Booknotes

'I write in the spirit of someone touring a museum of antiquities.' This is not the epigraph of Ian Hacking's *Why is There Philosophy of Mathematics At All?* (Cambridge University Press, 2014), nor, to be fair, does he make this remark about the whole field he is surveying. But it captures something of spirit of the book, one principal theme of which is to demonstrate how the topics which have engaged philosophers of mathematics have subtly morphed over the ages. Thus even such apparently clear-cut labels as Platonism and nominalism have meant rather different things at different times, which is one of the things Hacking is at pains to demonstrate.

Even the basic notion of a proof meant rather different things to Descartes and Leibniz. On the one hand proof is something which the mind can grasp as a clear and distinct idea; on the other, it is something produced by means of a string of statements, laid out line by line, linked by logically compelling steps. In our days of proofs generated by computers, which are humanly unsurveyable, this is no mean difference and may actually raise – for the philosopher at least – questions concerning the reliability of the computational steps. There is also the puzzling (and maybe, according to Hacking not puzzling enough) fact that not only is mathematics applicable to the physical world, unreasonably effectively, some might feel (or is it that the world is harmonic, to speak like a Pythagorean, because it appears like that because of the tools we use?). Further, arithmetic and geometry converge, a phenomenon which led Andre Weil (who wrote to his saintly sister on the topic) and his Bourbaki group to see mathematics fundamentally in terms of structures. And then there is also the question of mathematical necessity, which, quaintly perhaps to us, today, J.S. Mill saw as the source of deep-seated prejudices in 'morals, politics and religion', and hence politically evil; quaint, perhaps, but do we, today, have a coherent account of the hardness of the mathematical must?

Those familiar with Hacking's approach will not be surprised to find in his book wide-ranging historical references and journeys down surprising by-ways. They will also find a wealth of contemporary anecdote; indeed Hacking supplies us with a list of 'disclosures' of his own acquaintance with many of the figures he considers, which

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certainly enliven the text. And they will also find frequent expressions of Hacking's own forcefully stated opinions and reactions provoked by the matters under consideration. The vivid way Hacking presents many of the issues which arise, some of which we have listed above, in a way answers the question of the book's title. These questions are all of great interest, and, even if in posing them we do not always understand them completely; they all arise in the practice of mathematics, but in that they not answered directly in mathematical activity, they are in that sense philosophical. Having said that, though, it would not be unfair to observe that in Hacking's book some of these questions are brought out for inspection only for a time only and are then put back into their cabinet.

What underlies the whole book – and gives the answer to the question in the title – is the question of the objectivity of mathematics. In doing mathematics, do we have to believe that there really are things, out there, to which our calculations correspond? And how are we to conceive these realities, if such there are? At the end of the book Hacking quotes C.S. Peirce's view that hypostasisation (in this case, the turning of abstract mathematical terms, such as names for numbers, into objects) 'is the only kind of thinking that has ever advanced human culture'. But is this, in Wittgensteinian terms, glitter, moonshine, alchemy?

One of Hacking's own epigraphs is from Imre Lakatos, whom Hacking knew ('the old revolutionary), and was thanked by (as he tells us): 'Mathematical activity is human activity… But mathematical activity produces mathematics. Mathematics, this product of human activity, "alienates itself" from the human activity which has been producing it. It becomes a living, growing organism.' Whether there are traces of the old revolutionary's Marxism here in this quotation or not, throughout the book Hacking is appreciative of Wittgenstein's philosophy of mathematics. Following the lead of both Lakatos and Wittgenstein, Hacking enlists practicing mathematicians in the debate as to the independent existence of mathematical objects, into which their work researches and about which they make discoveries. Or does this mathematical world not really exist, except in the sense that within their work mathematicians talk about such things, yielding at most an internal realism? One feels that Hacking's own view would like it to be that in mathematical work it makes no difference at all whether there are (actually are, really are) numbers or not, or even whether we think there are. 'Stop asking for the denotation, ask for the use', Hacking tells us, but, as he also shows the testimony of practicing mathematicians is not so clear. Indeed they seem to be as divided as philosophers on the

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issue. We don't understand fully it, it seems, nor, as Hacking also points out in his conclusion, do we understand what one of his mathematical witnesses describes as 'the enigmatic matching of nature with mathematics and of mathematics by nature'. So the philosophy of mathematics is perennial, even if the way the basic questions are phrased varies. Perennial yes, but, perennially inconclusive: so maybe a perennial *temptation*, leaving actual mathematics where it is.

Hacking is, of course, well known for his writing on the way psychological and psychiatric classifications seem to be, if not actually invented, at least dependent on how people are classified, and that there is a contingent, historical aspect to this. So what would he say about axorexia and bulimia, eating disorders, which if not actually of recent invention/discovery, are certainly far more prevalent now than, say, 100 years ago? Rene Girard, in his *Anorexia and Mimetic Desire* (Michigan State University Press, 2014) strives to bring anorexia within his general theory of mimetic desire, that which sees much of human behaviour in terms of competitive imitation. Girard would not dispute the comparatively recent provenance of the phenomenon of eating disorders. Indeed he dates its genesis to the occasion in the second half of the nineteenth century when Eugenie, Empress of France and Sisi (Elisabeth), Empress of Austro-Hungary abandoned their crinolines and compared (competitively) the actual, uncorseted slenderness of their respective waists. This fashion caught on gradually through the twentieth century till we are where we are to-day.

This observation might not itself be of great interest, save for the fact that Girard links his account of eating disorder and the cult of bodily slenderness (which is not confined to women) with a more general social analysis. We, as a species, are always competitive in his view. In past ages this competitiveness has often focused around ideals such as military and intellectual prowess, individual achievement in some higher field and, in Girard's view has typically been turned in a religious direction, with Christianity turning competitiveness on its head by valuing humility, compassion and a genuine inclusiveness above the exclusionary social and religious systems prevalent prior to it. But, thinks Girard, we live in a world from which, in the old sense, God, humanity as a whole and even the individual achieving in some field of genuine worth have all largely disappeared, in which all values and tastes are equal, in what some have called a post-human or post-modern world. Into this world celebrity for its own sake and the appearance of celebrity are all that are left to compete over. Girard observes that 'few people want to be saints nowadays, but everybody is trying to lose weight'. Hence

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the cult of slenderness, in itself meaningless and valueless, but it happens to have caught on, because that is what is competed over in the world of celebrity. Hence eating disorders, and hence, incidentally the prevalence of obesity on the part of those who have given up the competition (often because they are too poor to enter it). Is any of this philosophy, or of philosophical interest? At one level, probably not – though Girard's criticism of Freudian interpretations of anorexia do raise interesting methodological questions; but there may well be more to be said, from a philosophical point of view, about the deeper question posed by Girard, as to how empty celebrity has come to obsess and dominate so much in the world in which we live.