

## **C.S. Peirce's "First Curiosity": The World's Most Complicated Card Trick**

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About 1860 I cooked up a *mélange* of effects of most of the elementary principles of cyclic arithmetic; and ever since, at the end of some evening's card-play, I have occasionally exhibited it in the form of a "trick" (though there is really no trick about the phenomenon) with the uniform result of interesting and surprising all the company, albeit their mathematical powers have ranged from a bare sufficiency for an altruistic tolerance of cards up to those of some of the mightiest mathematicians of the age, who assuredly with a little reflection could have unraveled the marvel. (Collected Papers of C. S. Peirce, Vol. 4, Book III, Chapter 1).

There followed sixty pages of description and explanation of this "trick", which remained unknown by magicians until Tom Ransom rediscovered it in 1955. He in turn sent it to P. Howard Lyons, who published it as "the world's most complicated card trick," in the Nov. 1955 issue of *Ibidem*, a magazine for advanced card magicians.

It remained a curiosity, since few, if any, magicians would care to struggle through Peirce's description of cyclic arithmetic just to be able to do a relatively boring card trick. But one magician — Alex Elmsley — persevered. Elmsley had an ideal background, being both a technical systems analyst of the "bits and bites" variety, as well as one of the most brilliant creators of card magic of modern times. Elmsley isolated two principles in Peirce's trick and developed two card tricks of his own using what he called Peirce's first and second principles. I'll describe Elmsley's application of Peirce's first principle, which is presented as a humorous bet, but which could conceivably be used as an actual bar bet. The second principle, and the trick based on it, is much more complex, so we'll leave that for now.

The "con-man" — that's you — approaches someone who looks like they would be willing to make a bet; hereafter called the "sucker". You take out any 12 cards from a normal deck of playing cards. To illustrate the bet, you have the sucker pick any number between 1 and 12. Let's say he chooses 7, but any number will do. The sucker deals the cards into two face-down piles. When he reaches the 7th card in the deal, he turns it face-up, then continues dealing the rest of the cards. Finally he puts the first pile on top of the second pile. That's the procedure that is to be used throughout.

Here's the bet: if the card that falls 7th in any deal is face-up, the sucker wins \$100. If it's face-down, he turns it face-up and pays you \$1 the first round, \$2 the

