Interview:

James Ladyman

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James Ladyman is Professor of Philosophy at the University of Bristol. He received his BA from the University of York, his MSc from the University of London, and his PhD from the University of Leeds, where he worked with Steven French. His main areas of research are the philosophy of science, the philosophy of physics, and metaphysics; he is best known for the distinction between epistemic and ontic structural realism and his defence of the latter. He is the author of *Understanding Philosophy of Science* and, with Don Ross, of *Every Thing Must Go: Metaphysics Naturalized*, and co-author with Karoline Wiesner of *What Is a Complex System?* He is a former editor of the *British Journal for the Philosophy of Science* and a former President of the British Society for the Philosophy of Science.

Stathis Psillos rejects the distinction between structure and nature, and critics of ontic structural realism say there can be no relations without relata. Which objection has troubled you most?

Stathis Psillos argues that properties in mature science are defined by the laws in which they feature, and so nature and structure are a continuum. In this respect he echoes Heinrich Hertz who said 'Maxwell's theory is Maxwell's equations' and this sounds like an expression of structural realism. Ontic structural realists emphasise how science represents 'modal structure'. Modal structure is understood as a general term that subsumes causal structure, mechanisms, nomological structure, probabilistic and statistical structures and so on. The 'no relations without relata' objection is due to Michael Redhead. Ontic structural realists do not claim that there are relations without relata, rather they argue that relational structure does not reduce to objects and intrinsic properties. In joint work with Hannes Leitgeb (2007), and subsequent work Ladyman (2008), and with Øystein Linnebo and Richard Pettigrew (2011), I investigated identity and discernibility in philosophical logic. I argue that there is no unanimity about the difference between individuals, objects, and entities among philosophers (2016).

With Nora Berenstain you argue that scientific realism needs natural necessity. Is modal structure in the world or only in our models? Or is realism about it simply primitive?

In some recent literature on scientific models the term 'modal information' is used to refer to the idea of a space of possibilities, some of which involve nonactual states defined by the parameters of the models. Scientific models are linked to the representation of modality by various other ideas that feature in other distinct and prominent views on the nature of scientific modelling. Sometimes the idea of modal structure may be more apt than the idea of modal information or vice versa. Scientific practice which works with phase spaces or other mathematical structures and according to an antirealist about modality such as van Fraassen, necessity, probability and possibility are all in the model not the world. The commitment to some form of realism about the modal structure of the world as represented by science may well be a primitive commitment.

What makes a pattern real, in the "rainforest realism" you defend with Don Ross? Is a recession as real as an electron?

Real patterns are projectible, but economics is much less successfully predictive than physics and I do not know whether recessions meet the criteria for being a real pattern but electrons definitely do (Don Ross has written about whether the business cycle is a real pattern).

Herman Cappelen argues that analytic philosophers do not really rely on intuitions as evidence. If so, does your critique of analytic metaphysics lose its target?

Cian Dorr's review of *Every Thing Must Go* (2010) argues that our criticisms miss the mark because metaphysicians do not after all appeal to common sense or intuitions as a source of evidence or information about how things are. This is puzzling because there are so many examples of metaphysicians using talk of what is commonsensical or intuitive as evidence in favour of a particular view. Jonathan Tallant (2014) (who is concerned to defend analytic metaphysics against us) cites metaphysicians such as Ned Markosian, Ted Sider and Dean Zimmerman whose work is core to the literature explicitly claiming that being intuitive and counterintuitive are epistemically significant features of theories or propositions. For example, Zimmerman (2008) says

that being commonsensical counts 'very strongly in favour' of a proposition, and Markosian (2008) makes explicit the cost-benefit approach and among the benefits he adduces he explicitly includes satisfying intuitions. Indeed, Dorr appeals to intuition in various ways himself in a paper on relations (2002) saying "I have not been shy of appeals to modal intuitions in this paper: in fact my method of argument relies essentially upon them" (p. 183).

Following Frankfurt, LLMs have been called bullshitters, yet with Ryan Nefdt you argue they are genuine scientific models of language. Can something be both?

LLMs are models of language because they are trained to reliably produce linguistic output that is appropriate to the input, but that does not entail that they faithfully represent the world more generally, and of course much of what they output is bullshit. So, yes.

Language models remain largely black boxes. Does a science that leans on them buy predictions at the price of understanding?

See my new book with Emanuele Ratti and Alberto Termine, *The Modelling Structure of AI Science*, forthcoming with CUP.

You thank Bas van Fraassen for teaching you philosophy of science, yet you have long argued against his constructive empiricism. What has that taught you about how philosophical disagreement works?

Philosophical disagreement works because there is also philosophical agreement.

Further Reading

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