

In Praise of Randomness

Dale Easley's Blog

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There are those who tell me that I survived in order to write this text. I am not convinced. I don't know how I survived; I was weak, rather shy; I did nothing to save myself. A Miracle? Certainly not. If heaven could or world perform a miracle for me, why not for others more deserving than myself? It was nothing more than chance. However, having survived, I need to give some meaning to my survival.

from **Night** by Elie Wiesel

When I was a sophomore in college, my father died from leukemia. At the funeral, more than one of the people from the small town in the South where dad lived said to me, "You'll understand it all someday. It's part of God's plan." Many years have passed since then, and no plan is yet apparent. As the Bible says, "The rain falls on both the just and unjust." Dad was a just man. He happened to contract leukemia, but it could just as easily been someone else. The leukemia rain fell on him that day. To see his death as some sort of cosmic plan devalues his life and ignores its complexity.

For an adult, it is easier to rationalize a death—personal choices like smoking, excessive risk taking, job exposure to toxins, etc. For a child, that death is harder to justify with any sort of Holy Plan. In 1984, the year after all states started requiring car seats for kids, auto fatalities of kids ages 0 to 4 declined 26%. Does that mean that God simultaneously decided to kill fewer kids? Not likely. Or you might argue that our political leaders had the power but also the free will to create this law, saving lives. No doubt they had the power earlier. Were the additional kids who died because of legislative delay sacrificed to make some point?

I understand the idea of free will causing death and destruction. About a third of the children killed in crashes in 2011 were unbuckled at the time, so their parents free will was likely the cause of their death. Meanwhile, the child was innocent. Were the parents somehow being punished? It probably felt like it to many of them.) A study by the Insurance Institute for Highway Safety studied the impact when five states raised the required age for car seats or booster seats from 7 to 8 years. Deaths and serious injuries dropped 17%. So states that delay are using their free will to kill additional kids.

Irrational thinking isn't limited to parents and children. Ever watched people in a casino? In fact, casinos depend largely on people not understanding statistics; that, and our need to be entertained. A power of statistics is that it helps us extract a pattern from the noise. For something to be random doesn't mean there is no pattern. In fact, casinos can predict quite accurately what portion of the money put into a slot machine is going to be returned to the gambler. What they can't predict is who will be pulling the lever at the time the money is returned. Each pull is independent of the last, despite what faith the gambler might have: "I've been putting money in all night. It's got to happen this time!"

In fact, the combination of a pattern with random noise is exactly what leads to evolution. An organism a bit taller or faster or resistant to disease, all by chance, is the one which lives to breed. Similarly, the occasional outlier in scientific development sometimes becomes the beginning of a scientific revolution (See Kuhn.) Back in my college literature days, we talked of both the classical and romantic impulses: working within established forms (such as Shakespeare's sonnets) versus creating new forms (like Poe's short stories). Often, it seems as if the individual's disposition and upbringing do more than anything to create the classicist or romantic. However, the times one is born into (the intellectual environment and the rapidness with which it is changing, like an oncoming Ice Age) set the context in which an innovation is rewarded and persists or becomes another dead mutation.

The field of statistics has generated a multitude of models for the underlying patterns in what often seems pure noise: how queues form, how black and white marbles come out of a hat, or what is the most difficult baseball record to break. Statisticians are creating an intellectual framework no different from Linnaeus grouping and naming the organisms of the world. Linnaeus picked a few characteristics that he judged important, and then sorted on that basis: hair or scales, eggs that had to be laid in water versus those laid on land, and skeleton on the inside or outside. However, in a sense Linnaeus judged the book by its cover. Inside was the writing, printed on the DNA of the organism.

Sometimes these statistical patterns can be idealized so perfectly that they become natural laws. But as a platypus is not most people's idea of a mammal (more of a boundary problem that arises in any man-made system), natural laws have behaviors on the margins—at very high or low temperatures, at very large or small scales, at very long or short times. In fact, what we mean by a natural law is something like, “highly predictable at the scale at which humans mostly function.” To go back to the casino analogy, most people don't function at the scale of the casino, where the wins and losses are nearly as predictable as gravity working on a falling bomb. They look for a pattern at the scale of the single slot machine they've been playing for the last two hours, find none, and project a mythological one upon it. If that gambler could step back and look at the bigger pattern, maybe they wouldn't play the game.

Do many religious leaders fear the same thing? That is, if people could see the larger pattern, might they not play the game? Would they commit suicide? (See Hamlet or *The Brothers Karamazov*.) Or become dangerous anarchists? (See Edmund Burke on the French Revolution or the latter days of Martin Luther.) Or might they, like a mutant fish, crawl onto a new landscape and open up possibilities not yet envisioned? After all, haven't religions evolved? And do the leaders fighting the change, like the legislator putting off the vote on requiring car seats, endanger others: a gay kid who commits suicide or a teenager who dies in childbirth?

What evolutionary history has shown us is that most mutations are deadly, that most new forms are dead ends, and that what works in one environment may not work in a new one. A certain level of continuity is crucial. But evolution also shows us that everything would have died off long ago without that simultaneous constant testing of the boundaries, leading to those rare but valuable changes. Because the world does not remain static. Things change. And adapting to that change requires something new. And the new is sometimes scary, but ultimately necessary.