



Book reviews

Twisted

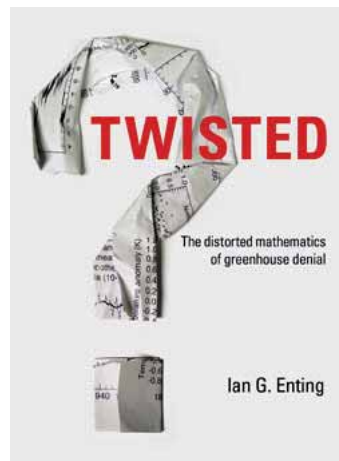
Ian G. Enting

Australian Mathematical Sciences Institute, 2007, ISBN 978-0-6464-8012-1

Former CSIRO Division of Atmospheric Research scientist, Dr Ian Enting, presents an intriguing little book of just 152 pages including references, a glossary and various other aspects, aimed at exposing the contradictions in the arguments of the ‘greenhouse sceptics’. In reviewing this book I kept pondering on the likely readership for such an essay. Would it be the ‘greenhouse sceptics’ themselves, I wondered? Not really — I would not think they would buy it. Rather, it may have readership in the undergraduate and lay community who are generally accepting of anthropogenic induced climate change. In other words, I doubt if this work would convince the hardened sceptics.

Rather, it is a concise book of armaments that the believer in anthropogenic-induced climate change can carry with them if ever confronted by a sceptic and driven to argument. In this, it provides useful responses to some of the currently popular sceptics’ questions.

Enting avoids the inclusion of a lot of mathematical equations or anything unduly complex that would otherwise quickly lose readership in some sections of the community. This makes for a very easy and enjoyable read although more serious readers may want to look further afield if they are searching for more detailed input on this issue. I was a little disappointed by the relatively small amount of attention paid to the application of coupled general circulation models (GCMs). Five pages are devoted to this enormously important approach (including one page that contains a large flow diagram) which really is the key to provision of the likely outcomes, globally, of anthropogenic-induced climate change. In this respect, I’m not sure the quick and engaging responses provided in *Twisted* will totally disarm the entrenched sceptic. Enting follows Al Gore’s approach in concentrating on interesting historical issues, which Enting does well, but perhaps at the expense of otherwise enlightening the reading audience on the outcomes associated with the fascinating area of science in climate and oceanographic modelling. Maybe others will take on this additional challenge now that Enting has provided us with a very useful formula by which to proceed.



One, finally, has to enjoy the insights Enting provides on the relative competencies, appropriate qualifications and backgrounds of some of the better-known sceptics. One suspects he could have driven further into this issue (and this aspect would have made for enticing reading!). For example, to be in charge of a meteorological or climatological office does not automatically qualify that person to be other than an administrator responsible for leave forms, rosters and human resources. Most of the population may not appreciate this fact regarding the management of scientific bureaucracies that Enting gently draws out. Similarly, a ‘climatologist’ may call themselves so but never have published on these issues or have qualifications associated with atmospheric or oceanographic circulation patterns at all. I found this to be one of the more insightful aspects in the pages of *Twisted*.

Roger Stone

University of Southern Queensland, Toowoomba, QLD.

E-mail: stone@usq.edu.au

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A Mathematical Mosaic: Patterns & Problem Solving (Second Edition)

Ravi Vakil

Brendan Kelly Publishing, 2008, ISBN 978-1-8959-9728-6

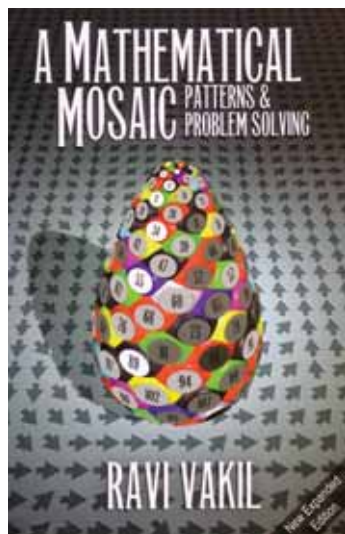
To understand the author’s objectives in writing this book it pays to know something about the author himself. As a teenager, Ravi Vakil represented Canada on three occasions at the International Mathematical Olympiad, the most elite mathematics competition for school students. He then went on to graduate school at Harvard University, during which time the first edition of *A Mathematical Mosaic* was penned and published. Since then, he has become an algebraic geometer of the highest calibre, with a rather impressive list of credentials and awards to his name. I have seen Vakil give extremely intelligible conference talks and this book portrays a little of that rare talent for technical communication.

A Mathematical Mosaic is essentially a platter of mathematical morsels, each occupying no more than a page or two. They have been carefully hand-picked so as to be easily digestible by motivated high school and early undergraduate students, whom the book is squarely aimed at. The vignettes are arranged into fifteen chapters ranging from broad headings like Number Theory or Geometry to more specific ones like Chessboard Colouring or Fibonacci and the Golden Mean. Vakil endeavours to serve them up while conveying the flavour of what it is to do mathematics and to be a mathematician. However, one can’t help feel that some of the delight in discovering these morsels has been lost by having the meal so carefully prepared and organised. Some of these gems are probably better appreciated if discovered on one’s own or, at least, within a greater context.

The topics discussed include some of the obligatory oldie-but-goodies such as the irrationality of $\sqrt{2}$, Euclid’s proof of the infinitude of primes, and Archimedes’

derivation of the volume of a sphere. Some less well-known facts concerning Pascal's triangle, Fibonacci numbers and combinatorial games also appear. Still other parts of the book are dedicated to ideas of a more recent vintage: the notion of cardinalities of sets, Arrow's theorem on voting systems, and a brief and ambitious attempt to discuss Galois theory.

Vakil expresses a sincere desire to stress that mathematics is not only about learning but also about doing and, to this end, there is a variety of problems littered throughout the book¹. There are occasional historical diversions in the form of mini-biographies of mathematical greats such as Archimedes, Newton, Gauss and Ramanujan, among others. Accounts of the lives of Buckminster Fuller and Richard Feynman are also thrown in for good measure since they, too, embody the spirit of a mathematician. A more unusual and gratuitous inclusion is a series of portraits, outlining the development and achievements of eleven young people, all of whom have excelled at the International Mathematical Olympiad. This second edition has allowed Vakil to further track their career progress since the book debuted twelve years ago.



The main weakness of *A Mathematical Mosaic* is that it does not adequately highlight the rich tapestry that is mathematics. Rather, it merely exposes some of its various jewels, most in a superficial sort of way. On the flip side, it may be argued that one can only do so much in under three hundred pages of sparse text. In general, Vakil's writing style is extremely informal and, as a result, easily accessible. However, coupled with the accompanying cartoons, the character of the book treads the line between lighthearted and patronising. Furthermore, the typesetting is a little unsightly to a stickler like myself; hopefully, the pages will not be so disagreeable to other readers' eyes.

A reasonable proportion of those purchasing *A Mathematical Mosaic* will consist of highly motivated, overly ambitious school students, keen on retracing Ravi Vakil's glorious record in mathematics competitions. And they will most likely be disappointed, for the book certainly does not focus on any secret tricks or techniques for solving competition problems. Rather, Vakil's objectives are more admirable and it is certain that he will inspire fledgling mathematicians and entertain older ones through this book.

N. Do

Department of Mathematics and Statistics, The University of Melbourne, VIC 3010.

E-mail: N.Do@ms.unimelb.edu.au

¹One example is the penny-in-a-corner problem which appears in Puzzle Corner 10 in this issue of the Gazette.

The American Mathematical Monthly , Volume 105; doi:10.2307/2589548. Publisher Website. Google Scholar. Keywords: Mathematical Mosaic / Patterns and Problem Solving.Â Click here to see the statistics on "The American Mathematical Monthly" . 13) T. Tao, Solving Mathematical Problems: A Personal Perspective, Oxford University Press. 14) R. Vakil, A Mathematical Mosaic: Patterns and Problem Solving, Mathematical Association of America. 15) P. Winkler, Mathematical Mind-Benders, A K Peters, Natick, MA. 16) D. O. Shkliarskii, The USSR olympiad problem book, Freeman, San Francisco. In addition to the AMC awards our department buys book prizes for the top students and I have regularly given the first edition of A Mathematical Mosaic: Patterns and Problem Solving as a prize. I was well aware of Ravi Vakil's incredible record of successes in the IMO and Putnam contest, not to mention his reputation for eloquence and generally for being the nicest guy you could ever meet.Â It was a thoroughly enjoyable experience. The marketing for this book relies heavily on Vakil's phenomenal success in high level math contests. As a result, I expected a master class in problem solving techniques. I was expecting too much. When it comes to mathematics, the book is more of a potpourri than a mosaic. This book is aimed at (exceedingly bright) high school students.