

Thanks from an appreciative reader— Bruce Reznick, 10/21/10

Like most of the people in this room, I read a lot when I was growing up, and the authors who wrote what I was reading had a huge influence on my view of the world. For mathematics, I mainly mean Martin Gardner, through his column in *Scientific American* and the books which collected and amplified those columns, and Constance Reid, through her amazing book *From Zero to Infinity*. Both of these wonderful people have passed away in the last six months, living into their early 90s. The authors of non-mathematical works who had the greatest influence on me were Martin Gardner, through his skeptical masterpiece *Fads and Fallacies in the Name of Science* and Isaac Asimov, through his wide-ranging and endlessly erudite non-fiction. Those two, plus *MAD Magazine*, gave me a suspicion of self-proclaimed authority which has served me well all my life. I had other interests of course – my childhood heroes were Mickey Mantle and Jerry Lewis – but everything eventually returned to mathematics: I wondered how “6” could be considered a perfect number if it was on the back of Cleve Boyer’s Yankees uniform, while Mickey Mantle wore a “7”.

I had always been fascinated by numbers. Some time before my fifth birthday, my parents remember hearing me announce that it was “July 48”. No, they corrected me, it’s “August 17”. “But they’re the same thing,” I am alleged to have replied. My father was writing for the Robert Q. Lewis comedy variety show on radio, and he would bring home the unused tickets, so I could play with the numbers printed on them. My favorites (suspiciously in retrospect) were those ending in “1”, “4”, “5”, “6” and “9”. Of these, “4” was the very best, but only if it was written as an isosceles right triangle with extended legs. The open version of the numeral with parallel vertical lines was somehow frightening to me then.

The wind was at my back as a young mathematician: my parents were supportive of any interest that my brother or I might have, and could afford to buy me the books I wanted, and my school, Hunter College Elementary School in New York City, was a laboratory for teaching techniques. I was a guinea pig for the new math. My parents would go to the rows of used magazine stores on Second Avenue and bring back copies of *Scientific American*. At first, this was because they had attached “reader response” cards listing the numbers from 1 to 600 in 24 rows of 25 integers, which I could play with endlessly. These were my tin soldiers. After I found Martin Gardner’s column in the magazine, they subscribed and would even try to find earlier issues referenced there. (My father also owned some of Gardner’s early work: pamphlets of jokey dialogue to be used by magicians between their tricks.)

There isn’t enough time to talk much about what in particular fascinated me, though I spent much of the sixth grade working through the problem of the four 4’s. Around that time a new PhD in mathematics found a way to write all integers using only one 4 and a lot of symbols. His name was Donald Knuth and I wonder what ever happened to him.

What I absorbed unconsciously from Martin Gardner was that:

- (i) Other people found mathematics to be as much fun as I did, and they continued to do so when they grew up;
- (ii) They seemed to be able to have jobs which let them work mathematical problems;
- (iii) New mathematics was being found all the time.

Gardner filtered much of his numerological playfulness through the fictional character of Dr. Matrix. I treasured him long before I knew what a matrix was, or realized the significance of the initials of his first two names: Irving Joshua.

Students today live in a different environment in which wonders such as Martin Gardner's columns remain easy to find on the web after they've appeared in print. Perhaps they are appreciated less intensely because they are "always there". I teach an honors research seminar for undergraduate math majors every spring and at the end of the course, I usually give the participants a book which might inspire them to continue their research. The book is usually *The Colossal Book of Mathematics*, a "greatest hits" collection of Martin Gardner's columns. This keeps his influence going to the next generation.

When my parents asked me what I wanted for my 16th birthday, we were living in Los Angeles, and this particular present was a big deal back then. I'm sure I was the only kid at Uni High who got Leonard Eugene Dickson's three-volume *History of the Theory of Numbers*, which Martin Gardner had cited so often in his column. My classmates' birthday cars have vanished to rust by now, but these three volumes of *Dickson* live in my office forty years later, and continue to inspire my work.

By the time I was ready to send mathematical material to Martin Gardner for his column, he was nearly ready to stop writing it. I sent two items about 30 years ago. The first is a trig identity:

$$\frac{\sin(3x)}{\sin(x)} - \frac{\cos(3x)}{\cos(x)} = 2$$

The second was a problem: "Find the smallest positive integer which has divisors ending in every digit modulo 10." This one he put into one of his *Science Fiction Tales*, one of the many books he wrote after he allegedly "retired". If this seems familiar to audience members in their late 20s, this was recycled as a problem for the USA Olympiad Mathematical Talent Search about 10 years ago.

About 20 years ago, I was on the MAA Publications Committee when I had the singularly gratifying experience of voting to bring *From Zero to Infinity* back into print and I was able to meet Constance Reid. About four years ago, I was asked to review a new edition of her book for the *Notices of the AMS*, and much of today's remembrance is taken from that review.

I got a copy of Martin Gardner's address in retirement from our mutual friend Colm Mulcahy, and I sent Mr. Gardner a copy of my review. He wrote back thanking me, and he sent me a copy of a long book review he had just written. He was 92 at the time.

We should all live so well for so long and do so much good for so many.