Noûsletter

Introducing Ryan Muldoon
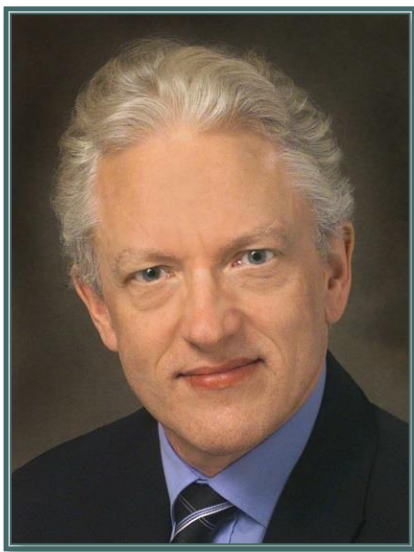
Assistant Professor

Ryan Muldoon is presently a Senior Research Fellow in the Philosophy, Politics and Economics program at the University of Pennsylvania, where he received his Ph.D. in 2009. In addition to social and political philosophy, his specialties include philosophy of science and epistemology. He is the author or co-author of twelve papers and has recently completed a book entitled *Beyond Tolerance: Social Contract Theory for a Diverse World*, in which he argues that increasing social diversity can lead to greater justice and prosperity for all.

Faculty Interview: Barry Smith

SUNY Distinguished Professor

There are people who work in applied philosophy, and then there is Barry Smith who applies philosophy to everything. He is a force of nature. His CV is as long as the completed works of many scholars. He has over 500 publications. His h-index is a 64, which means that 64 of his publications have been cited at least 64 times. His total citations are over 16,000, which according to Google Scholar places him in the top 10 of living philosophers. Barry has appointments in four departments. He gets grants at a rate that would be the envy of many in the hard sciences. He is the editor of the highly acclaimed *Monist*, the associate editor of three journals, and on the editorial boards of 19 other journals. He writes on topics ranging from the ontology of human emotions to plant ontology. He will pen papers on traditional philosophical topics like truth-makers, the relationships of parts to wholes, and how and when we came into existence. But he will also write about topics such as whether mountains exist, or what is involved in the orthodox Jewish demarcation of the boundary of a religious area known as an *eruv*. He created, to a considerable extent, the field of applied ontology, and organized the first conference on this topic in Buffalo in 1998. He founded IFOMIS, which was the first research center for the study of biomedical ontology. He is the director for the National Center of Ontological Research and a lead researcher in many ontology initiatives to do with medicine and disease, on the one side, and with military intelligence on the other. He has delivered papers to the most diverse audiences: to marine biologists at Oxford, plant scientists working at the New York Botanical Gardens, dentists at their association meetings, medical researchers at the National Institutes of Health, officers at the Space and Naval Warfare Systems Command, CIA agents at Langley, and freshmen at the University of Buffalo.

1. What intellectual interests did you have before college? You eventually majored in math. What was the appeal? Why did you later switch your focus to philosophy? Was the philosophy of math the bridge or were there other philosophical issues that first interested you?

My interests at that stage, I am ashamed to say, were heavily focused on pure mathematics (rather than applied mathematics, or physics); I enjoyed the possibilities for manipulating abstract structures which math provided. It was the opportunity to continue working in pure mathematics that led me to the idea of enrolling as an undergraduate in the new

joint program in Mathematics and Philosophy then just starting at Oxford. This led me to philosophy. The first philosophy books I read were Russell's *Introduction to Mathematical Philosophy* and Wittgenstein's *Tractatus*.

2. What prominent philosophers did you study with when you were at Oxford? Who were your mentors at Oxford and Manchester?

At Oxford I was especially taken by Dummett, at that time Reader in the Philosophy of Mathematics, and I attended every single one of Dummett's lectures during my time there. Otherwise I read a lot of books by dead authors. In Manchester, where I did my Ph.D., it was my fellow students Kevin Mulligan and Peter Simons by whom I was primarily influenced. The three of us founded the Seminar for Austro-German Philosophy as a vehicle to continue our work on Husserl and other Austro-German philosophers after graduation.

3. Your dissertation was a study of meaning and reference in Frege and Husserl? How did you discover the phenomenological tradition in an English hotbed of analytical philosophy?

In those days people still used to browse through open library stacks, and I found by accident a book entitled *Time and Modes of Being* by a Polish student of Husserl by the name of Roman Ingarden. This book showed me for the first time the potentially limitless possibilities of an ontological approach to philosophy. For Ingarden, ontology is the key to understanding the whole of philosophy in a non-reductionistic way, including – as in Ingarden's own writings – the philosophy of art and literature. From Ingarden I began exploring other phenomenologists, including Sartre and Merleau-Ponty, and even Heidegger. And then to Husserl, and to Husserl's teacher Brentano, and to Adolf Reinach, who applied Husserl's ideas in logic and in the ontology of language to the domain of law, thereby inventing in 1913 what later came to be called 'speech act theory'. Husserl and Ingarden, above all, brought me to the distinction between formal and material ontologies – and in this way

showed me that there were possibilities for manipulating abstract structures also outside of mathematics. They laid the groundwork, too, for my later interest in applying ontology in material domains such as geography, law, economics, biology, medicine, and military intelligence.

4. You are now best known for your work on theoretical and applied ontology. I take it that ontology doesn't today mean what Aristotle meant by "the study of being qua being". Could you give the readers a brief statement of the kind of ontology that you work in and its connection to traditional ontology and metaphysics?

Ingarden is in many ways a modern-day counterpart of Aristotle and Aquinas. Each tried to develop an approach to describing the kinds of entities in reality and the kinds of relations between such entities in a maximally adequatist (which is to say: non-reductionist) way. What I have been trying to do in applying ontology is to boil down this realist approach to a set of rules and a common architecture – called Basic Formal Ontology (BFO) – which people can use to build ontologies for specific domains in a consistent fashion, so that their results will cumulate. Scientists and computer engineers have been building applied ontologies in this sense for more than a decade to address problems which arise in sharing and comparing heterogeneous data – for instance data about the relations between genes and diseases discovered in mice and in humans. The recognition of the need for ontologies to support these new sorts of applications has now expanded to include all areas where computers need to share data, including industry and commerce and government and journalism. Unfortunately it is by no means the case that all such projects use BFO, or any kind of coherent ontology, as the basis of their work. But BFO is, when measured in terms of numbers of users, currently the most prominent among the three upper-level ontologies in common use.

5. What led you to start IFOMIS and what did the institute accomplish?

My first attempts to create a genuinely applicable ontology were in the realm of geography, where my UB geographer colleague David Mark and I performed a series of experiments designed to identify how human subjects demarcate the realm of geographical entities. This was early experimental philosophy, of a sort. However, its goal was not to throw light on philosophical questions; rather we were aiming to use the results of these experiments to create an ontology of geography that might support, for example, the comparison and aggregation of data in different geospatial information systems. For my work in this area I was awarded the Wolfgang Paul Prize by the Alexander von Humboldt Foundation, and this gave me the opportunity to establish a research center in Germany on a topic of my choice. In the period preceding the award of the prize I had begun working on the topic of what might be called embryontology, which is concerned with questions such as: when, in the course of human development, does a human being first begin to exist? (Embryontology is thus in some ways the dual of gerontology.) This new interest in questions of ontology in medicine led to the founding of the Institute for Formal Ontology and Medical Information Science in Germany in 2002. During my 4 years working as the Director of IFOMIS, with some 19 colleagues, including clinicians, biologists, linguists, computer scientists, and philosophers – including Thomas Bittner, Werner Ceusters and Maureen Donnelly now on the faculty here at Buffalo – I think I can say that we transformed the way in which both biologists and medical informaticians approached issues of ontology and terminology in their work. One important outcome was the initiation of the OBO (Open Biological and Biomedical Ontologies) Foundry, which is designed to serve as a suite of high-quality interoperable ontologies covering the entire domain of the life sciences.

6. Your work has met with some resistance in the information sciences. Has it been just the typical entrenched interests one finds in any field where grants, prestige and positions are at stake, or was the problem that you were a philosophical outsider or advocating really radical changes and new approaches?

As I became more and more involved with computers and with informatics, I became increasingly puzzled by the degree to which computer scientists, when they think about fundamental ontological questions at all, seem overwhelmingly to embrace one or other brand of relativist or deconstructionist or postmodern philosophical claptrap in their work. If there is no reality, of course, then there is also no reason to impose any kind of consistency on the ontologies one builds, and it is something like a miracle that integration of data from independent sources is possible at all. If reality exists, on the other hand, then this raises the question of what the overarching ontology of this reality might be – and something like BFO begins to make sense.

7. What are you advising military people about? I take it that you are not lecturing them about becoming more deontological and less consequentialist. What can an ontologist do for the defense and intelligence communities?

Just one example: Department of Defense (DoD) Directive 8320.02 on "Sharing Data, Information, and Information Technology Services" requires all authoritative DoD data sources to be discoverable, searchable, retrievable, and understandable through use of appropriate data standards and specifications "including vocabularies, taxonomies, and ontologies." Currently I am working on an Information Artifact Ontology framework that is designed to support these goals.

9. Which of your projects will have the biggest effect on the academy, which will have the largest influence on the military, which will most change medicine, and which will have the most financial impact?

In the academy: it is still too early to tell whether philosophers will finally realize the tremendous opportunities provided by ontology as a means to convert their aging discipline into a once more young science with genuine applications.

In the military: it is not too early to see that the next major land war will require embedded ontologists to ensure that military information systems are able to apprehend and respond rapidly to changes in the battlefield environment.

In medicine: IBM's Watson is now being applied by the MD Andersen Cancer Center in Houston to help improve diagnosis and treatment for cancer patients (the medical ontology in Watson was built by the just-mentioned Werner Ceusters, and rests in part on work with BFO).

In finance, BFO is currently being used by Charles Hoffman as the basis for a new Financial Report Ontology, which Hoffman hopes will replace the XBRL (eXtensible Business Reporting Language) currently used by corporations when submitting their annual reports to the Securities and Exchange Commission (Hoffman is the author of XBRL).

10. You have placed a number of your students and postdocs in business, the academy and government institutions. What sort of jobs outside of philosophy are available to ontology students?

Working for the military, and for military and government contractors more generally – a huge amount of work will be involved in putting into practice Directive 8320.02 and the many other such directives in all branches of government. Working on biological and biomedical research projects – for instance as in the current UB collaboration with Stanford University to make de-identified clinical trial data freely available on the web; the problem is that researchers can use such data only if it is described in ways they can understand, and for this we require people to build and reason with ontologies, and people to teach other people how to use these ontologies. Four of our Ph.D. students are currently working on projects of this sort in UB.

11. Am I correct in recalling that some of your ontology students or post docs are now making six figures and not in the way an adjunct philosophy instructor earns

in the six figures – four figures of their salary to the left of the decimal point and two to the right?

Yes.

12. You recently became interested in some questions of legal documents and legal ontology. What is involved in these pursuits?

This grows out of my long-standing interest in Searle's work on the ontology of social reality. Clearly debts, laws, prices, and so forth, must somehow fall within the scope of this ontology; yet Searle's commitment to naturalism – to the view that everything in the universe is physical particles and fields of force – leaves him with no way of dealing ontologically with entities of these sorts. The strategy I have been pursuing tries to make progress in the direction of an ontology of legal entities through the study of the ontology of legal documents – and more precisely of *document acts* – for instance filling in your tax form – which are in interesting ways different from speech acts more narrowly conceived. The realm of document acts is now itself becoming transformed, of course, as paper documents give way more and more to electronic documents; the latter are, I believe, transforming social reality in ways which philosophers have still hardly begun to appreciate.

14. You started a recent project on death. What are the issues that interest you and what sort of views are you defending?

This started at a meeting in Germany organized by systems biologists, clinical scientists, and computational linguists, all working on topics in the area of aging research. The goal of the meeting was to identify more effective ways to mine and aggregate the large amounts of data relating to aging and longevity that are accumulating in experiments on organisms of different types, including studies of the genetics of super-centennials and of the prematurely aged. I was brought in to help with the initiation of a new ontology called GERO: The Gerontology Ontology.

15. No other philosopher has obtained grants at the rate you do. I fear that you are reaching dollar levels that will soon make you the first philosopher that Occupied Wall Street protests. Without getting out your calculator, do you have a rough idea of the dollar value of all the grants you have received?

It is more than $10 million.

16. How many emails do you receive and send on an average workday?

Google's spam traps have brought it down to about 200; I send about 100 each day.

17. I suspect that someday soon you will be one of the first people to have a device implanted in your arm - a device that can get email and conduct Google searches. Would such an implant be literally a part of your body? Would having such an implant make you a cyborg or would there be a cyborg that contains you as a proper part?

Very soon we will all be wearing google glasses. The people who are already wearing them are still people. (People who wear hats are still people.) It is very hard to stop being a person.

18. Which is a worse philosophical error: claiming such a device implanted in your forearm consists just of a bundle of tropes, instantiates a Platonic universal, or has temporal parts?

All of them are bad, of course; but the last has the additional problem that it is for some reason, (alongside theories about 'possible worlds'), found particularly attractive by bad ontologists. Consider for instance the following extract from the International Standard Oil and Gas Industry Ontology (ISO 15926):

> DEFINITION: A <possible_individual> is: a <thing> that exists in space and time.
> This includes:
> – things where any of the space-time dimensions are vanishingly small,
> – those that are either all space for any time, or all time and any space,

> – the entirety of all space-time,
> – things that actually exist, or have existed,
> – things that are fictional or conjectured and possibly exist in the past, present or future,
> – temporal parts (states) of other individuals,
> – things that have a specific position, but zero extent in one or more dimensions, such as points, lines, and surfaces.

> In this context existence is based upon being imaginable within some consistent logic, including actual, hypothetical, planned, expected, or required individuals.

This passage goes a long way to show why people with expertise in philosophy are needed to support practical ontology building.

19. The intellectual world would be better off if what five philosophers (using that title loosely) had far less influence?

Kant, Foucault, Derrida, Kant, Kant.

20. The contemporary intellectual scene would be better off if which three philosophers had more influence?

Still among the dead: Aristotle, Ingarden, David Stove.

21. Who is David Stove?

See "Stove's Discovery of the Worst Argument in the World",
http://web.maths.unsw.edu.au/~jim/worst.html