Money Mattered

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(Autobiographical Example)

I still remember my disappointment when I learned that my sophomore math teacher would be Mr Ralph Money instead of one of the famous math professors at my school. It was Fall 1956 and the school was Fairfield Prep, an all-boys Jesuit school in Fairfield, Connecticut. Money was a diminutive, round man, balding, always wearing a slightly tattered sport coat and striped tie. He often stood with his right hand thrust in his jacket side pocket, thumb on the outside, and a twinkle in his eye. It soon became obvious that my assignment to his class no accident of fate.

Money was a master punster and prankster. Several weeks before he started teaching us how to solve equations, he said that he would introduce equation solving with the Breakfast Problem. Every day he reminded us about the coming Breakfast Problem. At last, on that fated day, he wrote the equation y=m+2x on the board. He stood next to it, beaming, his hand outstretched, and said, "Here it is!" We all stared at it blankly. He finally broke the long silence, "Em and two Ecks, don't you get it? Breakfast!" He made it OK to invent puns.

On the day of the midterm, mindful of our mischievous inclinations, he warned us against cheating. After this stern warning, I was surprised to hear whispering from the last row. Money casually wandered out the front door of the room and then in through the back door. He stood behind the two whisperers and held a light bulb over them. He said, "Here have a little light," and the bulb came on. They were so startled that they fell to the floor amidst a pile of papers they weren't supposed to have open. He said, "If you were actually using those papers, you'd fail the test." Red-faced, they put their papers away. They probably never attempted to cheat anywhere again. Money knew how to teach lessons that last.

About midterm, Money said to me, "You are doing so well on your tests and homework that I fear you are bored with our slow pace. Go ahead, read through the rest of the book at your pace. Come to me and discuss any point you don't understand. When you get done with this book, I'll start you on another. Oh, and don't bother with the tests. I'll give you an A." He was the first person to reward me for being good at math.

Also at midterm, Money told me he thought I should join the Science Club. He was the faculty advisor. I was delighted at the invitation and joined the club immediately. We had lively weekly meetings in which we discussed various topics in math and science. When he learned that I had an interest in electronics and radio, he asked me to prepare three lectures on radio basics for the rest of the group. I undertook this task vigorously

and prepared some handwritten stencil handouts. My lectures were well received and my club mates told me they were exceptionally clear. Money beamed with pride at the end of each lecture and said I had a natural talent for teaching. This was when I knew I would be a teacher.

Soon after I joined the club, Money asked everyone to propose a project for the Southern Connecticut Science Fair next May. I proposed to build a computer that would perform additions. Money loved the proposal and told me to go for it. I remembered an ad in Popular Electronics for surplus relays at 25 cents apiece. I ordered 100 of them, more than enough for my machine. When they arrived, I saw why they were cheap. They came in heavy-duty steel hermetically sealed cans, originally designed for submarine use. It took me several weeks to hacksaw through the cans and liberate the relays. Money kept me on schedule with the design and construction. The computer added 6-digit numbers entered by dials on the front panel, and indicated its sums with columns of lights. When the time arrived, he arranged for a van and took the whole lot of us over to the fair to exhibit our projects. We set up inside a huge gymnasium with ceiling higher than Grand Central Station and with impressive reverberating echoes. Money went around and marketed us to all the judges, telling them how wonderful our projects were. The judges gave our projects warm receptions. When I came back the second day I found my computer with a big blue ribbon, a first-prize! I was elated. Money told me that I should not rest, but instead should get to work immediately to design an even better computer for next year.

This is exactly what I did. I spent all my free time during junior year working on a computer that would solve linear equations of the form ax+b=cx+d, where the coefficients were entered on dials in the front and the computer's answer for x appeared as a lighted numeral in a small window. The heart of the machine was a rotor that performed subtractions, the number of rotations being the value of x solving the equation. The machine itself was made from relays left over from the first computer and a set of stepping relays from a neighbor's discarded pinball machine. (The graphic output engine was the pinball machine's scoring relay.) When solving an equation, the machine made loud clacking noises, flashy sparks, and rank ozone smells. It was self-advertising. Huge crowds gathered to watch. The judges found it even before Money had a chance to tell them how wonderful it was. The next morning, to my surprise, I found that it won the Grand Award for the entire Science Fair! I was written up in the newspapers and got to go to the New England Science Fair at Brown University. Money drove me there personally. What was his advice now? Get to work immediately and build an even better computer for next year. He suggested that I go for one that solves quadratic equations.

Well, I attacked that project with similar vigor, constantly encouraged by Money's persistent punster presence. I decided to go him one better and designed a machine that solved cubic equations. I threw away all the relays and bought a bank of vacuum tubes to do the computation. I invented some tricky circuits (that never quite worked right) using sine

waves to represent positive numbers and 180°-shifted sine waves for negative numbers. After entering the coefficients, you turned a dial marked "x" until a voltmeter registered a minimum; the dial pointed to a value of x that solved the equation. It was quiet, fast, odor-free, and used no lights. As usual, Money talked up all our projects with the judges at the fair. The judges came and watched me solve equations with stone faces. The next morning I found my reward -- a red ribbon marking second prize. I felt quite disappointed because I was confident the machine would get a first prize or better. Afterwards, Money did not advise me to so a better computer next year. After all I was graduating and there would be no next year. Instead he said that I had just learned something about the value of marketing. My machine was too quiet and too unpretentious. It drew no attention to itself. I had provided no posters or patter about the relevance of cubic equations to everyday life. He told me to gaze upon the first-prize winners and note all the touches that drew attention -- the noises, the lights, the smells, the posters, and the entertaining stories. Science, he said, does not sell itself. Scientists sell it.

No teacher had a greater effect at encouraging me to identify and develop my strengths as a scientist and teacher than did Ralph Money. He also taught me many lessons about life.

Not long after I graduated in 1960, Ralph Money got married and had several sons who eventually went to Prep and graduated from there. He continued to teach math and until his retirement in the late 1980s. In 1995, just before my 25th Reunion, I tried to contact him. I asked the Prep Alumni Office to pass a message to him, saying I would like to see him again. (He kept his address and phone number private, they said.) He responded, indirectly through them, that he was retired and did not expect to come down to the reunion. Via the Alumni Office, I sent him a letter expressing my gratitude for all his help, shaping, and encouragement. He did not respond. I concluded that he valued his privacy and I reluctantly called off my attempts to see him.