REVIEW

ONTOMETRY MEETS ONTOLOGIES: PHILOSOPHERS AS HEALERS


*By Peter Simons*

You are very complex. You consist of numerous anatomical parts at many levels of scale, granularity and function, and you live via similarly stratified physiological processes and systems, all (we hope) working well together. But when they don’t, you want the best available medical care—swiftly and efficiently, and informed by the latest research. In many cases, that research will inform your treatment through various biomedical information systems. So you have an interest in these systems’ being as good as possible. Problem: they often aren’t, for conceptual rather than technical reasons. So if philosophers can assist in improving such systems, they could save lives, including yours.

Ontology has at long last come out of the Philosophy Room and is starting to do useful work in the outside world. Information scientists, intelligence artificers and others have been using the word ‘ontology’ for some years for platform- or implementation-independent representation schemes, but this usage has only some things in common with the philosopher’s notion of a ‘science of being’. To distinguish the two, I shall use ‘Ontology’ for the philosopher’s sense and ‘ontology’ (or its plural) for the IT sense (and extend to cognates). It turns out that many of the systems for which ontology has been used contained and still contain serious defects from an Ontologist’s point of view, and these defects are more than just purists’ intellectual nitpicks: they seriously inhibit the effectiveness of large, important, and expensive schemes of data representation. To take just one example: in Chap. 7, ‘Classification’, of this
impressive collection, Ludger Jansen neatly epitomises the conditions that a good classification scheme should exemplify, notes that Borges’s famous whimsical Chinese Encyclopaedia Classification breaks every rule, and then less amusingly shows that similar errors are endemic in a large and important medical information system, the US National Cancer Information Thesaurus. In the following Chap. 8, ‘Categories: the Top-Level Ontology’, he exposes serious taxonomic sins in the top-level ontologies of Cyc (the registered tradename of Cycorp) and John Sowa (the computer scientist who invented ‘conceptual graphs’ – a graphic notation for logic and natural language), which is the more worrying since these projects cannot be said, unlike some of the earlier medical and biological ontologies, to have arisen in ignorance of the importance of philosophical exactness and hygiene. Jansen still finds a lot to commend in Aristotle’s categories, and the modified Aristotelian scheme he outlines informs the Basic Formal Ontology (BFO) of his teammates Pierre Grenon and Barry Smith.

Taxonomic schemes of a traditional tree-like variety offer many virtues in the organisation of and search for information, but their computerised implementation as inheritance hierarchies based on a single primitive ‘is_a’ predate philosophical involvement in ontology, and suffer from trying to do too much with very limited formal resources. In ‘Four Kinds of ‘Is_A’ Relation’ Ingvar Johansson anatomises the different relations that have been squashed together into one by early inheritance systems. In considering such basic medical subjects as anatomy it is obvious that is_a alone is insufficient, so ontologists sensibly added the basic mereological relation part_of. (This led to the coinage of the ghastly term ‘partonomy’ by analogy with ‘taxonomy’. Surely ‘mereonomy’ would have been better?)

In ‘Ontological Relations’, Ulf Schwarz and Barry Smith extend the number of important formal Ontological relations structuring reality and therefore requiring representation within any adequate ontology to include for example being located at a place at a time, participating in (object in event or process), instantiating (individual to universal). Only by being sensitive to the multiplicity and variety of Ontological relations, in advance of coding, can ontologists expect to provide knowledge representation systems that are adequate to the complexities thrown at us by the world.
If there is a single underlying thesis of this rich collection, it is that a good ontology should be predicated on scientific and epistemological realism. Only thus can ontologists keep pace with scientific advances and avoid the relativism or anti-realism of the post-Cartesian and post-Kantian moderns, whose invidious influence extended far into the twentieth century. One relatively unknown but influential victim and proponent of this excessive conceptualism was the Austrian terminologist Eugen Wüster, whose conceptualism became established, literally, as the international standard, when in the 1930s the International Standards Organization (ISO) adopted his terminological precepts. The damage done by Wüster’s conceptualism continues to our day. Some of its evils (not all) are exposed in Barry Smith’s ‘New Desiderata for Biomedical Terminologies’ and ‘The Benefits of Realism: A Realist Logic with Applications’. Another confirmed realist is Ingvar Johansson, whose ‘Bioinformatics and Biological Reality’ offers excellent reasons to prefer Popper’s fallibilist realism over Gunnar Myrdal’s ‘biasism’ (the idea that all science is biased) and Vaihinger’s sensationalist fictionalism. Johansson sees Popper’s important but analysis-recalcitrant notion of verisimilitude as providing the key to his realism and serving as the main reason to prefer his account of scientific knowledge over those rivals.

Other essays in this collection deal with the nature of biomedical ontologies, knowledge representation in general, and the idea that reality comes structured at different levels of granularity, which sanctions a perspectival approach to the world conceding nothing to Nietzschean relativism.

But the authors are several, and do not all pull in quite the same direction. Nor are all their conclusions consonant with tutored common sense. In ‘Occurrents’ Boris Hennig argues that individual occurrences, such as the endoscopy that a particular doctor performs on a particular patient, do not have structure and duration in themselves, but only in so far as they instantiate certain types. He considers the initial procedure of inserting the endoscope as both an endoscope insertion and an endoscopy: qua insertion it lasts 3 min, but qua endoscopy it lasts say 15. This is clearly absurd, and since Hennig makes a large number of well-judged ontological and terminological distinctions in this essay, which covers familiar material about activities, achievements, processes, etc., we may wonder how he managed to paint himself into such a corner. The answer is that
he has an aversion to tenseless predication. Of an endoscopy or other process it is never right, in his view, to say that it has a duration of 15 min, only (when it is going on) that it has lasted so long so far (for he asserts that no process is ever complete) and afterwards, once it is complete, that it lasted 15 min. This is not quite presentism, since Hennig does not deny reality to the past, but it is almost as bad. How will he account for the truth of true predictions about how long a future process will last? Allowing atemporal predications of duration, parthood and structure, the problem fails to arise. The insertion lasts 3 min and is part of an endoscopy lasting 15, a part with a different type from that of the whole, a non-homogeneity Hennig rightly stresses. While it is true to say of an ongoing endoscopy that will in fact be interrupted and not completed that it is an endoscopy, considered atemporally the event-term ‘endoscopy’ applies by default to complete endoscopies. Hennig’s animadversions against using quadruples of numbers to represent spatial and temporal locations in four-dimensionalism are simply not relevant. No one – well, extreme structuralists perhaps excepted – thinks that having an extra number in a tuple captures what is temporal about time, any more than they think the three other numbers capture what is distancy about spatial distances. The point is that small parts of occurrents are separated by temporal as well as spatial gaps, and when those gaps are quantified, real numbers get into the representation. Hennig’s essay is an interesting lesson in how apparently minor decisions in apparently abstruse philosophical method (abjuring atemporal predication) can have massive consequences (such as denying duration per se to individual processes), and so how delicately Ontological decisions must be made, balanced, and adjusted to one another in order to avoid nonsense.

The collection has an introduction and 13 articles, all of them worth reading. They are by a total of only nine authors, and four are dual-authored. The most prominently featured author is the co-editor Barry Smith, with two single-authored and three jointly authored pieces. Other authors are also multiply represented. This is teamwork more in the mould of the natural sciences than the humanities, and the themes and viewpoints overlap considerably. There is not total uniformity, however: one may distinguish more Aristotelian and more Kantian leanings among the authors. The volume owes its existence to the work done under generously funded projects from various non-governmental sources, and so
represents a welcome infusion of new finance into applied philosophical research. If this volume is any guide, the money has been well spent, and more of the kind should be encouraged.

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