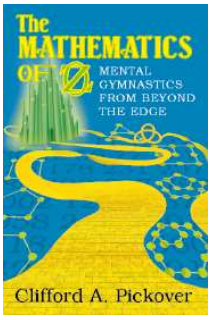
Clifford A. Pickover *The mathematics of Oz. Mental gymnastics from beyond the edge*, Cambridge University Press, 2002, ISBN 0-521-01678-9.



Clifford Pickover has made a (probably lucrative) business out of his hobby of posing challenging puzzles. He has now published 30 books, at a rate of nearly one book per year. These range from neoreality science fiction to fractal art and collections of mathematical puzzles and brainteasers, weird top-ten lists, historical anecdotes etc. With the mathematics of Oz, the "Pickover factory" has delivered another collection of puzzles. It is presented as if Dorothy (from the Wizard of Oz books) is kidnaped by some mathematically obsessed aliens (Dr. Oz and his assistant Mr. Plex). Terrible things can happen to Dorothy unless she can solve all these puzzles. Each puzzle is presented in one of the 108 different chapters which have often only one or two pages. Each chapter is not just one task, but contains subsequent tasks of increasing difficulty (if you can solve this problem, then what is the longest, shortest,... solution? or if you add this constraint, what will happen then? etc.). The subjects are in random order. They involve geometry (in a sphere with 2 billion points, is there a plane that has exactly 1 billion points on each side?), mazelike problems (connect 3 given pairs of squares in a bounded 2D area without intersecting the connecting lines), sequences and series (complete a given sequence of images), physical world (how many bricks do you need to build a road across the US?), probability (Buffon's needle problem), number theory (find 3 integers such that the sum of their squares is a cube and the sum of their cubes is a square). There are 4 levels of difficulty: from simply challenging to almost impossible to solve. The questions are phrased is a rather childish way (e.g. explaining what the square of a number is), but the solutions often require much more advanced mathematical techniques. These solutions are found at the end of the book. However, the solution pages often go much further than just giving the solution. They often end with posing an even more challenging question. The text is amply illustrated (the pictures often being an essential part of the problem). The Pickover fans, and some of the Martin Gardner fans –if these are nonoverlapping sets– will probably love this book as they loved the other ones. I have some problem with the character of Dorothy though. I think it is not functional and rather artificial. Frank Baum's Dorothy, just as Lewis Carroll's Alice, lives in a much more subtle fairy tale world than Pickover's Dorothy. They do not seem to be related.

A. Bultheel