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How Amazing! What a Surprise!

Beyond Coincidence. *By Martin Plimmer and Brian King, Icon Books, Cambridge, UK, 2004, 292 pages, £12.99.*

BOOK REVIEW

By Philip J. Davis

On page 259 of this book we read:

"A man called Todd was at the Australian Rules Football Grand Final in 1990, where spectators were tearing up pages from telephone books and tossing them into the air whenever a goal was scored. A shredded strip landed on Todd's lap. Just as he was about to brush it away he noticed that he was looking at his own name, address and telephone number."

Was this a coincidence? Just what is a coincidence? Was it a coincidence when I called Fred yesterday and Fred answered, "Hey, what a coincidence, I was just about to call you up"?

Is it a coincidence that there are thirty James Murphys listed in the Providence phone book? Surprise, surprise.

Is it a coincidence, I teased my young son years ago, that the ocean ends precisely where the shore begins?

Martin Plimmer and Brian King, two British media men who have worked in radio, have put together a fun book, an anthology of coincidences, some of which go back centuries. The hundred or so short items in their book are as addictive as salted peanuts.

Get set to read what such well-known writers and scientists as Schopenhauer, Marie Corelli, Arthur Koestler, Carl Jung, William Hartston, David Bohm, Wolfgang Pauli, and Ian Stewart have said about coincidences.

I have mused about the topic myself, once asking in print, "Are there any coincidences in mathematics?" (This brings up other issues, and I'll not pursue the question in this article; for readers interested in this and other ideas mentioned here, see the resource list that appears at the end of this review.)

Thinking about coincidences has led to some very strange notions. Get set to read here a mishmash of "explanations"—written very lightly—that embrace luck, chance, probabilities, prevision, ESP, the paranormal, synchronicity, the collective unconscious, the occult, putative incidences of plagiarism, teleology, the mystical, numerology, the Book of Revelation, levels of reality, dreams, serendipity, providence, accident, curses, doppelgängers, altered states of minds, theosophy . . . and whatnot.

Coincidence has been said to be destiny, fate, fortune, kismet, a message from the Deity. Diametrically opposed is the view that we make our coincidences and that, like "luck," coincidences favor the prepared mind.

What is a coincidence? All of us know what a coincidence is, but the authorities seem to disagree. My *American Heritage Dictionary* says that a coincidence is "an accidental sequence of events that appears to have a causal relationship." *Webster* says that to count as coincidence, events must be acausal. Persi Diaconis and Frederick Mosteller (alas, not referred to in this book) agree with *Webster* and define a coincidence as "a surprising concurrence of events, perceived as meaningfully related, with no apparent causal connection."

We love to read about coincidences, and Plimmer and King have satisfied this love of ours fully. When someone tells us of a personal coincidence, we can usually match it with one of our own. Thus, when I told Gail Corbett, editor of *SIAM News*, that I was about to do a review of *Beyond Coincidence*, she couldn't resist supplying me with one of her favorite coincidences:

"Back when I had just started at SIAM, Barry Cipra called to pitch an article about a Hungarian mathematician who, he said, had succeeded in 'squaring' the circle (with 'squaring' not to be understood in the usual sense). The notion of squaring the circle was completely foreign to me, so I told him I'd have to ask my boss, Ed Block.

At home that night, I opened Thomas Mann's *The Magic Mountain*, a book that I was just about to finish. On the page I turned to, a new patient had arrived at the sanitarium: a Maître Paravant, whose passion in life was squaring the circle."

Though we love to talk about them, at the same time we can be suspicious and critical of coincidences. The great English novelist Thomas Hardy laced his plots with coincidences and low-probability events, and critics have taken him to task for it. Thus, rare coincidental events can give rise to contradictory feelings: (1) The events result from "pure chance," meaning—I suppose—that an explanation is neither necessary nor possible. (2) An underlying cause must be sought and can ultimately be found.

Now that I've used the probability word again, I should point out that the authors consulted mathematician Ian Stewart, who "was not impressed" and explained coincidences probability-wise and did not attribute strange potentialities to them. If, in addition to Stewart, the authors had consulted a classic paper of Diaconis and Mosteller, they could have cited Diaconis and Mosteller's taxonomy of coincidences: (1) coincidences that have hidden but discoverable causes (which, they say, are not really coincidences at all); (2) coincidences that arise from psychological states of mind; (3) coincidences whose probabilities are low, but higher than what one might think. Diaconis and Mosteller imply further that (1) an event with a low probability (say, one in ten million) does occasionally occur, and (2) an event with a very low individual probability (say, one in ten trillion), when combined with ten million instances of it, as in a lottery, also occurs from time to time.

In his book *Probability and Life,* mathematician and prolific writer Emile Borel (1871–1956) took a stab at formulating these vague cut-offs and estimated that an individual will not experience an event whose probability is 10^{-6}, that a 10^{-15} event will not be observed by the world population, and that 10^{-500} is an absolute impossibility. These figures always amused me. Make up your own.

Mathematician and prolific writer Emile Borel (1871–1956) estimated that an individual will not experience an event whose probability is 10^{-6}, that a 10^{-15} event will not be observed by the world population, and that 10^{-500} is an absolute impossibility. These figures always amused me. Make up your own.

Coincidences surround us and astound us. Magician Diaconis has devoted much ink and many lecture hours to the necessary but regrettable act of demystifying the mysterious. He has followed in the honorable footsteps of Magician Harry Houdini, who devoted much time to defrocking the priests of spiritualism and ouija boards by exposing their tricks. Why, then, regrettable? Because the demystification contributes to what some critics have called "the disenchantment of the world" that leaves us with dry rationalism.

Probability texts and papers are filled with what are called "birthday paradoxes," e.g., if 23 people are in the same room, there's a better than fifty–fifty chance that at least two of them will have the same birthday. Now allow me to reveal my favorite coincidence. My wife and I were born on January 2 of the same year, and years later we were married on January 2. Now let the combinatorialists and probabilists of the world compute, using whatever assumptions of probability they wish, the expected number of couples in the United States who can amaze their listeners with similar claims.

My story has a bit of a sequel. A few years ago, returning from a trip to Europe and passing through Immigration at Boston's Logan Airport, my wife and I presented our passports to the immigration officer; he examined them and held us up. He had never seen anything like this before. There must be a mistake; at least one of the passports must be invalid—a very serious matter, if true. We did not have our birth certificates handy, and it took a bit of explaining before he let us through. (Question: How does one *explain* what *is*? And how, the philosopher Alfred Ayer once asked me, does one *know* what *is*?)

In conclusion, here is another of Plimmer and King's stories, one that broke me up when I read it:

"Niels Bohr used to tell the story of a Mr. Jones who had a horseshoe above his door. Someone called him on it and said, 'You don't believe in that stuff, do you?' Mr. Jones answered, 'No of course not, but I understand it works even if you don't believe in it.' "

Bohr was always interested in levels of meaning. Perhaps it's a coincidence that quantum theory—with which some people have problems—works. Is it a coincidence that mathematics works in physics? Now that's one explanation.

For Further Reading on a Very Popular Subject

P.J. Davis, "Are There Coincidences in Mathematics?," *American Mathematical Monthly*, Vol. 88, No. 5, 1981.
P. Diaconis and F. Mosteller, "Methods for Studying Coincidences," *Journal of the American Statistical Association*, Vol. 84, 1989.
T.S. Nunnikhoven, "A Birthday Problem Solution for Nonuniform Birth Frequencies," *American Statistician*, Vol. 46, 1992.
I. Peterson, *The Jungles of Randomness: A Mathematical Safari*, John Wiley & Sons, Hoboken, NJ, 1997.
I. Stewart, "What a Coincidence!," *Scientific American*, June 1998.

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