

## ***The Fabric of Numeracy***

Follow the money trail.

Every criminal investigator knows that one of the best ways to unravel a mystery is to track its cash-flow. The will of the perpetrator is reflected in every dollar that changes hands. Find the stash – find the criminal.

His power is his will made manifest. For all of us in a cash-based economy, whether a criminal, a business owner, a scientist, or a parent buying a toy for his son, money converts will to reality. So money appears to be, in itself, power.

But the charm of money has veiled other forms of human power, all of them numerical. From deep in the roots of our prehistory until this very moment, power has been created and consolidated by the numerate. To be innumerate is to be subtly enslaved.

Manufacturing fuels an economy from cashless subsistence to cash-laden abundance. The Ugandan fisherman who earns \$20 a year is not so impoverished in the quality of his daily life; he has food, shelter, clothes, family and friends. But he is impoverished in his influence. The small circle of people he knows directly are the only ones he'll affect.

Compare this to an average worker in a manufacturing society. Even if he only makes a moderate wage, he votes with his dollars every day. Millions of people are ultimately influenced by his votes. Business owners and employees in every facet of the marketplace – from blue jean makers, to grocers, to auto manufacturers, to dry cleaners; doctors, to toy makers, to long distance telephone service providers. Beyond that, his political votes influence the flux of tax dollars; this impacts the military, the environment, the quality of prisons, the space program. His excess dollars may go to charities, entertainment, or education. His circle of influence is spectacular in comparison to our friend, the Tilapia fisherman.

Mathematics is the foundation of a manufacturing society. Hand-crafted goods are not subject, but any product that is made in volume or made by a team requires the precision communication that only Mathematics can provide. Of course the numerical power of money is also in play – whatever is needed to buy raw materials, pay staff, rent facilities, and more, but so is the numerical power of time; planning, organizing, scheduling. It is this total numerical power-set: money, time, communication, that enables us to envision something new, then make it real. Mathematics is power.

The present rise of manufacturing world-wide is simply breathtaking. And, thanks to telephony and the Internet, even service jobs, also Mathematically entwined, are going global. As more work enters a region, wages will rise and spur the growth of jobs in newer, lower wage areas. In time, their wages will also rise, and the trend will continue.

This economic empowerment will only accelerate over the coming decades. It will not only cover massive regions of the planet, but it will also dissipate power away from institutions to infuse individuals. Instead of 500 million people voting with their dollars (or pesos or Euros), billions will. Pockets of isolation will give way to a numerical fabric that will connect us all in countless trillions of interactions.

The upcoming global economy is utterly Mathematical at its foundation. To remain numerically unaware is to discard your autonomy, your self-determination. Learning Mathematics is not about getting a good job. It's about captaining your life. In this coming age, the innumerate will be at the blind mercy of the numerate.

And innumeracy is rampant. Educators are floundering, looking for ways to adequately equip the horrific proportion of students who fear numbers.

Why is this so? Math, properly introduced, is a skill easily acquired. Yet we've turned it into a struggle. The two primary culprits, I believe, are the shadowy remnants of our cultural subservience to the numerate elite, and failing to teach Mathematics in a top-down approach to top-down thinkers.

Our subservience to the numerate elite is demonstrated by our belief that some people are able to learn Math, but others aren't. As a culture, we simply give up on anyone who doesn't quickly show promise. Without ever openly expressing it, we're still bowing to the ancient Priesthoods who retained all Mathematical knowledge for themselves.

And the students least likely to grasp Mathematics as we teach it? The visionaries. The top-down thinkers who will one day sew together the larger concepts that inspire our culture's evolution. Which implies that it is the smaller thinkers – people of intelligence, yes, but people who prefer to find solutions to limited, well-defined problems - who presently hold the most sway.

If we are to maximize the conscious evolution of our species, if we are to empower those best able to see and communicate and create the highest version of Us, we must begin to teach Mathematics effectively to top-down thinkers.

As a top-down thinker who crossed over from innumeracy to numeracy, I feel compelled to share my insights. The shift in perspective that enabled my change happened in an instant, but was more than twenty years in the making. My goal is to teach that perspective to the struggling Math-challenged top-down thinkers who now fill our classrooms. These are the people who will one day see the myriad aspects of the greatness of humankind and unleash it. If only we give them the tools.