II- Why I Do All This Walking, or How Systems Become Fragile

Relearn to walk -- Temperance, he knew not -- Will I catch Bob Rubin? Extremistan and Air France travel

ANOTHER FEW BARBELLS

Again, thanks to the exposure of the book, I was alerted to a new aspect of robustness in complex systems ...from the most unlikely of the sources. It came from two fitness authors and practitioners who integrated the notion of randomness and Extremistan (though of the Grey Swan variety) into our understanding of human diet and exercise. Curiously, the first person, Art de Vany, is the same one who studied Extremistan in the movies (in Chapter 3). The second, Doug Mc Guff is a physician. And both can talk about fitness, particularly Art who, at seventy two, looks like what a Greek God would like to look like at forty two. Both were referring to the ideas of *The Black Swan* in their works and connecting to it; and I had no clue.

I then discovered to my great shame the following. I had spent my life thinking about randomness; I wrote three books on dealing with randomness (one technical); I was prancing about as the expert in the subject of randomness from mathematics to psychology. And I missed something central: living organisms (whether the human body or the economy) *need* variability and randomness. What's more, they need the Extremistan type of variability, certain extreme stressors. Otherwise they become fragile. That, I completely missed.

Organisms need, to use the metaphor of Marcus Aurelius, to turn obstacles to fuel.

Brainwashed by the cultural environment and by my education, I was under the illusion that steady exercise and steady nutrition were a good thing for one's health --not realizing that I was falling into the rationalistic arguments; the Platonic projection of wishes into the world. Worse, I was brainwashed while having all the facts in my head.

From predator-prey models (the so-called Lotka-Volterra type of population dynamics), I knew that populations will experience Extremistan-style variability, hence the predator will necessarily go through periods of feasts and famine. That's us, humans --we had to have been designed to experience extreme hunger and extreme abundance. So our food intake had to have been fractal. Not a single one of those promoting the "three meals a day", "eat in moderation", idea tested it empirically to see if it is healthier than intermittent fasts followed by large feasts[4].

But Near Eastern religions (Judaism, Islam, and Orthodox Christianity) knew it, of course, with the fasting days --just as they knew the need for debt avoidance.

I also knew that the size of stones and trees was, up to a point, fractal (I even wrote about it in Chapter 16) --our ancestors had to face most of the time very light stones to lift, mild stressors, and, once or twice a decade, encountered the need to lift a huge one. So, where on

[4] There is a sociology of science dimension to the problem. The science writer Gary Taubes convinced me that the majority of dietary recommendations (about lowering fats in diets) stand against the evidence --I can understand how one can harbor beliefs about natural things without justifying them empirically; I fail to understand beliefs that go against both nature and scientific evidence.

Earth does this idea of "steady" exercise come from? Nobody in the Pleistocene jogged for 42 minutes three days a week; lifted weights every Tuesday and Friday with a bullying (but otherwise nice) personal trainer, and Played tennis at 11 A.M. Saturday mornings. Not hunters. We swung between extremes: sprinted when chased or when chasing (once in a while in an extremely exerting way), and walked about aimlessly the rest of the time. Marathon running is a modern abomination (particularly when done without emotional stimuli).

This is another application of the barbell strategy: plenty of idleness, some high intensity. The data shows that long, very long walks combined with high intensity exercise outperforms just running.

I am not talking about "brisk walks" of the type you read about in the Science section of the *New York Times*. I mean walking without making any effort, except of course to kill boredom.

What's more, consider the negative correlation between caloric expenditures and intake: we hunted in response of hunger; we did not eat breakfast to hunt, which had to accentuate the energy deficits.

If you deprive an organism of stressors, you affect its epigenetics and gene expression-- some genes are up-regulated (or down-regulated) by contact with the environment. A person who does not face stressors will not survive should he encounters them. Just consider what happens to someone's strength after he spends a year in bed, or someone growing up in a sterilized environment who, one day, takes the Tokyo subway where riders are squeezed like sardines.

Why am I using evolutionary arguments? Not because of the optimality of evolution --but entirely for epistemological reasons, how we should deal with a complex system with opaque causal links and complicated interactions. Mother Nature is not perfect, but has been so far proven smarter than humans, certainly much smarter than biologists.

So my approach is to combine evidence-based research (stripped of biological theory), with an *a priori* that mother nature has more authority than anyone.

After my *Aha!* flash, under guidance from Art de Vany, I embarked on an Extremistan barbell lifestyle: long, very long, slow meditative (or conversational) walks in a stimulating urban setting, but with occasional (and random) very short sprints, making myself angry imagining I were chasing the bankster Robert Rubin with a big stick trying to catch him to bring him to human justice. I went to the weight lifting rooms in a random way for a completely stochastic workout --typically in a hotel when I was on the road. Like the Grey Swan event, these were very, very rare, but highly consequential weight lifting periods, after a day of semi-starvation, leaving me completely exhausted, then I would be totally sedentary for weeks and hang around cafés. Even the duration of the workouts remained random --but most often very short, less than fifteen minutes. I put myself through thermal variability as well, exposed, on the occasion, to extreme cold without a coat. Thanks to transcontinental travel and jet lag, I underwent periods of sleep deprivation followed by excessive rest. When I went to places with good restaurants, like Italy, I ate in quantities that would have impressed Fat Tony himself, then skipped meals for a while without suffering. Then, after two and a half years of such apparently "unhealthy" regimen, I saw serious changes in my own physique on every possible criterion --the absence of unnecessary adipose tissue, the blood pressure of a 21 year old, etc. I also have a clearer, much more acute mind.

So the main idea is to trade duration for intensity --for a hedonic gain. Recall the reasoning I presented in Chapter 6 about hedonic effects. Just as people prefer to have large but sudden losses to small, but regular ones, as one becomes dull to pain beyond a certain threshold, unpleasant

experiences, like working out without external stimuli (say in a gym), or spending time in New Jersey, need to be as concentrated and made as intense as possible.

Another way to view the connection to the Black Swan ideas is as follows. Classical thermodynamics produce Gaussian variations, while informational variations are from Extremistan. Let me explain. If you consider your diet and exercise as a simple energy deficits and excesses, with a straight calorie-in, calorie-burned equation, you will fall into the trap of misspecifying the system into simple causal and mechanical links. Your food intake becomes the equivalent of filling up the tank of your new BMW. If on the other hand you look at food and exercise as activating metabolic signals, with potential metabolic cascades and nonlinearities from network effects, and with recursive links, then welcome to complexity, hence Extremistan. Both food and workout provide your body with information about stressor in the environment. As I have been saying throughout, informational randomness is from Extremistan. Medicine fell into the trap of using simple thermodynamics[5], with the same physics-envy and with the same mentality and the same tools as economists did when they looked at the economy as a web of simple links. And both are complex systems.

But these lifestyle ideas do not come for just self-experimentation or some quack theory. All that was completely expected from the evidence-based, peer-reviewed research that is available. Hunger (or episodic energy deficit) strengthens the body and the immune system --and helps rejuvenate brain cells, weaken cancer cells, and prevent diabetes. It was just that the current thinking --in a way similar to economics --was out of

[5] The financial equations used by the villains for the "random walk" is based on heat diffusion.

sync with the empirical research. I was capable of recreating 90% of the benefits of the hunter-gatherer lifestyle[6] with minimal effort, without compromising a modern lifestyle, in the aesthetics of an urban setting (I get extremely bored in nature and prefer to walk around the Jewish quarter of Venice rather than spend time in Bora Bora)[7].

The only thing currently missing from my life is the absence of panics, from, say, finding a gigantic snake in my library, or watching the economist Myron Scholes, armed to the teeth, walk into my bedroom in the middle of the night. I lack what the biologist Robert Sapolsky calls the beneficial aspect of acute stress, compared to the deleterious one of dull stress --another barbell in which no stress plus a little bit of extreme stress is vastly better than a little bit of stress (like mortgage worries) all the time.

Some, argued that my health benefits come from long walks, about ten to fifteen hours a week (though nobody explained to me why they would count as workout since I walk slowly), while others claim that they come from the few minutes of sprinting; I've had the same problem explaining the inseparability of the two extremes as I did explaining economic deviations. If you have acute stressors, then periods of rest, how can you separate the stressors from the recovery? Extremistan is characterized by both polar extremes, a high share of low impact, a low

[6] The argument often heard about primitive people living *on average* less than 30 years ignores distribution around such average --life expectancy needs to be analyzed conditionally. Plenty died early, from injuries, many lived very long --and healthy --lives. This is exactly the very same elementary "fooled by randomness" mistake, relying on the notion of "average" in the presence of variance, that makes people underestimate the risks in the stock market.

[7] By the same argument we can lower 90% of Black Swan risks in economic life... by just eliminating speculative debt.

share of high impact. Think that the presence of concentration, here energy expenditure, necessitates that a high number of observations do not contribute to anything except to the dilution. Just as the condition that makes market volatility explained by bursts (say one day in 5 years represents half the variance) requires that most other days remain exceedingly quiet. If one in a million authors makes half the sales, you need a lot of authors to sell no books.

This is the Turkey trap I will discuss later: philistines (and Federal Reserve Chairpersons) mistake periods of low volatility (caused by stabilization policies) for periods of low risk, not for switches into Extremistan.

Welcome to Gray Extremistan. Do not tamper too much with the complex system mother nature gave you: your body.

Beware Manufactured Stability

By a variant of the same reasoning we can see how fear of volatility, leading to interference with nature to impose "regularity" makes us more fragile across so many domains. Preventing small forest fires sets the grounds for more extreme ones; giving out antibiotics when it is not very necessary makes us more vulnerable to severe epidemics --and perhaps that big-one, the grand infection that will be resistant to known antibiotics and will travel on Air France.

Which brings me to another organism: economic life. Our aversion to variability and desire for order and our acting on it has helped precipitate severe crises. Making something artificially bigger (instead of letting it die early if it cannot survive stressors) makes it more and more vulnerable to a very severe collapse --as I showed with the Black Swan vulnerability associated with an increase in size. Another thing we saw in

the 2008 debacle: the U.S. government (or, rather, the Federal Reserve) had been trying for years to iron out the business cycle, making us exposed to a severe disintegration. This is the sort of reasoning I have against "stabilization" policies and manufacturing a nonvolatile environment. On that, later. Next, I will discuss a few things about the Black Swan idea that do not appear to easily penetrate consciousness. Predictably.

