

Mathematical Card Magic: Fifty-Two New Effects

REVIEWED BY ROB EBY

I grew up around decks of cards. I cannot remember a time we were not playing hearts or cribbage in my house, and I learned to play bridge at a young age. I am also interested in magic and, of course, mathematics. So I was eager to read Colm Mulcahy's book *Mathematical Card Magic: Fifty-Two New Effects*, which brings together all three of these interests. It did not disappoint.

If Colm Mulcahy's name sounds familiar, it is likely because he has been writing the MAA's *Card Colm* blog for many years (<http://cardcolm-maa.blogspot.com/>). On his blog, and now in his book, he describes card tricks that succeed because of some underlying mathematics. He describes these card tricks as “mathemagic.”

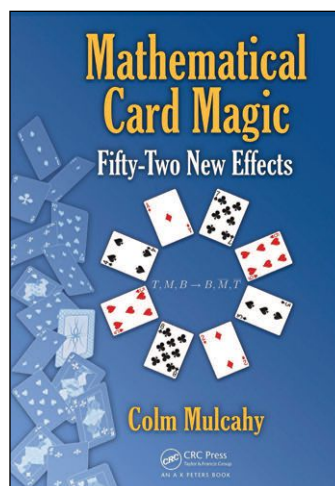
Lest the reader think—as many of my colleagues did—that the mathematics of card tricks extends only to “counting cards,” here are some of the terms in the index: arithmetic progression, binary error correcting codes, bipartite graphs, combinations, complement of a set, cycle decomposition, De Morgan's laws, generalized Fibonacci numbers, Markov chains, modular arithmetic, and a number of entries under statistics.

Wonderfully Organized

The book is wonderfully organized. The first 24 pages contain basic tips on stage presence, advice on how to handle a deck of cards, and explanations of the mathematical essentials needed for the rest of the book, like modular arithmetic, probability, and techniques of counting.

There is also a rating system for each trick, with four symbols to rank the sophistication of the mathematics, the entertainment value of the trick (think: “the wow! factor”), the level of setup required (such as putting special cards in certain places in the deck), and the difficulty level of the trick (in terms of card handling and memory).

There is also a phone handle symbol beside those tricks that require an assistant in the know—although unlike an ordinary magician's assistant, this one must be prepared to do some mathematics. The introduction contains a nice touch of listing 21 tricks that can



be done rather easily, without any prepping of the deck. There are also eight pages of references, many of them webpages, for further reading.

My favorite part of the book is the way each trick is presented. First there is a “How It Looks” section describing the trick from the audience's perspective.

Then a “How It Works” section explains how to perform the trick. Finally, a section describes the mathematics and explains how it works in the trick.

Mulcahy has a conversational tone throughout. However, by no means is there a loss of rigor, as he proves many of the principles that he uses. In fact, this book would make an excellent addition to any math club library, and it would provide a fun way to introduce important mathematical concepts.

A junior mathematics major should be able to understand all of the topics, while readers with less mathematical background should be able to grasp most of the ideas. The mathematics in a few of the tricks is quite elementary, so I would even suggest some of them for those aspiring magicians who are not that keen on mathematics.

Of course, you may want to keep this book and the ideas contained in it to yourself. As Mulcahy writes, “you should really think twice before divulging how an effect works. As soon as you explain it, people cease to be entertained.” I'm glad he didn't take his own advice and that we have this wonderful, entertaining book. ■

When Rob Eby is not helping students see the joy of mathematics, he is playing strategy games with his children.

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