Applied Metaphysics

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1. Introduction

Try Googling 'applied metaphysics': you'll be led to a motley collection of new age healers, self-help tracts, and sacred geometry. You can obtain a Certificate in Applied Metaphysics by studying psychic growth, or learn about Historical Astrology versus Quantum Fractal Scaling on an Applied Metaphysics Foundation Program. Now try searching for 'applied metaphysics' on PhilPapers, the main database for professional philosophy: just a handful of papers explicitly use the phrase. 'Applied Metaphysics' as such is not a recognised sub-discipline of philosophy.

Nevertheless, there is all sorts of fascinating work going on – inside and outside of university philosophy departments – which could be labelled 'applied metaphysics' in a truly philosophical sense. It is easy to track down valuable insights, arguments and ideas; it is more difficult to understand whether such enterprises have anything interesting in common, and to understand the relationship between applied metaphysics and metaphysics in general.

But let's begin by establishing what metaphysics is, and to do that, let's begin with some examples of metaphysical questions: What is it for something to cause something else? Must every event have a cause? Is the future real? What about the past? Which elements of reality, if any, are independent of our thoughts about reality? What is it for one thing to be a part of another? When objects have some feature in common, is there entity which is literally shared between them? Is there more than one way to exist? How do things persist through time?

Metaphysical issues which lend themselves to application beyond philosophy are often (though not always) issues to do with categorising, classifying and organising the world. Reality seems to be divided into things, and those things seem to be divided up into different categories: trees, laptops, clouds, Scots, parties, oil price shocks, and so on. We may wonder to what extent reality itself dictates how it should be divided and categorised, and to what extent these distinctions reflect human interests, whether these are determined socially,

psychologically, biologically, or all three. Which distinctions are objective, and which are conventional?

What is distinctive about metaphysics? Metaphysical questions concern the nature of reality at a very general or abstract level. Metaphysicians ask whether the past is real, not whether some specific historical event really occurred. They ask what it is for one thing to be part of another, not whether this specific piece of plastic is part of my kids' Star Wars Lego set. And they ask how things persist in general, not how those geraniums managed to survive the winter. But scientists, of course, also ask questions at a very general level: how did the universe begin? are matter and energy equivalent? is space infinitely divisible? It's not always clear where – or even whether – to draw the boundary between metaphysical questions and scientific questions. The very idea of such a boundary is relatively new, in historical terms, and its purported location has shifted over time. Moreover, it's not even clear whether the boundary between metaphysics and science is best thought of as a boundary between different types of question, as opposed to different methodologies for example. So 'metaphysics' is something of a fuzzy category. (The opening section of 'Metaphysics' in the *Stanford Encyclopedia of Philosophy* provides a useful next step.)

As if intended to confuse beginners, the term 'ontology' is sometimes used interchangeably with the term 'metaphysics'. Typically, there is an implied contrast between ontological/metaphysical questions on the one hand, and epistemological questions on the other: ontology, or metaphysics, is the investigation of what the world is like, whilst epistemology is the investigation of how we come to know about the world.

But sometimes ontology is thought of as a special sub-division of metaphysics, a sub-division which investigates existence, or what exists. (Relatedly, *an* ontology is a list, or theory of what exists: if something is in my ontology, it is something I believe to exist.) In this sense of 'ontology', not all of metaphysics counts as ontology. For example, questions about what it is for one thing to be part of another do not seem to be ontological questions: they are not questions of what exists, but questions about relationships between existing things. Nevertheless, when you think about a metaphysical issue, you often find an ontological issue of existence lurking nearby. When we ask what it is for one thing to be part of another, we may easily find ourselves asking what kind of objects have parts, and thus what kinds of parts

exist. (The opening sections of another *Stanford Encyclopedia of Philosophy* article, on 'Logic and Existence' are helpful here.)

There is a deep philosophical problem here, about whether we can or should distinguish metaphysical questions about existence ('ontological' questions) from other types of metaphysical questions. There is also a practical problem of trying to understand whether people who write or talk about 'ontology' are thinking of metaphysics in general, or of a special sub-division of metaphysics which concerns existence.   Nevertheless we can get a good start at appreciating the possibilities of applied metaphysics without letting these worries detain us too long.

2. Applying metaphysics within philosophy

Applied philosophy usually reaches beyond philosophy, and we'll see below that applied metaphysics does this too. But, in addition, metaphysics is applied within philosophy, to questions and topics which are unequivocally philosophical, yet do not normally feature in a standard metaphysics course or textbook.

These include topics in applied ethics. For example, debates around the permissibility of abortion, or of reproductive technologies, may draw upon metaphysical ideas about personal identity and the self. At the other end of life, practical discussions about death and killing may also draw upon metaphysical debates about the nature of death, and the possibility of posthumous harm.

Metaphysical issues also arise in areas of philosophy not usually thought of as 'applied'. For example, philosophers ask whether there are such things as moral facts, and if so what the basis for such facts are: for example, are they mind-dependent in some way, dependent upon more mundane physical facts, or features of reality in their own right? Such debates fit within meta-ethics in the standard taxonomy of philosophical specialisms, but they are informed by metaphysical discussions of facts, fundamentality, objectivity and the like.

A branch of philosophical aesthetics investigates the ontology of art. That is, what sort of entities are musical works, novels, or photographs, for example? What is the relationship between Gillian Flynn's novel *Gone Girl*, and the millions of physical printed copies of that novel currently located in many countries worldwide? Is *How Soon Is Now?* an abstract

object which was discovered amongst the multitudes of pre-existing but physically unrealised pieces of music, or did Morrissey and Marr literally create this piece of music in 1984, bringing it into existence for the first time?

Several significant issues in the philosophy of religion are essentially metaphysical issues. There's the great ontological question of whether God exists, of course. And philosophers of religion have drawn extensively upon metaphysical discussions of the nature of time in attempting to reconcile God's eternity or timelessness with the way in which, according to many traditions, God intervenes in human affairs. Enduring mysteries, such as the Christian doctrine of the Trinity, or the Catholic doctrine of transubstantiation in the Eucharist, have prompted centuries of thought about the nature of identity, change and substance; for a very long time, and in some circles today, religious concerns have provided the key motive for doing metaphysics, rather than being an afterthought or mere 'application' of metaphysical debate.

Likewise, many issues in the philosophy of science can be considered metaphysical; debates about causation, laws of nature, natural kinds, and chance fall into this category. Lots of philosophers of science, however, would resist the 'applied metaphysics' designation, if it is taken to imply some kind of priority for metaphysics. They would insist that it is science, and philosophy of science, which should provide the prompts and constraints for metaphysics: our metaphysics should follow where science leads. (In some ways, this is analogous to the view of religious commitment and metaphysics described in the preceding paragraph.) So, for example, as we learn from science that the world may be fundamentally indeterministic, metaphysicians must develop accounts of causation which do not presuppose determinism.

It doesn't much matter how we divide up philosophy into sub-areas, where exactly we draw a line between 'core' metaphysics and metaphysical debate which arises in connection with ethics, art, religion, or science. But we should bear in mind that different people may take different views about what comes first, and about what role general metaphysics can play in helping address these somewhat more specific questions. One view is that 'core' metaphysics should proceed on its own terms, attempting to discover deep truths about reality, which can then be applied to more specific cases regarding ethics, etc. A more cautious view would see metaphysicians as generating a range of conceptual tools,

connections and ideas, which can act as a toolbox or set of resources from which other philosophers can choose what works best for them. Thus metaphysicians' discussions of abstract objects, for example, can inform debates about the ontology of artworks, debates about the nature of numbers, and debates about the existence of God, perhaps in different ways, but without needing to reinvent the wheel each time. (Steven French and Kerry McKenzie (2012) develop this 'toolbox' idea of the relationship between metaphysics and philosophy of science.)

So metaphysics can influence other areas of philosophy even if it does not offer definitive verdicts about the ultimate structure of reality. (And a good job too, since whenever a metaphysician offers a definitive view about the ultimate structure of reality, you will find another metaphysician offering an entirely different definitive view.) This brief survey of metaphysics applied within philosophy gives us a starting point for considering some ways in which metaphysics can be applied beyond philosophy. In what follows, I will discuss three case studies in applied metaphysics, before returning to more general reflections at the end of the chapter.

3. Case Study I: Applied Ontology

You'll have seen the ads, if you don't own an iPhone yourself: users can interact with their devices via Siri, the voice-activated 'personal assistant'. Siri's functioning depends on applied ontology, indeed a version specific to Apple, known as 'active ontology'. Tech commentators who have read the many patents lodged by Apple expect the company to develop and expand this system over the coming years. When you find yourself asking the refrigerator what your dinner options are, or your bathroom cabinet recognises your reflection and reminds you to take your medication, you'll be relying on applied ontology.

Applied ontology is a young field. The first international workshop was held in 1993, and *Applied Ontology* – the journal of the International Association for Ontology and its Applications – published its first issue in 2005. On the very first page, the editors-in-chief write:

> Ontology is no longer perceived as an arcane branch of metaphysics, the province only of philosophers; the study of ontology now fits squarely into the study of modern computer science and informatics…Linguists and philosophers now work hand-in-hand with traditional computer scientists to build complex information systems with

explicit, examinable conceptual models of the environments in which they are intended to operate, of the organizations in which they will be used, and of the data and knowledge that they will process. (Guarino and Musen 2005: 1)

Many computer systems involve the storage and manipulation of large quantities of data. Any such system must incorporate standardised formats for such information. For example, a database of restaurants needs categories for type of cuisine, opening hours, location, and price range. But even for this simple example, decisions need to be made. Is 'pizza' a category of restaurant in its own right, or is it a sub-category of 'Italian'? How many categories of Chinese restaurants are there? Does a restaurant specialising in 'fusion' cooking belong in the same category as a restaurant which serves dishes from different cuisines? When it comes to price range, should we list the cheapest meal available at the restaurant, the average, or the typical price? Is it the price for a main dish (US entrée) or for a three-course meal with a glass of house wine? Or maybe a beer? How many price categories do we need? The system designers must consider the needs and interests of likely database users. And they must also consider interactions between this database and other systems: it might make sense to use the same categories as TripAdvisor, for example, in order to synchronise with customer reviews on that site.

In other words, the designers need to adopt or develop an ontology of restaurants: a system of categories which applies to this domain, and which can be used to organise, query, and articulate information about it. Ontologies are used to help represent scientific knowledge, especially in areas where categorisation is key, and data is big; the biomedical sciences feature heavily. A real example of applied ontology is the Gene Ontology:

> The Gene Ontology (GO) project is a collaborative effort to address the need for consistent descriptions of gene products in different databases. The GO collaborators are developing three structured, controlled vocabularies (ontologies) that describe gene products in terms of their associated biological processes, cellular components and molecular functions in a species-independent manner.
> http://geneontology.org/faq/what-go

A gene product is a protein or RNA generated when a gene is expressed. Scientists all over the world are investigating a vast array of gene products, in a multitude of different biological species. The aim of the GO project is to standardise the ways in which scientists record the

information they discover, so that it becomes easy to compare gene products from different species, or to search for gene products with specific functions.

What is the relationship between applied ontology in this sense, and philosophical ontology? Let's not get hung up on the distinction between 'metaphysics' and 'ontology': as we saw earlier, different philosophers use these terms in different ways, and it's not always clear what's at stake in the choice of words. The more important question here is what relationship there is between scientists' work on something like the Gene Ontology, and metaphysical or ontological work traditionally done by philosophers.

Some information scientists take pains to distinguish a computer science sense of 'ontology' from the philosophical sense of 'ontology'; the tone is not of distinguishing pure and applied ends of a single spectrum, but rather of disambiguation, separating two notions that have little to do with one another. For example, here is Tom Gruber, a major figure in the field of ontological engineering and co-founder of the company which first developed Siri:

> In philosophy, one can talk about an ontology as a theory of the nature of existence (e.g., Aristotle's ontology offers primitive categories, such as substance and quality, which were presumed to account for All That Is). In computer and information science, ontology is a technical term denoting an artifact that is designed for a purpose, which is to enable the modeling of knowledge about some domain, real or imagined. (Gruber 2009; note the sarcastic capital letters!)

In contrast, here are philosopher Barry Smith and biologist Bert Klagges:

> Applied ontology is a branch of applied philosophy using philosophical ideas and methods from ontology in order to contribute to a more adequate presentation of the results of scientific research. (Smith and Klagges 2008: 21)

This isn't just boundary policing: the disagreement about whether applied ontology should be 'philosophical' involves a disagreement about what makes an ontology for a given domain correct. Roughly speaking, the philosophers understand their goal in terms of accurately representing the reality of the domain, whilst many information scientists understand their goal as accurately representing beliefs about the domain, in order to facilitate communication.

For a database of restaurants, different considerations seem to pull in each direction. On the one hand, the database should include the real locations of the restaurants, not where people often mistakenly remember them as located. This is because people searching the database will likely have the immediate goal of getting dinner, and need accurate information about where to find it. On the other hand, the database should reflect restaurant-goers' perceptions of different cuisines, even if these perceptions are in fact mistaken. If the database is for east Scotland, and if people in that region think of deep-dish pizza as typically Italian, then deep-dish pizza restaurants should be classified as 'Italian' in the database even though that style in fact originates in Chicago.

Why does this distinction between reality and beliefs about reality supposedly correspond to a distinction between philosophy and information/computer science? One reference work explains:

> The goal with a computer science ontology is to make knowledge of a domain computationally useful. [Compared to philosophy, t]here is less concern with a true account of reality as it is information that is being processed, not reality. The definition used here (and any other definition for that matter) is contentious and many will disagree with it. Within the bio-ontology community there are those that take a much more philosophical stance on ontology. (Stevens, Rector and Hull 2010)

Putting weight on a distinction between information and reality can seem peculiar: after all, if 'information' doesn't match reality, isn't it just pseudo-information? And how can there be 'knowledge of a domain' which doesn't correspond to reality? It may be OK to design a restaurant database around widespread inaccuracies about pizza, but surely we shouldn't pander to misconceptions in developing biomedical ontologies.

The 'computer science' picture seems to be that a single, accurate set of information, which corresponds to reality, can be represented in more than one way. The choice between different systems of representation is seen as ultimately a pragmatic matter: in particular, the pragmatic value of mutual understanding is very high, and so standardising the system of representation is the most important goal. In contrast, the 'philosophical' picture is that there is an objective fact of the matter as to how to represent information in the way which best matches reality, by carving nature at its joints. Of course, not every philosopher takes such an objective view about the nature and structure of reality. But it is true that most philosophers working in ontology are likely to take this objectivist view, and to believe that,

as philosophers, we can help establish how to carve nature at its joints; after all, the carving metaphor goes back to Plato (*Phaedrus* 265e).

Now, this picture is over-simplified, and, as Stevens, Rector, and Hull acknowledge, there are disagreements even within the information science community. But what's striking is that the dispute about the relationship between philosophical ontology, applied ontology, and computer science ontology is itself a philosophical dispute, turning on deep issues about the nature of reality, representation and truth.

So there are at least three possible ways in which philosophy may be 'applied' in this area. First, and most ambitious, there is the strategy of taking philosophical 'discoveries' about the deep structure of reality, and using these to help structure computer science ontologies (this is the option rejected by Gruber, and by Stevens, Rector and Hull). Second, there is the strategy of opening up the philosophical toolbox of conceptual resources, to see what works in the practical realm, without necessarily accepting any substantive claims by philosophers about the nature of actuality. Third, there is the strategy of thinking philosophically about the methodology and presuppositions of the discipline of applied ontology, looking more closely at claims such as 'it is information which is being processed, not reality'. This third strategy might be regarded as a branch of the philosophy of science, rather than an application of ontology or metaphysics as such, just as there are philosophers of science who discuss the methodology and presuppositions of physics, biology, economics, and so on. The papers collected in (Kumm and Smith eds. 2008) explore many of these issues in detail, whilst the Buffalo Ontology Site (http://ontology.buffalo.edu/) provides lots of links and information.

4. Case Study II: Social Ontology

Like 'applied ontology', 'social ontology' is the name of a recognised area of study which reaches beyond philosophy. The Cambridge Social Ontology Group has its centre of gravity within Economics. The Centre for Social Ontology is based in Sociology at Warwick. The *Journal of Social Ontology* – affiliated with the International Social Ontology Society – published its first issue in 2014. The *JSO* is edited from the University of Vienna by philosopher Hans Bernhard Schmid; the editorial board includes non-philosophers alongside many philosophers, including Barry Smith, leading light of applied ontology. (Intriguingly, Judith Butler, distinguished scholar of gender, critical theory, and more, is also a member of the board, suggesting an openness to 'continental' philosophical approaches to social

ontology; here I must acknowledge that this chapter explores applied metaphysics only within the 'analytic' tradition.)

Social ontologists study the nature of social reality, for example social groups, institutions, markets, rules, collective actions, and a myriad other social phenomena. What is the relationship between a group's action and structure, and the individual actions of group members? What is it for individuals to act jointly? What is it for an institution to structure behaviour? Must institutions involve potential sanctions or punishments? What is the difference between a worthless piece of paper and a dollar bill? What are we to make of Margaret Thatcher's claim that '…there's no such thing as society. There are individual men and women and there are families'?

Philosophers working on these topics typically draw on resources from philosophy more generally; this is of course unsurprising given their training, their colleagues, and their teaching responsibilities within philosophy departments. In order to understand collective action, it helps to understand individual action, intention, and commitment. To understand social conventions or norms, it helps to understand dispositions, patterns and regularities more generally. To understand whether there is such a thing as society, or merely individuals and families, it should be helpful to understand the ways in which parts relate to wholes, and the ways in which 'holistic' facts relate to more piecemeal facts: it should be helpful to think about philosophical notions such as existence, reduction, and supervenience.

Indeed, one of the most eminent philosophers of social ontology, John Searle, explicitly bases his thinking on his influential earlier work *Speech Acts: an Essay in the Philosophy of Language* (1969), thus marking a point at which applied metaphysics meets applied philosophy of language. He writes: 'With the exception of language itself, all of institutional reality, and therefore, in a sense, all of human civilisation, is created by speech acts that have the same logical form as Declarations' (2010: 12–13).

For Searle, a declaration involves a phrase like 'I resign', 'I excommunicate you', or 'War is hereby declared': when someone successfully uses a phrase like this, the very saying makes it true. If you are my boss, and I say to you 'I resign!', then it becomes true that I have resigned. Now, this doesn't always work: if you have already fired me, then I can't resign no matter what I say, and if I say 'I resign!' to my dog, then I haven't resigned. But nevertheless, in the right circumstances, I alter social reality (i.e. my employment status) by what I say (Searle 1979: 16-17). Searle develops a complex story about the conditions under

which declarations are successful, and the role of mutual acceptance in enabling this; he extends this to encompass institutional facts of all sorts, though, inevitably, it is controversial how far he succeeds.

Likewise, another prominent philosopher of social ontology, Margaret Gilbert, builds a far-reaching account of political obligation, law, shared languages and social groups on the basis of what she calls 'plural subjects' constituted by 'joint commitments' (e.g. Gilbert 1989, 2013). Setting aside important details, roughly speaking a joint commitment is made by two or more people when they undertake together to do or believe something together; each can hold the others accountable for any failure to meet this commitment.

Whilst Gilbert's work is richly philosophical, it is hard to read her as drawing distinctively upon metaphysics, as opposed to other areas of philosophy such as the philosophy of mind and action, ethics, and to some extent the philosophy of language. Likewise, many or most of the philosophers working in the area of social ontology have backgrounds in the philosophy of mind, political philosophy, or ethics, rather than in metaphysics. This remark isn't intended as criticism; moreover, I don't claim that such work is entirely unmetaphysical. After all, as I showed in section 2, metaphysical issues crop up in many areas of philosophy, from the ontology of artworks to the nature of values, so the fact that a philosopher is not explicitly drawing on 'core' metaphysics does not mean that metaphysics plays no role in her thinking.

Nevertheless, the apparent absence of 'core' metaphysics in much social ontology prompts a couple of reflections. The first is that it would be worthwhile taking a closer look at the resources of contemporary metaphysics, to see whether there is potential for fruitful interactions with social ontology. The second is that this situation provides an interesting twist on the notion of 'applied philosophy' or 'applied metaphysics'. We find plenty of philosophy applied to issues in social ontology, and social ontology clearly involves metaphysical-ontological questions in a broad sense, but the philosophy which is applied is not usually metaphysics. So these are metaphysical questions within applied philosophy, but they are not typically addressed by applying metaphysics.

What is the relationship between social ontology as pursued by philosophers (metaphysical or not), and social ontology as pursued by economists, sociologists and others? There are no sharp boundaries here, and less rhetorical resistance to philosophy than we found in some

information scientists' discussion of applied ontology. The Cambridge Social Ontology Group makes a distinction between

> …philosophical ontology, the study of features common to all phenomena of any domain of reality, and scientific ontology, interpreted as the study of specific phenomena of a domain.

> Thus for the social realm, philosophical ontology is concerned with investigating the manner in which social phenomena depend necessarily on human interactions [e.g. the claim that] that social reality is an emergent realm that is everywhere open, structured, processual and highly internally related.…Scientific ontology oriented to the social domain is concerned with the nature of such existents as money, gender, markets, technology, social relations, the corporation, care, regions, community, power, authority, trust, cooperation, testimony, institutions, norms, rules, custom, convention, collective practice, profit, output, income, wealth, identity, individual, social evolution, development, human flourishing, probability, society, economy, and so forth.

> (http://www.csog.econ.cam.ac.uk/)

Both philosophical and scientific ontology are seen as respectable pursuits in this context. Philosophical ontology is not to be confined to philosophy departments, and the distinction between the two seems to be one of degree rather than kind; this is reminiscent of the 'specificity conception' of applied philosophy discussed in chapter 1 of this *Companion*. In line with this specificity, social ontology beyond philosophy is more often closely informed by empirical studies than is philosophers' social ontology. Moreover, it is set in disciplinary contexts in which different ideas count as orthodoxy, to be accepted as default or else to be actively resisted. For example, Tony Lawson of the Cambridge group describes his intellectual trajectory as prompted in part by dissatisfaction with standard methodologies within economics. It seemed to Lawson that these methodologies focused on formal models, whilst neglecting 'social reality', i.e. how economic systems work in practice (Hirsch and DesRoches 2009). Philosophers interested in the nature of social reality are likely to begin from other motivations.

5. Case Study III: Natural Kinds in Psychiatry and Medicine

Within psychiatry, and within medicine more generally, a great deal of classification goes on. Diagnosis is a form of classification – of the patient, or of her condition – and diagnosis is often a necessary precursor to treatment. Medical research can advance when previously-

confused conditions are distinguished from one another, opening up the possibility of different types of treatment, or when seemingly-disparate symptoms are identified as aspects of a common condition. Even when diagnosis of an underlying condition proves elusive, identifying and classifying the patient's symptoms may be a first step towards alleviating them.

Classification has an especially central role in psychiatry, due to the immense practical significance of the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders* (DSM), now in its fifth edition. This authoritative (or authoritarian) text itemises the various clusters of symptoms or behaviours which are to count as mental disorders: over the years, disorders have been added, deleted, and reconceptualised, sometimes in highly controversial ways. The DSM is the standard point of reference within psychiatry, but is also used in legal contexts, and is central to reporting and billing of psychiatric treatment to health insurers. But what basis do such classifications have?

There is a long tradition within metaphysics of understanding classification in terms of natural kinds. Chemical elements, as represented within the periodic table, are a paradigm case of natural kinds: any atom belongs to one, and only one, of the elements, and understanding which element an atom belongs to enables us to predict and explain its behaviour. Biological species are also often thought of as natural kinds: to know which species an organism belongs to is, it seems, to know something fundamental and powerful about that organism.

So it is unsurprising that philosophers of medicine, and philosophers of psychiatry, have sought to understand whether diseases are natural kinds. The concept of disease fits into an interrelated cluster of concepts including health, wellness, injury, illness, and disability; these concepts are not purely descriptive, but involve normative judgements about the badness of disease, and the desirability of health. For example, the discredited claim that homosexuality is a disease may seem less judgemental than the claim that it is a moral failing, but it still incorporates the assumption that heterosexuality is, to put it crudely, Best, and that a 'cure' for homosexuality would be welcome.

We cannot investigate these important and interesting philosophical issues here, even though they involve aspects of applied metaphysics: the *Stanford Encyclopedia of Philosophy*

articles on 'Health', on 'Disability: Definitions, Models, Experience', on 'Feminist Perspectives on Disability', on 'Mental Illness', and on 'Homosexuality' provide ways into the relevant debates. Instead, let's assume that we have some grasp of the contrast between disease and health, in order to discuss some metaphysical issues concerned with the individuation and categorisation of diseases.

There is no consensus even with metaphysics about what natural kinds are. Rachel Cooper (2013) helpfully distinguishes three approaches. The kinds-in-science tradition takes natural kinds to be those categories, whatever they are, which are fruitful sources of explanation, prediction and understanding in science. The Aristotelian tradition takes kinds to be the source of identity, persistence and individuation for particular objects. The new essentialist tradition focuses on the features of a kind which are essential to it: for example, it seems essential to oxygen that oxygen atoms have eight protons in the nucleus.

As Cooper argues, mental illnesses in particular seem very different from chemical elements, for various reasons: for example, they can be chronically imprecise categories, and they can incorporate feedback loops, whereby categorising a patient can affect her behaviour and symptoms, for better or worse (Ian Hacking has written extensively about this phenomenon, e.g. in respect of multiple personality disorder in his 1995). Cooper herself argues that, if we adopt the more permissive kinds-in-science approach, then we can recognise that plenty of mental disorders are natural kinds. Beyond psychiatry, philosophical treatments of disease more generally sometimes draw upon metaphysical discussions of natural kinds, as when Benjamin Smart (2014: 252) sets out to 'posit a metaphysical ontology of diseases, that is, [to] give an account of what a disease is.'

What is the value of developing a 'metaphysical ontology' of diseases, or of mental disorders? Classification and categorisation can be an aid to understanding: to diagnose a patient is to identify respects in which she resembles other patients with the same diagnosis, and thus, it is hoped, to better understand her condition. In medicine and psychiatry, we often think of understanding as a route to treatment, though of course this presupposes the normativity of health; this fits with the ways in which Cooper likens some mental disorders to the phenomena studied by other sciences, seeing classification as a means to improve our ability to predict and control the world.

But categorising people and their conditions – in particular when we use categories thought of as 'natural' – may also seem to have ethical or political consequences.   If we take the example of chemical elements as paradigmatic, we may think of natural kinds as determining the intrinsic, essential features of the world, and as drawing sharp, immutable boundaries between different kinds of people. We can begin to imagine a nightmarish periodic table of humanity

At this point, metaphysics can come in very handy. Pursuing metaphysical investigations can help us understand the many forms of classification and categorisation, to see that we sometimes group things together not because of their intrinsic similarities, but because of their common environments, or reactions to those environments. Moreover, we can begin to understand the variety of ways in which classification schemes can be objective, subjective, conventional, contingent, essential and so on, and to separate out entangled concerns.

None of this work will in isolation help us understand disease or mental disorder, but it does provide a framework for engaging with these more 'applied' issues in a clearer way; Cooper's distinctions between the different approaches to natural kinds, and her advocating of a deflationary 'kinds-in-science' picture is a good example of this sort of contribution.

6. Further Examples

I focused on the three preceding topics for various reasons (including my own tastes and interests): both applied ontology and social ontology deal with metaphysics in the practical sphere, and each is developing a disciplinary identity of its own, whilst the issue of kinds in psychiatry and medicine is a fruitful example of philosophical debates about naturalness, realism and classification more generally. But other, sometimes underdeveloped, topics could equally well serve as examples of 'applied metaphysics', and in this section I will briefly mention a few, providing references for the curious.

The *non-identity problem* is an ethical issue which has roots in metaphysics. Many of our actions today – perhaps especially with regard to the environment – will have consequences for future generations of people, including those who are not yet born or even conceived. For example, our first-world habits of taking long-distance flights for leisure (or to give philosophy talks) contribute significantly to climate change, to the detriment of living standards later this century. We might think we should take future generations into account in thinking about whether to fly, take the train, or just stay at home this summer.

However, it seems plausible that our decisions about whether to fly will have consequences for *which* people will exist in the future. Perhaps you'll meet a charming future spouse when you take the train, instead of marrying that loser you would have met on the plane; perhaps the airlines will employ fewer people, and some of the people who are laid off will decide not to have kids. That is, some of the children who will be born if we take the flights will not be born at all if we stay at home. So who exactly are we harming if we decide to fly? If a future person complains that she is living in climate chaos because of our flights, we could remind her that she would not have existed at all if we hadn't taken those flights; instead, someone else would have been enjoying the fruits of our restraint. How, then, can we understand the idea that we owe it to future generations to fly less?

The non-identity problem is so-called because it turns on the non-identity of the people who exist in the two future scenarios, where we fly or don't fly. But this non-identity is a metaphysical claim, turning on seemingly abstract thoughts about the nature of identity, essence, and possibility: could the same person have been born from different parents? If not, why not?

Urging bioethics towards 'better philosophy', Julian Savulescu, editor-in-chief of the *Journal of Medical Ethics*, writes:

> Failure to appreciate this metaphysical fact about identity-determining reproductive acts infects legislation and policy. For example, in the UK and Australia, the supposed guiding principle 'paramount in law' for making reproductive decisions is the 'best interests of the child'. But these are almost entirely irrelevant to identity-determining reproductive acts such as IVF and genetic selection, and cloning. Legislation and practice are based on confusion. (Savulescu 2015: 28)

Savulescu's point is that a child who comes into the existence as a result of IVF, genetic selection or cloning will not exist at all if those procedures do not take place, so it is mere confusion to think about whether that child would be better or worse off as a result of the procedures: this is an instance of the metaphysical nonidentity problem. (See 'The Nonidentity Problem' in the *Stanford Encyclopedia of Philosophy* for details.)

Turning to a different issue: the nature of *causation in the law* is both important and contested. It seems plausible that, for someone to be legally responsible for some harm, she or he must have caused that harm (which is not to say that, moving in the opposite direction, causation entails legal responsibility). What, then, to say about cases in which we hold

people responsible for what they *haven't* done, for example in cases of negligence? Can we say that an absence, a non-event, is really the cause of a disaster? The question of causation-by-absence is a paradigmatically metaphysical question, applied here to an issue of great practical significance. (See 'Causation in the Law' in the *Stanford Encylopedia of Philosophy* for an overview of this and other issues, Moore (2009) for a major recent book, and Schaffer (2012) for a metaphysician's friendly critique of Moore.)

Finally, *risk* is a topic where metaphysical issues have been underexplored. Philosophers thinking about risk have primarily focused on ethical and political questions about when it is permissible to incur or impose risk, or on epistemological questions about how to identify and reason about risks. Threaded through these discussions are metaphysical questions about the nature of risk which do not always receive explicit attention; for example, in his 'Towards a Political Philosophy of Risk', Martin Kusch argues that 'We need a much better understanding of what is socially constructed about risks, and what this social construction entails for their reality and objectivity' (2007: 148). (See 'Risk' in the *Stanford Encyclopedia of Philosophy* for a useful introduction to this area.)

7. Conclusions?

As you read through the other chapters in this *Companion*, I hope you will now be able to spot metaphysical assumptions and ideas where they crop up, and to appreciate both the scope of metaphysics, but also the difficult of separating out metaphysical concerns from other philosophical and extra-philosophical questions.

Can we draw any general conclusions about the nature, possibility or value of applying metaphysics? It's useful to bear French and McKenzie's (2012) toolbox idea in mind: there is a lot to be gained by drawing on the distinctions, conceptual connections and clarifications made by metaphysicians, even for those who are sceptical about metaphysics of the most ambitious kind. It's also worth bearing in mind the many ways in which metaphysical questions permeate other areas of philosophy; metaphysics can crop up where you least expect it But on the whole I think we shouldn't expect or even want a very general story about how and where metaphysics can be applied: instead we should be open to new possibilities, new problems, and new ideas. I hope that the range of examples discussed in this chapter give some flavour of what can be exciting about applying metaphysics.

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