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Geometric Origami, by Robert Geretschläger
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When Larry asked if I could review this book I pointed out that I couldn't even spell 'trigonometry', let alone do it. He said "Great! So we'll find out if an ordinary origamist can find it useful." So I've done my best.

This book shows a number of ways in which origami techniques can allow geometrical constructions that are not possible using the traditional Euclidian methods of straight-edge and compasses. This comes from the realisation that Euclidian geometry treats the idealised plane as an infinite set of points. A point can be defined anywhere on the plane and can be given a set of coordinates. If another point is also defined in this way, then a straight line can be created by joining them. This line can be extended to infinity at either end. In origami by contrast, we start with the lines—either by making a crease or by having a physical edge to our real, finite piece of paper. The points then follow afterwards, as places on these lines.

The actual mathematics is beyond me (I've probably even got the bit above wrong) but the result of using origami techniques is that some of the ancient puzzles have now been conquered. Examples are given of trisecting an angle and finding the cube-root of 2. Despite my mathematical ignorance, it gave me a thrill to trisect an angle—Euclid eat your heart out!

The second part of the book deals with using origami to create regular polygons. This includes the regular heptagon, which like angle-trisection is impossible to do with Euclidian methods. A method is even shown to obtain the largest possible heptagon from a square. Other polygons shown include the decagon (10 sides), dodecagon (12) and even a 19-agon. The origami favourites of the equilateral triangle, pentagon and hexagon are not forgotten. Although most readers will already be familiar with a way to fold these, I did learn a thing or two that could be useful.

If I need a particular polygon for a model, e.g. a hexagon to fold a flower, then I want the fewest un-wanted creases. So if I make a polygon using the methods in this book I would use it as a template to cut out a 'clean' one from fresh paper. So I feel that the book is really for a mathematics enthusiast who will see the challenge of constructing a regular heptagon or a trisected angle as an end in its own right. And good for them! The world needs more origami-inclined mathematicians.

David Raynor