasingly popular in philosophy, too. This two-day workshop, held in Munich, brought together philosophers and social scientists applying such methods to foster interdisciplinary dialogue and collaboration. The workshop was organized by the Center for Advanced Study at Ludwig-Maximilians-University Munich (LMU) and the Munich Center for Mathematical Philosophy (MCMP). Participants from a broad range of disciplines attended—political science, economics, sociology, experimental and social psychology, (formal) philosophy, and management studies.

The first talk was delivered by Ulrike Hahn (University of Birbeck, psychology). Hahn discussed how an individual's beliefs and values are shaped by others and, more specifically, to what extent patterns of connectivity within a person's social networks systematically affect the accuracy of that person's beliefs. By analyzing the effects of different network topologies on collective competence, one conclusion was that differences in collective competence are in parts due to network structure. Aidan Lyon (MCMP/University of Maryland, philosophy) asked if the integration of deliberation groups and prediction markets leads to improved group outcomes. Drawing upon agent-based simulations, Lyon found that resiliency of beliefs and biases in diverse deliberation groups can have a considerable effect on prediction market outcomes.

Andreas Mojzisch (University of Hildesheim, social psychology) presented work on information pooling and group decision-making. Departing from the observation that groups often do not realize their potential to outperform individual decision-making, Mojzisch identified four reasons for this failure: insufficient discussion and processing intensity among decision-makers, biased discussions favoring preference-consistent information, and biased evaluation of information in favor of both, preference-consistent and shared information. Stephan Hartmann (LMU, philosophy) presented research on the anchoring effect, i.e. on the cognitive bias of relying too heavy on the first speaker's judgment in group deliberation. By constructing a model inspired by the Lehrer-Wagner model, Hartmann discussed different ways in which the anchoring effect even occurs in deliberations of groups of truth-seeking and rational members. Martin Kocher (LMU, economics) asked how small group behavior deviates from individual behavior in social dilemma situations. He found that small groups are more cooperative and are also expected to make, on average, higher contributions in repeated public good games than individuals.

Friederike Mengel (University of Essex, Maastricht, economics) presented experimental research on the existence and nature of gender differences, which have been considered partly responsible for earnings and promotion gaps. She showed that

gender differences are not as prevalent as one might expect. An exception: whilst women's social networks do not contain fewer links than men's, women's networks are less strategic than men's. Bernhard Kittel (University of Vienna, economic sociology) presented research on structural power in networks. Pointing to experimental results showing that powerful agents in a network do not always make direct use of their opportunities, but instead draw on their position to empower disadvantaged agents, Kittel experimentally tested how power differentials influence group decisions. Finally, Jens Ulrick Hansen (Lund University) compared the Lehrer-Wagner-DeGroot model of opinion dynamics with a dynamic fuzzy logic approach to opinion-formation in social networks. He showed that modal logic brings conceptual clarity to reasoning about social networks, their properties, and their dynamics, whilst equally capturing simple social network dynamics.

The second day of the workshop began with a talk by Paul Thurner (LMU, political science), on treating multiple committee memberships as a tool to approaching strategic information exchange and coordination among legislative parties. Drawing on a case study of committee memberships in the European parliament, Thurner argued that the accumulation of committee assignments and the strategic position in such networks are valuable investments, leading to higher political returns of multiple memberships. On the basis of a similarity network constructed from roll call votes of members of the United Nations, Skyler Cranmer (Ohio State, political science) developed what he called "affinity communities" to identify policy preference profiles that underlie the interactions between states. Malte Döhne (Zeppelin University Friedrichshafen, sociology) and Catherine Herfeld (MCMP, philosophy) applied network analysis and block modeling to study the diffusion of scientific theories. By introducing a measure of scientific theory diffusion and analyzing actor positions in acknowledgement- and co-citation networks, they traced the spread of game theory in economics between the 1944 and 1970. Finally, Anja Tuschke (LMU, strategic management) considered how firms protect themselves from the risks of knowledge spillover to indirectly connected rivals in a network constructed from boardroom-interlocks. Tuschke showed that firms terminate and avoid entering into ties that might expose strategic knowledge to indirectly linked rivals.

Discussions at the workshop revealed that there is plenty of room for collaboration between philosophers and social scientists in applying empirical and formal methods to study decisions, groups, and networks.

Catherine Herfeld
Munich Center for Mathematical Philosophy

Calls for Papers

Combining Probability and Logic: special issue of *Journal of Applied Logic*, deadline 15 January 2015.
Causation and Mental Causation: special issue of *Humana.Mente*, deadline 15 March 2015.

What's Hot in ...

Uncertain Reasoning

How good are we at probabilistic reasoning? It is well known that people react differently to uncertainty and the risks it leads to. Indeed, as pointed out by Kahnemann and Tversky in their Prospect Theory, the same individual may exhibit distinct attitudes to uncertain prospects depending on whether they are in a situation of gain or loss. The literature on this is vast, but interested readers may get a very good idea of its importance from D. Kahneman (2011: *Thinking fast and slow*. Penguin Books). In addition, overwhelming evidence suggests that experimental subjects tend to perform rather badly in the laboratory. This evidence constitutes the main motivation behind a variety of models of "Bounded Rationality" (see, e.g., G. Gigerenzer (2008: *Rationality for Mortals: How People Cope with Uncertainty*. Oxford University Press.) which are enjoying an ever increasing popularity.

So there is much that we know we *aren't* very good at when it comes to uncertain reasoning. But do human beings share any common—i.e., independent of culture and literacy—probabilistic ability to cope *successfully* with uncertainty? This is the fascinating question addressed by L. Fontanari, M. Gonzalez, G. Vallortigara, and V. Girotto (2014: Probabilistic cognition in two indigenous Mayan groups. *Proceedings of the National Academy of Sciences.*) Specifically they investigate how two groups of pre-literate and prenumerate Mayan Amerindians perform reasoning under uncertainty. Their findings suggest that as far as basic probabilistic reasoning is concerned—both unconditional and conditional, i.e., involving some form of updating of prior information into posterior beliefs—unschooled Mayans living in remote areas of Guatemala perform indistinguishably from educated Mayans on the one hand, and their Italian counterparts on the other.

The treatments are based on the classical decision-theoretic device of choice-based elicitation (aka revealed belief), where the evaluation of the uncertain prospects is revealed through the subjects' choice (i.e., "betting" behaviour). It is very interesting to note that the competence found by the authors in their experimental subjects effectively concerns a *qualitative* notion of probability, that is to say the comparison of the degrees of belief attached by the individual to pairs of uncertain outcomes. It is this ability to make probabilistic comparisons which constitutes, according to the results reported in this paper, a form of universal probabilistic competence of human beings. I cannot help but note that de Finetti (and later L. Savage and T. Fine) put the qualitative foundation of (subjective) probability ahead of its quantitative development in his seminal B. de Finetti (1937: La prévision: ses lois logiques, ses sources subjectives, *Annales de l'Institut Henri Poincaré* 7(1), 168). Indeed de Finetti's motivation for doing so was that the idea that consistent comparison of probabilities—of which their numerical evaluation is nothing but a purely mathematical consequence—corresponds to the actual reasoning of "laypeople" in all practical circumstances of life.

Finally, I think it is worth mentioning that, in addition to the precise details of the experimental setting and the analysis of the findings, the paper by Fontanari et al. provides many pointers to the extremely fascinating literature on the development of probabilistic competences in children and non-human primates.

HYKEL HOSNI
Marie Curie Fellow,
CPNSS, London School of Economics

Evidence-Based Medicine

In epistemology there is a principle of total evidence which says that one should take as one's evidence all and only that which is in fact evidence. Suppose that evidence consists only of true propositions. Then, one violates the principle of total evidence by taking one's evidence to include some false proposition, or something other than a proposition. Suppose also that all the propositions that one knows are evidence. Then, if one knows some proposition but does not take it to be evidence, one again violates the principle of total evidence. The idea is that evidence justifies one's beliefs, and if one mistakes the evidence then unjustified beliefs might look justified, or justified beliefs might look unjustified.

The principle of total evidence as stated seems pretty plausible, but it is tricky to follow in practice. It seems particularly tricky to follow in medicine. Ben Goldacre tells a story about prescribing the anti-depressant reboxetine on the basis of reading some positive journal publications. For instance, he read one published trial comparing reboxetine to a placebo, which suggested that reboxetine was more effective. But here he was unwittingly violating the principle of total evidence. There were six similar trials conducted which suggested that reboxetine was no more effective than a placebo, but the results of these trials were not published. Goldacre was taking as his evidence only a subset of that which was in fact evidence.

Now, Goldacre is inviting people to sign a petition over at www.alltrials.net, which 'calls for all past and present clinical trials to be registered and their full methods and summary results reported'. (He also has a new book out, and just in time for Christmas.)

Meanwhile, over at the EBM+ blog, Federica Russo has written on Interdisciplinarity and Universal biological response and gender medicine, and Brendan Clarke has written on A puzzle about absence of evidence and Fun with reference classes. The EBM+ workshop (8–9 January 2015, University of Kent, Canterbury) is coming together nicely, with confirmed speakers including Alex Fiorentino (Medicine, Tufts), Andy Fugard (Psychology, UCL), Jeremy Howick (Centre for Evidence Based Medicine, Oxford), and Sarah Wieten (Philosophy, Durham). See here for more details.

MICHAEL WILDE
Philosophy, Kent

INTRODUCING . . .

The Center for Applied Rationality: practical techniques for overcoming biases

At the end of his duly acclaimed *Thinking Fast and Slow* (Farrar, Straus and Giroux, 2011), Daniel Kahneman comments on whether we could overcome the biases that he, Amos Tversky, and many other psychologists have uncovered during the past forty years or so. Kahneman is not very optimistic:

> As I know from experience, System 1 is not readily educable. Except for some effects that I attribute mostly to age, my intuitive thinking is just as prone to overconfidence, extreme predictions, and the planning fallacy as it was before I made a study of these issues. (p. 416)

While organizations can to some extent avoid errors by setting up structured decision procedures, individuals naturally think in a faster and less orderly way. Together with our inborn aversion to doubt, this prevents us from recognizing when we enter "cognitive minefields" where fallacies are highly likely (pp. 416-417). As a consequence we have scant hope of debiasing ourselves.

A Californian non-profit start-up, Center for Applied Rationality (CFAR), founded by Andrew Critch, Julia Galef, Anna Salamon and Michael Smith, takes a radically different view. With a firm grounding in psychological research they have, using a good deal of ingenuity, developed a number of sophisticated practical techniques to overcome different biases which they teach in intense four-day workshops. To give the reader a sense of what these techniques are like, let me briefly describe one of them, *Propagating Urges*.

A large proportion of our errors are due to the instinctual System 1 not being on board with the plans of the more logical System 2. Hence, in order to overcome these errors we must teach, or condition, System 1 so that its visceral moment-to-moment "urges" conform to the verbal long-term "goals" of System 2. To see how that can be done, consider the following illuminating contrast (due to Salamon, CFAR's executive director) between urges that are aligned with our goals and those that are not (from unpublished lecture notes, cited with CFAR's permission):

> The other day, I received a paycheck in the mail. Now, like many people, I have both an urge and a goal to have money in the bank. The state "I have money in the bank" can be furthered by the following actions:

1) Open envelope
2) Put check in wallet
3) Next time I'm at the ATM, deposit check into ATM

Sure enough, I felt an urge to take each of these actions and a little "ka-ching!" feeling after I did it. My experience went something like this: *feel an urge to open envelope* ... Open envelope: "ka-ching!" *Feel urge to put check in wallet* ... Put check in wallet: Ka-ching! And so on.

Salamon compares this felicitous case with a structurally identical case where her urges were not in line with her goals. She received a $28 parking ticket which she had to pay within 31 days on pain of getting a $62 fine. To do this, she had to carry out three actions which were very similar to 1)–3): open the envelope; write a check; mail the check. Carrying out these actions did not produce a "ka-ching"-feeling, however—rather the opposite—with the predictable result that she failed to do so and hence had to pay the fine.

In these situations, you have to re-frame the situation so that System 1 gets different urges. This is, of course, precisely what you do when you manipulate the "choice architecture"—when you, e.g., change the order in which choices are presented—as Richard Thaler and Cass Sunstein suggest we should in their famous book *Nudge* (Yale University Press, 2008). The difference is that while Thaler and Sunstein achieves this reframing by manipulating the physical environment, Salamon makes do with pure mental effort:

> I ended up visualizing that the envelope with the parking ticket actually held a check for $62 that would expire in 31 days. I just had to open it to be able to claim the check. I also practiced the ka-ching feeling while opening the envelope, by saying "yes!" out loud. That vivid image did the trick. Opening parking tickets, and paying bills promptly in time, began to feel like opening paychecks.

The general strategy, which Salamon gives many other examples of, is to condition System 1 into having the urges you desire it to have by talking to it in its own primitive language, using vivid images, personally significant stories, exaggerations, etc. You must condition your System 1 pretty much like you would condition a dog; treating it, in a way, as an alien creature inside your brain. By giving the dog-in-your-brain strong feedback of a kind it can understand, you can, Salamon argues, step by step transform your urges.

Some of CFAR's other classes concern similar themes, such as habit training, whereas others are quite different. There are classes on how you can avoid cognitive biases such as overconfidence and base rate neglect, classes on analysing the structure of your goals and the means to reach them, as well as a number of classes on various emotional and social issues (employing, e.g., mindfulness techniques). There are many obstacles to rational action, and in order to maximize our performance, we must remove as much as possible of all of them. As a result, CFAR's classes cover a very broad spectrum.

Since the start in 2012, CFAR has had a strongly positive trajectory. Participant satisfaction rates are very high (9.3/10) and demand for the workshops is ever growing. CFAR also command an increasing respect in academia and now have renowned psychologists Paul Slovic and Keith Stanovich—who is a famous proponent of the notion that rationality can be taught and improved ("meliorism")—among their advisors. Anyone interested in applied rationality should pay heed.

Stefan Schubert
CPNSS, London School of Economics

	2	6	3		7			
		8				7		6
4				1				3
		1		3				4
	5		4	7	6		1	
8				9		6		
7				5				1
9		3				4		
			8		3	2	9	

Events

December

NZAP: University of Canterbury, New Zealand, 1–5 December.
Frege: University of Bergen, Norway, 5–6 December.The History of Chemistry and Scientific Realism,
HCSR: The History of Chemistry and Scientific Realism, Indiana-University-Purdue University Indianapolis, 6–7 December.
POM: Graduate Conference in the Philosophy of Mind, University of Warwick, 6–7 December.
EOW: Ethics of War seminar, Stockholm University, 8 December.
FE & RE: Formal Epistemology and Religious Epistemology, Oxford University, 8–9 December.
ASCS: Australasian Society for Cognitive Science, Monash University, 8–10 December.
CMNA: Computational Models and Natural Argument, Krakow, Poland, 10 December.
BISCR: Bodies of Ideas: Science and Classical Reception, Warburg Institute, 11 December.
LPMP: Logic and Philosophy of Mathematical Practices, Brussels, 11–12 December.
ABM: Agent-Based Modeling in Philosophy, LMU Munich, 11–13 December.
SERPN: Workshop on Statistical Evidence in Epistemology and the Law, University of Glasgow, 12–13 December.
CP: The Completeness of Physics, University of Durham, 15–17 December.

January

ICLA: 6th Indian Conference on Logic and Its Applications, Bombay, 5–8 January.
DATA: Workshop on the Theory of Big Data Science, University College London, 7–9 January.
ICAART: 7th International Conference on Agents and Artificial Intelligence, Lisbon, Portugal, 10–12 January.
SoTFoM: Competing Foundations, London, 12–13 January.
What is Expertise?: Münster, Germany, 12–13 January.
SAPS: 4th South African Philosophy of Science Colloquium, Pretoria, 15–16 January.
EPN: Epistemic and Practical Normativity: Explanatory Connections, University of Southampton, 16 January.
CGCPML: 8h Annual Cambridge Graduate Conference on the Philosophy of Mathematics and Logic, St John's College, Cambridge, 17–18 January.
Diagrams: 1st Indian Winter School on Diagrams, Jadavpur University, Kolkata, 27–31 January.
SDSS: Scientific Discovery in the Social Sciences, London School of Economics, 30–31 January.

Courses and Programmes

Courses

AAAI: Texas, USA, 25–29 January.
Combining Probability and Logic: University of Kent, 20–21 April.
EPICENTER: Spring Course in Epistemic Game Theory, Maastricht University, 8–19 June.
EPICENTER: Mini-course on Games with Unawareness, Maastricht University, 22–23 June.

Programmes

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

MSc in Artificial Intelligence: Faculty of Engineering, University of Leeds.

MA in Reasoning
A programme at the University of Kent, Canterbury, UK. Gain the philosophical background required for a PhD in this area. Optional modules available from Psychology, Computing, Statistics, Social Policy, Law, Biosciences and History.

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

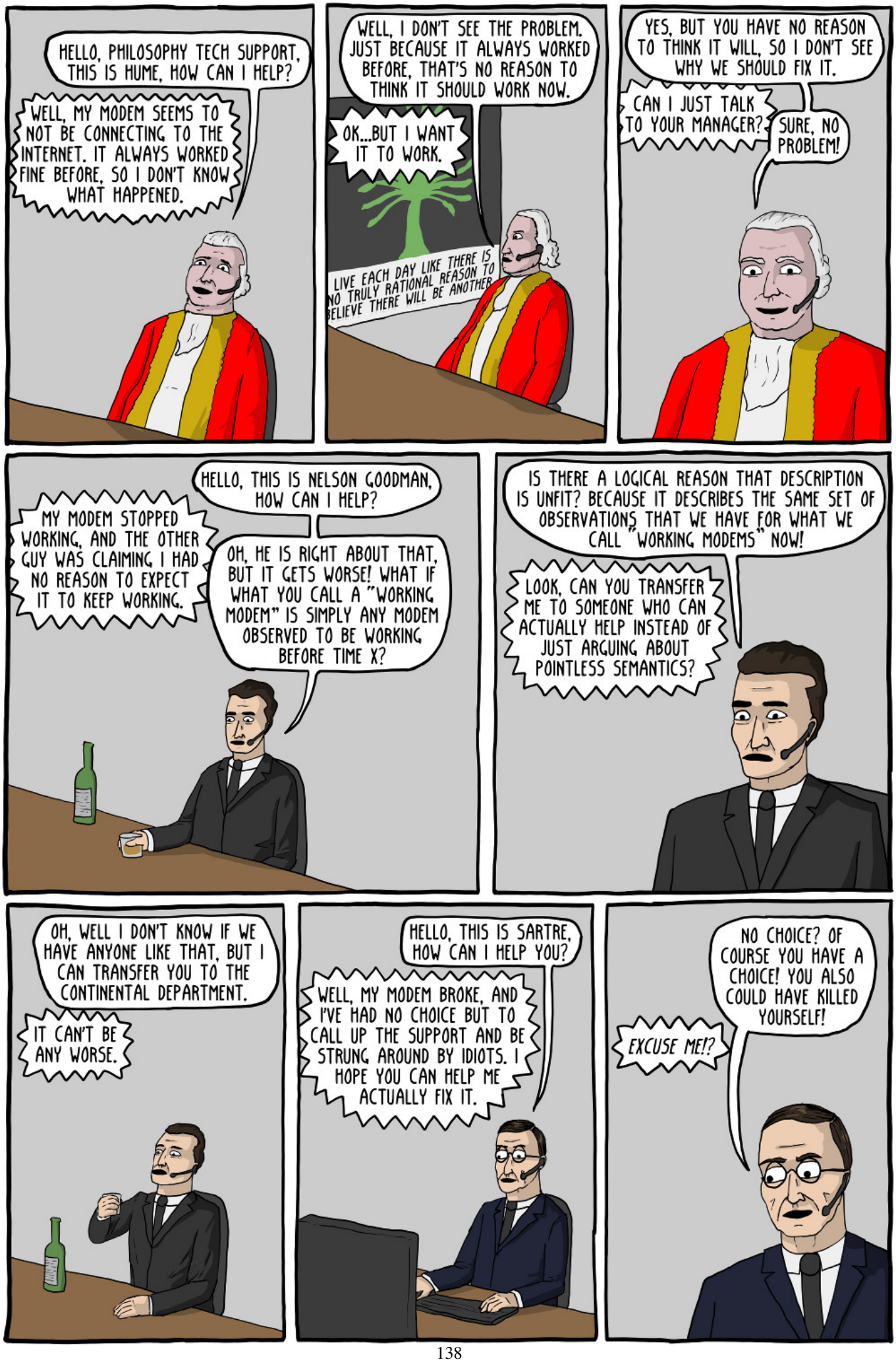
Jobs and Studentships

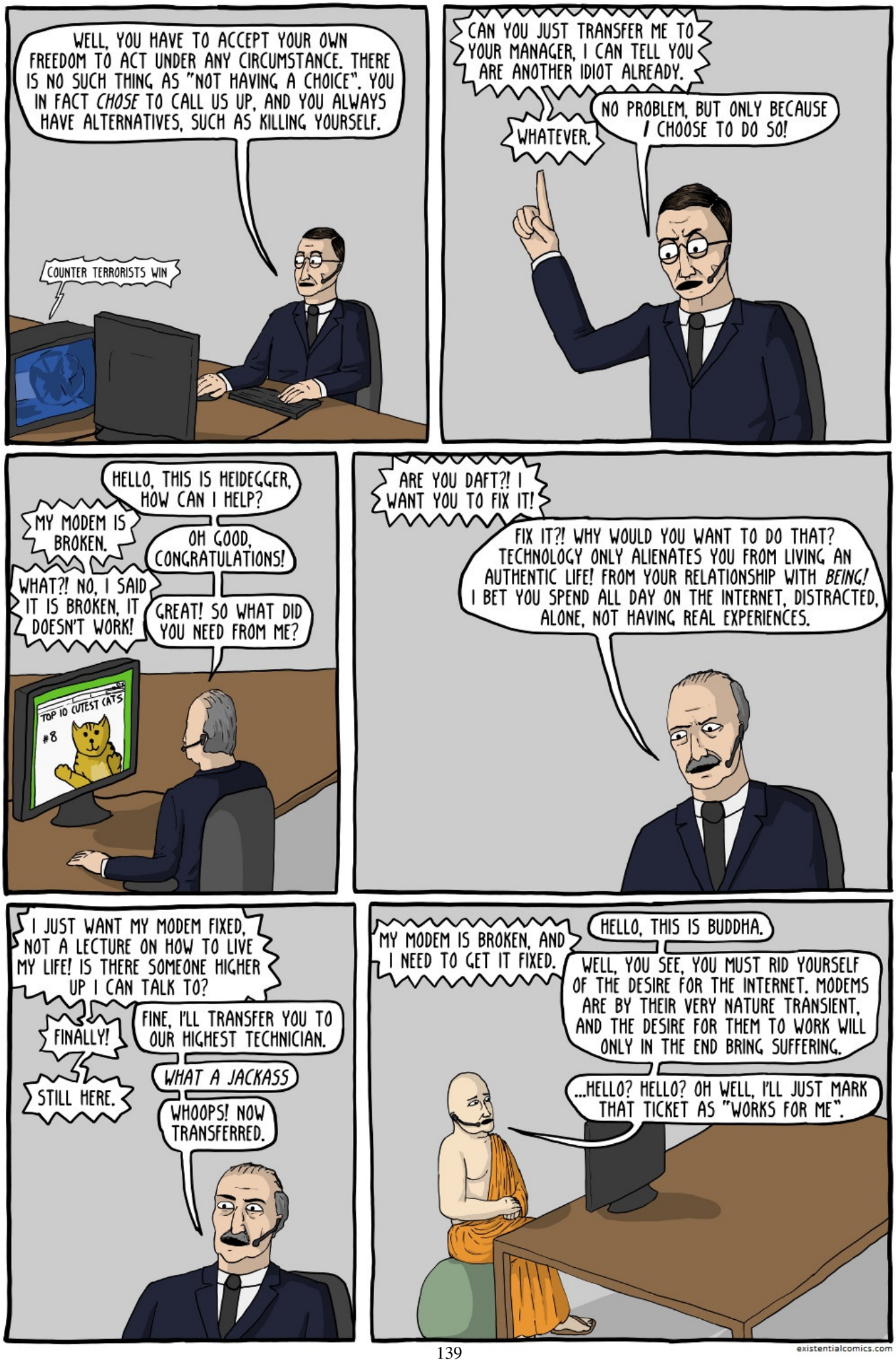
Jobs

Open Rank: in Metaphysics and Epistemology, University of California at Santa Barbara, Deadline 3 December.
Postdoctoral fellow: Tilburg Center for Logic, General Ethics, and Philosophy of Science, deadline 20 December.

Studentships

PhD Position: in epistemology and philosophy of science, University of Kent, until filled.
Studentship: in Philosophy of Science, London School of Economics, Deadline 12 January.
Studentship: in History and Philosophy of Science, Durham University, Deadline 16 January.


HELLO, PHILOSOPHY TECH SUPPORT, THIS IS HUME, HOW CAN I HELP?
WELL, MY MODEM SEEMS TO NOT BE CONNECTING TO THE INTERNET. IT ALWAYS WORKED FINE BEFORE, SO I DON'T KNOW WHAT HAPPENED.
WELL, I DON'T SEE THE PROBLEM. JUST BECAUSE IT ALWAYS WORKED BEFORE, THAT'S NO REASON TO THINK IT SHOULD WORK NOW.
OK...BUT I WANT IT TO WORK.
LIVE EACH DAY LIKE THERE IS NO TRULY RATIONAL REASON TO BELIEVE THERE WILL BE ANOTHER
YES, BUT YOU HAVE NO REASON TO THINK IT WILL, SO I DON'T SEE WHY WE SHOULD FIX IT.
CAN I JUST TALK TO YOUR MANAGER?
SURE, NO PROBLEM!
HELLO, THIS IS NELSON GOODMAN, HOW CAN I HELP?
MY MODEM STOPPED WORKING, AND THE OTHER GUY WAS CLAIMING I HAD NO REASON TO EXPECT IT TO KEEP WORKING.
OH, HE IS RIGHT ABOUT THAT, BUT IT GETS WORSE! WHAT IF WHAT YOU CALL A "WORKING MODEM" IS SIMPLY ANY MODEM OBSERVED TO BE WORKING BEFORE TIME X?
IS THERE A LOGICAL REASON THAT DESCRIPTION IS UNFIT? BECAUSE IT DESCRIBES THE SAME SET OF OBSERVATIONS THAT WE HAVE FOR WHAT WE CALL "WORKING MODEMS" NOW!
LOOK, CAN YOU TRANSFER ME TO SOMEONE WHO CAN ACTUALLY HELP INSTEAD OF JUST ARGUING ABOUT POINTLESS SEMANTICS?
OH, WELL I DON'T KNOW IF WE HAVE ANYONE LIKE THAT, BUT I CAN TRANSFER YOU TO THE CONTINENTAL DEPARTMENT.
IT CAN'T BE ANY WORSE.
HELLO, THIS IS SARTRE, HOW CAN I HELP YOU?
WELL, MY MODEM BROKE, AND I'VE HAD NO CHOICE BUT TO CALL UP THE SUPPORT AND BE STRUNG AROUND BY IDIOTS. I HOPE YOU CAN HELP ME ACTUALLY FIX IT.
EXCUSE ME!?
NO CHOICE? OF COURSE YOU HAVE A CHOICE! YOU ALSO COULD HAVE KILLED YOURSELF!


WELL, YOU HAVE TO ACCEPT YOUR OWN FREEDOM TO ACT UNDER ANY CIRCUMSTANCE. THERE IS NO SUCH THING AS "NOT HAVING A CHOICE". YOU IN FACT *CHOSE* TO CALL US UP, AND YOU ALWAYS HAVE ALTERNATIVES, SUCH AS KILLING YOURSELF.
COUNTER TERRORISTS WIN
CAN YOU JUST TRANSFER ME TO YOUR MANAGER, I CAN TELL YOU ARE ANOTHER IDIOT ALREADY.
WHATEVER.
NO PROBLEM, BUT ONLY BECAUSE I CHOOSE TO DO SO!
HELLO, THIS IS HEIDEGGER, HOW CAN I HELP?
MY MODEM IS BROKEN.
OH GOOD, CONGRATULATIONS!
WHAT?! NO, I SAID IT IS BROKEN, IT DOESN'T WORK!
GREAT! SO WHAT DID YOU NEED FROM ME?
TOP 10 CUTEST CATS
#8
ARE YOU DAFT?! I WANT YOU TO FIX IT!
FIX IT?! WHY WOULD YOU WANT TO DO THAT? TECHNOLOGY ONLY ALIENATES YOU FROM LIVING AN AUTHENTIC LIFE! FROM YOUR RELATIONSHIP WITH *BEING!* I BET YOU SPEND ALL DAY ON THE INTERNET, DISTRACTED, ALONE, NOT HAVING REAL EXPERIENCES.
I JUST WANT MY MODEM FIXED, NOT A LECTURE ON HOW TO LIVE MY LIFE! IS THERE SOMEONE HIGHER UP I CAN TALK TO?
FINALLY!
FINE, I'LL TRANSFER YOU TO OUR HIGHEST TECHNICIAN.
STILL HERE.
WHAT A JACKASS
WHOOPS! NOW TRANSFERRED.
MY MODEM IS BROKEN, AND I NEED TO GET IT FIXED.
HELLO, THIS IS BUDDHA.
WELL, YOU SEE, YOU MUST RID YOURSELF OF THE DESIRE FOR THE INTERNET. MODEMS ARE BY THEIR VERY NATURE TRANSIENT, AND THE DESIRE FOR THEM TO WORK WILL ONLY IN THE END BRING SUFFERING.
...HELLO? HELLO? OH WELL, I'LL JUST MARK THAT TICKET AS "WORKS FOR ME".
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