Fooled By Randomness

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IF YOU'RE SO RICH, WHY AREN'T YOU SO SMART?

An illustration of the effect of randomness on social pecking order and jealousy, through two characters of opposite attitudes. On the concealed rare event. How things in modern life may change rather rapidly, except, perhaps, in dentistry.

NERO TULIP

Hit by Lightning

Nero Tulip became obsessed with trading after witnessing a strange scene one spring day as he was visiting the Chicago Mercantile Exchange. A red convertible Porsche, driven at several times the city speed limit, abruptly stopped in front of the entrance, its tires emitting the sound of pigs being slaughtered. A visibly demented athletic man in his thirties, his face flushed red, emerged and ran up the steps as if he were chased by a tiger. He left the car double-parked, its engine running, provoking an angry fanfare of horns. After a long minute, a bored young man clad in a yellow jacket (yellow was the color reserved for clerks) came down the steps, visibly untroubled by the traffic commotion. He drove the car into the underground parking garage—perfunctorily, as if it were his daily chore.

That day Nero Tulip was hit with what the French call a coup de foudre, a sudden intense (and obsessive) infatuation that strikes like lightning. "This is for me!" he screamed enthusiastically—he could not help comparing the life of a trader to the alternative lives that could present themselves to him. Academia conjured up the image of a silent university office with rude secretaries; business, the image of a quiet office staffed with slow thinkers and semislow thinkers who express themselves in full sentences.

Temporary Sanity

Unlike a coup de foudre, the infatuation triggered by the Chicago scene has not left him more than a decade and a half after the incident. For Nero swears that no other lawful profession in our times could be as devoid of boredom as that of the trader. Furthermore, although he has not yet practiced the profession of high-sea piracy, he is now convinced that even that occupation would present more dull moments than that of the trader.

Nero could best be described as someone who randomly (and abruptly) swings between the deportment and speech manners of a church historian and the verbally abusive intensity of a Chicago pit trader. He can commit hundreds of millions of dollars in a transaction without a blink or a shadow of a second thought, yet agonize between two appetizers on the menu, changing his mind back and forth and wearing out the most patient of waiters.

Nero holds an undergraduate degree in ancient literature and mathematics from Cambridge University. He enrolled in a Ph.D. program in statistics at the University of Chicago but, after completing the prerequisite coursework, as well as the bulk of his doctoral research, he switched to the philosophy department. He called the switch "a moment of temporary sanity," adding to the consternation of his thesis director, who warned him against philosophers and predicted his return back to the fold. He finished writing his thesis in philosophy. But not the Derrida continental style of incomprehensible philosophy (that is, incomprehensible to anyone outside of their ranks, like myself). It was quite the opposite; his thesis was on the methodology of statistical inference in its application to the social sciences. In fact, his thesis was indistinguishable from a thesis in mathematical statistics—it was just a bit more thoughtful (and twice as long).

It is often said that philosophy cannot feed its man—but that was not the reason Nero left. He left because philosophy cannot entertain its man. At first, it started looking futile; he recalled his statistics thesis director's warnings. Then, suddenly, it started to look like work. As he became tired of writing papers on some arcane details of his earlier papers, he gave up the academy. The academic debates bored him to tears, particularly when minute points (invisible to the noninitiated) were at stake. Action was what Nero required. The problem, however, was that he selected the academy in the first place in order to kill what he detected was the flatness and tempered submission of employment life.

After witnessing the scene of the trader chased by a tiger, Nero found a trainee spot on the Chicago Mercantile Exchange, the large exchange where traders transact by shouting and gesticulating frenetically. There he worked for a prestigious (but eccentric) local, who trained him in the Chicago style, in return for Nero solving his mathematical equations. The energy in the air proved motivating to Nero. He rapidly graduated to the rank of self-employed trader. Then, when he got tired of standing on his feet in the crowd, and straining his vocal cords, he decided to seek employment "upstairs," that is, trading from a desk. He moved to the New York area and took a position with an investment house.

Nero specialized in quantitative financial products, in which he had an early moment of glory, became famous and in demand. Many investment houses in New York and London flashed huge guaranteed bonuses at him. Nero spent a couple of years shuttling between the two cities, attending important "meetings" and wearing expensive suits. But soon Nero went into hiding; he rapidly pulled back to anonymity—the Wall Street stardom track did not quite fit his temperament. To stay a "hot trader" requires some organizational ambitions and a power hunger that he feels lucky not to possess. He was only in it for the fun—and his idea of fun does not include administrative and managerial work. He is susceptible to conference room boredom and is incapable of talking to businessmen, particularly the run-of-the-mill variety. Nero is allergic to the vocabulary of business talk, not just on plain aesthetic grounds. Phrases like "game plan," "bottom line," "how to get there from here," "we provide our clients with solutions," "our mission," and other hackneyed expressions that dominate meetings lack both the precision and the coloration that he prefers to hear. Whether people populate silence with hollow sentences, or if such meetings present any true merit, he does not know; at any rate he did not want to be part of it. Indeed Nero's extensive social life includes almost no businesspeople. But unlike me (I can be extremely humiliating when someone rubs me the wrong way with inelegant pompousness), Nero handles himself with gentle aloof-ness in these circumstances.

So, Nero switched careers to what is called proprietary trading. Traders are set up as independent entities, internal funds with their own allocation of capital. They are left alone to do as they please, provided of course that their results satisfy the executives. The name proprietary comes from the fact that they trade the company's own capital. At the end of the year they receive between 7% and 12% of the profits generated. The proprietary trader has all the benefits of self-employment, and none of the burdens of running the mundane details of his own business. He can work any hours he likes, travel at a whim, and engage in all manner of personal pursuits. It is paradise for an intellectual like Nero who dislikes manual work and values unscheduled meditation. He has been doing that for the past ten years, in the employment of two different trading firms.

Modus Operandi

A word on Nero's methods. He is as conservative a trader as one can be in such a business. In the past he has had good years and less than good years—but virtually no truly "bad" years. Over these years he has slowly built for himself a stable nest egg, thanks to an income ranging between $300,000 and (at the peak) $2.5 million. On average, he manages to accumulate $500,000 a year in after-tax money (from an average income of about $1 million); this goes straight into his savings account. In 1993, he had a bad year and was made to feel uncomfortable in his company. Other traders made out much better, so the capital at his disposal was severely reduced, and he was made to feel undesirable at the institution. He then went to get an identical job, down to an identically designed workspace, but in a different firm that was friendlier. In the fall of 1994 the traders who had been competing for the great performance award blew up in unison during the worldwide bond market crash that resulted from the random tightening by the Federal Reserve Bank of the United States. They are all currently out of the market, performing a variety of tasks. This business has a high mortality rate.

Why isn't Nero more affluent? Because of his trading style—or perhaps his personality. His risk aversion is extreme. Nero's objective is not to maximize his profits, so much as it is to avoid having this entertaining machine called trading taken away from him. Blowing up would mean returning to the tedium of the university or the nontrading life. Every time his risks increase, he conjures up the image of the quiet hallway at the university, the long mornings at his desk spent in revising a paper, kept awake by bad coffee. No, he does not want to have to face the solemn university library where he was bored to tears. "I am shooting for longevity," he is wont to say.

Nero has seen many traders blow up, and does not want to get into that situation. Blow up in the lingo has a precise meaning; it does not just mean to lose money; it means to lose more money than one ever expected, to the point of being thrown out of the business (the equivalent of a doctor losing his license to practice or a lawyer being disbarred). Nero rapidly exits trades after a predetermined loss. He never sells "naked options" (a strategy that would leave him exposed to large possible losses). He never puts himself in a situation where he can lose more than, say, $1 million—regardless of the probability of such an event. That amount has always been variable; it depends on his accumulated profits for the year. This risk aversion prevented him from making as much money as the other traders on Wall Street who are often called "Masters of the Universe." The firms he has worked for generally allocate more money to traders with a different style from Nero, like John, whom we will encounter soon.

Nero's temperament is such that he does not mind losing small change. "I love taking small losses,"he says. "I just need my winners to be large." In no circumstances does he want to be exposed to those rare events, like panics and sudden crashes, that wipe a trader out in a flash. To the contrary, he wants to benefit from them. When people ask him why he does not hold on to losers, he invariably answers that he was trained by "the most chicken of them all," the Chicago trader Stevo who taught him the business. This is not true; the real reason is his training in probability and his innate skepticism.

There is another reason why Nero is not as rich as others in his situation. His skepticism does not allow him to invest any of his own funds outside of treasury bonds. He therefore missed out on the great bull market. The reason he offers is that it could have turned out to be a bear market and a trap. Nero harbors a deep suspicion that the stock market is some form of an investment scam and cannot bring himself to own a stock. The difference with people around him who were enriched by the stock market was that he was cash-flow rich, but his assets did not inflate at all along with the rest of the world (his treasury bonds hardly changed in value). He contrasts himself with one of those start-up technology companies that were massively cash-flow negative, but for which the hordes developed some infatuation. This allowed the owners to become rich from their stock valuation, and thus dependent on the randomness of the market's election of the winner. The difference with his friends of the investing variety is that he did not depend on the bull market, and, accordingly, does not have to worry about a bear market at all. His net worth is not a function of the investment of his savings—he does not want to depend on his investments, but on his cash earnings, for his enrichment. He takes not an inch of risk with his savings, which he invests in the safest possible vehicles. Treasury bonds are safe; they are issued by the United States government, and governments can hardly go bankrupt since they can freely print their own currency to pay back their obligation.

No Work Ethics

Today, at thirty-nine, after fourteen years in the business, he can consider himself comfortably settled. His personal portfolio contains several million dollars in medium-maturity Treasury bonds, enough to eliminate any worry about the future. What he likes most about proprietary trading is that it requires considerably less time than other high-paying professions; in other words it is perfectly compatible with his non-middle-class work ethic. Trading forces someone to think hard; those who merely work hard generally lose their focus and intellectual energy. In addition, they end up drowning in randomness; work ethics, Nero believes, draw people to focus on noise rather than the signal (the difference we established in Table P.1).

This free time has allowed him to carry on a variety of personal interests. As Nero reads voraciously and spends considerable time in the gym and museums, he cannot have a lawyer's or a doctor's schedule. Nero found the time to go back to the statistics department where he started his doctoral studies and finished the "harder science" doctorate in statistics, by rewriting his thesis in more concise terms. Nero now teaches, once a year, a half-semester seminar called History of Probabilistic Thinking in the mathematics department of New York University, a class of great originality that draws excellent graduate students. He has saved enough to be able to maintain his lifestyle in the future and has contingency plans perhaps to retire into writing popular essays of the scientific-literary variety, with themes revolving around probability and indeterminism—but only if some event in the future causes the markets to shut down. Nero believes that risk-conscious hard work and discipline can lead someone to achieve a comfortable life with a very high probability. Beyond that, it is all randomness: either by taking enormous (and unconscious) risks, or by being extraordinarily lucky. Mild success can be explainable by skills and labor. Wild success is attributable to variance.

There Are Always Secrets

Nero's probabilistic introspection may have been helped out by a dramatic event in his life—one that he kept to himself. A penetrating observer might detect in Nero a measure of suspicious exuberance, an unnatural drive. For his life is not as crystalline as it may seem. Nero harbors a secret, one that will be discussed in time.

JOHN THE HIGH-YIELD TRADER

Through most of the 1990s, across the street from Nero's house stood John's—a much larger one. John was a high-yield trader, but he was not a trader in the style of Nero. A brief professional conversation with him would have revealed that he presented the intellectual depth and sharpness of mind of an aerobics instructor (though not the physique). A purblind man could have seen that John had been doing markedly better than Nero (or, at least, felt compelled to show it). He parked two top-of-the-line German cars in his driveway (his and hers), in addition to two convertibles (one of which was a collectible Ferrari), while Nero had been driving the same VW Cabriolet for almost a decade—and still does.

The wives of John and Nero were acquaintances, of the health-club type, but Nero's wife felt extremely uncomfortable in the company of John's. She felt that the lady was not merely trying to impress her, but was treating her like someone inferior. While Nero had become inured to the sight of traders getting rich (and trying too hard to become sophisticated by turning into wine collectors and opera lovers), his wife had rarely encountered repressed new wealth—the type of people who have felt the sting of indigence at some point in their lives and want to get even by exhibiting their wares. The only dark side of being a trader, Nero often says, is the sight of money being showered on unprepared people who are suddenly taught that Vivaldi's Four Seasons is "refined" music. But it was hard for his spouse to be exposed almost daily to the neighbor who kept boasting of the new decorator they just hired. John and his wife were not the least uncomfortable with the fact that their "library" came with the leather-bound books (her health club reading was limited to People magazine but her shelves included a selection of untouched books by dead American authors). She also kept discussing unpronounceable exotic locations where they would repair during their vacations without so much as knowing the smallest thing about the places—she would have been hard put to explain on which continent the Seychelles Islands are located. Nero's wife is all too human; although she kept telling herself that she did not want to be in the shoes of John's wife, she felt as if she had been somewhat swamped in the competition of life. Somehow words and reason became ineffectual in front of an oversized diamond, a monstrous house, and a sports car collection.

An Overpaid Hick

Nero also suffered the same ambiguous feeling toward his neighbors. He was quite contemptuous of John, who represented about everything he is not and does not want to be—but there was the social pressure that was starting to weigh on him. In addition, he too would like to have sampled such excessive wealth. Intellectual contempt does not control personal envy. That house across the street kept getting bigger, with addition after addition—and Nero's discomfort kept apace. While Nero had succeeded beyond his wildest dreams, both personally and intellectually, he was starting to consider himself as having missed a chance somewhere. In the pecking order of Wall Street, the arrival of such types as John had caused him to be a significant trader no longer—but while he used to not care about this, John and his house and his cars had started to gnaw away at him. All would have been well if Nero had not had that stupid large house across the street judging him with a superficial standard every morning. Was it the animal pecking order at play, with John's house size making Nero a beta male? Worse even, John was about five years his junior, and, despite a shorter career, was making at least ten times his income.

When they used to run into each other Nero had a clear feeling that John tried to put him down—with barely detectable but no less potent signs of condescension. Some days John ignored him completely. Had John been a remote character, one Nero could only read about in the papers, the situation would have been different. But there John was in flesh and bones and he was his neighbor. The mistake Nero made was to start talking to him, as the rule of pecking order immediately emerged. Nero tried to soothe his discomfort by recalling the behavior of Swann, the character in Proust's In Search of Time Lost, a refined art dealer and man of leisure who was at ease with such men as his personal friend the then Prince of Wales, but acted like he had to prove something in the presence of the middle class. It was much easier for Swann to mix with the aristocratic and well-established set of Guermantes than it was with the social-climbing one of the Verdurins, no doubt because he was far more confident in their presence. Likewise Nero can exact some form of respect from prestigious and prominent people. He regularly takes long meditative walks in Paris and Venice with an erudite Nobel Prize–caliber scientist (the kind of person who no longer has to prove anything) who actively seeks his conversation. A very famous billionaire speculator calls him regularly to ask him his opinion on the valuation of some derivative securities. But there he was obsessively trying to gain the respect of some overpaid hick with a cheap New Jersey "Noo-Joyzy" accent. (Had I been in Nero's shoes I would have paraded some of my scorn to John with the use of body language, but again, Nero is a nice person.)

Clearly, John was not as well educated, well bred, physically fit, or perceived as being as intelligent as Nero—but that was not all; he was not even as street-smart as him! Nero has met true street-smart people in the pits of Chicago who exhibit a rapidity of thinking that he could not detect in John. Nero was convinced that the man was a confident shallow-thinker who had done well because he never made an allowance for his vulnerability. But Nero could not, at times, repress his envy—he wondered whether it was an objective evaluation of John, or if it was his feelings of being slighted that led him to such an assessment of John. Perhaps it was Nero who was not quite the best trader. Maybe if he had pushed himself harder or had sought the right opportunity—instead of "thinking," writing articles and reading complicated papers. Perhaps he should have been involved in the high-yield business, where he would have shined among those shallow-thinkers like John.

So Nero tried to soothe his jealousy by investigating the rules of pecking order. Psychologists have shown that most people prefer to make $70,000 when others around them are making $60,000 than to make $80,000 when others around them are making $90,000. Economics, schmeconomics, it is all pecking order, he thought. No such analysis could prevent him from assessing his condition in an absolute rather than a relative way. With John, Nero felt that, for all his intellectual training, he was just another one of those who would prefer to make less money provided others made even less.

Nero thought that there was at least a hint to support the idea of John being merely lucky—in other words Nero, after all, might not need to move away from his neighbor's starter palazzo. There was hope that John would meet his undoing. For John seemed unaware of one large hidden risk he was taking, the risk of blowup, a risk he could not see because he had too short an experience of the market (but also because he was not thoughtful enough to study history). How could John, with his coarse mind, otherwise be making so much money? This business of junk bonds depends on some knowledge of the "odds," a calculation of the probability of the rare (or random) events. What do such fools know about odds? These traders use "quantitative tools" that give them the odds—and Nero disagrees with the methods used. This high-yield market resembles a nap on a railway track. One afternoon, the surprise train would run you over. You make money every month for a long time, then lose a multiple of your cumulative performance in a few hours. He has seen it with option sellers in 1987, 1989, 1992, and 1998. One day they are taken off the exchange floors, accompanied by oversized security men, and nobody ever sees them again. The big house is simply a loan; John might end up as a luxury car salesman somewhere in New Jersey, selling to the new newly rich who no doubt would feel comfortable in his presence. Nero cannot blow up. His less oversized abode, with its four thousand books, is his own. No market event can take it away from him. Every one of his losses is limited. His trader's dignity will never, never be threatened.

John, for his part, thought of Nero as a loser, and a snobbish overeducated loser at that. Nero was involved in a mature business. He believed that he was way over the hill. "These 'prop' traders are dying," he used to say. "They think they are smarter than everybody else, but they are passé."

THE RED-HOT SUMMER

Finally, in September 1998, Nero was vindicated. One morning while leaving to go to work he saw John in his front yard unusually smoking a cigarette. He was not wearing a business suit. He looked humble; his customary swagger was gone. Nero immediately knew that John had been fired. What he did not suspect was that John also lost almost everything he had. We will see more details of John's losses in Chapter 5.

Nero felt ashamed of his feelings of Schadenfreude, the joy humans can experience upon their rivals' misfortunes. But he could not repress it. Aside from it being unchivalrous, it was said to bring bad luck (Nero is weakly superstitious). But in this case, Nero's merriment did not come from the fact that John went back to his place in life, so much as it was from the fact that Nero's methods, beliefs, and track record had suddenly gained in credibility. Nero would be able to raise public money on his track record precisely because such a thing could not possibly happen to him. A repetition of such an event would pay off massively for him. Part of Nero's elation also came from the fact that he felt proud of his sticking to his strategy for so long, in spite of the pressure to be the alpha male. It was also because he would no longer question his trading style when others were getting rich because they misunderstood the structure of randomness and market cycles.

Serotonin and Randomness

Can we judge the success of people by their raw performance and their personal wealth? Sometimes—but not always. We will see how, at any point in time, a large section of businessmen with outstanding track records will be no better than randomly thrown darts. More curiously, and owing to a peculiar bias, cases will abound of the least-skilled businessmen being the richest. However, they will fail to make an allowance for the role of luck in their performance.

Lucky fools do not bear the slightest suspicion that they may be lucky fools—by definition, they do not know that they belong to such a category. They will act as if they deserved the money. Their strings of successes will inject them with so much serotonin (or some similar substance) that they will even fool themselves about their ability to outperform markets (our hormonal system does not know whether our successes depend on randomness). One can notice it in their posture; a profitable trader will walk upright, dominant style—and will tend to talk more than a losing trader. Scientists found out that serotonin, a neurotransmitter, seems to command a large share of our human behavior. It sets a positive feedback, the virtuous cycle, but, owing to an external kick from randomness, can start a reverse motion and cause a vicious cycle. It has been shown that monkeys injected with serotonin will rise in the pecking order, which in turn causes an increase of the serotonin level in their blood—until the virtuous cycle breaks and starts a vicious one (during the vicious cycle failure will cause one to slide in the pecking order, causing a behavior that will bring about further drops in the pecking order). Likewise, an increase in personal performance (regardless of whether it is caused deterministically or by the agency of Lady Fortuna) induces a rise of serotonin in the subject, itself causing an increase of what is commonly called “leadership” ability. One is “on a roll.” Some imperceptible changes in deportment, like an ability to express oneself with serenity and confidence, make the subject look credible—as if he truly deserved the shekels. Randomness will be ruled out as a possible factor in the performance, until it rears its head once again and delivers the kick that will induce the downward spiral.

A word on the display of emotions. Almost no one can conceal his emotions. Behavioral scientists believe that one of the main reasons why people become leaders is not from what skills they seem to possess, but rather from what extremely superficial impression they make on others through hardly perceptible physical signals—what we call today “charisma,” for example. The biology of the phenomenon is now well studied under the subject heading “social emotions.” Meanwhile some historian will “explain” the success in terms of, perhaps, tactical skills, the right education, or some other theoretical reason seen in hindsight. In addition, there seems to be curious evidence of a link between leadership and a form of psychopathology (the sociopath) that encourages the non-blinking, self-confident, insensitive person to rally followers.

People have often had the bad taste of asking me in a social setting if my day in trading was profitable. If my father were there, he would usually stop them by saying “never ask a man if he is from Sparta: If he were, he would have let you know such an important fact—and if he were not, you could hurt his feelings.” Likewise, never ask a trader if he is profitable; you can easily see it in his gesture and gait. People in the profession can easily tell if traders are making or losing money; head traders are quick at identifying an employee who is faring poorly. Their face will seldom reveal much, as people consciously attempt to gain control of their facial expressions. But the way they walk, the way they hold the telephone, and the hesitation in their behavior will not fail to reveal their true disposition. On the morning after John had been fired, he certainly lost much of his serotonin—unless it was another substance that researchers will discover in another decade. One cab driver in Chicago explained to me that he could tell if traders he picked up near the Chicago Board of Trade, a futures exchange, were doing well. “They get all puffed up,” he said. I found it interesting (and mysterious) that he could detect it so rapidly. I later got some plausible explanation from evolutionary psychology, which claims that such physical manifestations of one’s performance in life, just like an animal’s dominant condition, can be used for signaling: It makes the winners seem easily visible, which is efficient in mate selection.

YOUR DENTIST IS RICH, VERY RICH

We close this chapter with a hint on the next discussion of resistance to randomness. Recall that Nero can be considered prosperous but not “very rich” by his day’s standards. However, according to some strange accounting measure we will see in the next chapter, he is extremely rich on the average of lives he could have led—he takes so little risk in his trading career that there could have been very few disastrous outcomes. The fact that he did not experience John's success was the reason he did not suffer his downfall. He would be therefore wealthy according to this unusual (and probabilistic) method of accounting for wealth. Recall that Nero protects himself from the rare event. Had Nero had to relive his professional life a few million times, very few sample paths would be marred by bad luck—but, owing to his conservatism, very few as well would be affected by extreme good luck. That is, his life in stability would be similar to that of an ecclesiastic clock repairman. Naturally, we are discussing only his professional life, excluding his (sometimes volatile) private one.

Arguably, in expectation, a dentist is considerably richer than the rock musician who is driven in a pink Rolls Royce, the speculator who bids up the price of impressionist paintings, or the entrepreneur who collects private jets. For one cannot consider a profession without taking into account the average of the people who enter it, not the sample of those who have succeeded in it. We will examine the point later from the vantage point of the survivorship bias, but here, in Part I, we will look at it with respect to resistance to randomness.

Consider two neighbors, John Doe A, a janitor who won the New Jersey lottery and moved to a wealthy neighborhood, compared to John Doe B, his next-door neighbor of more modest condition who has been drilling teeth eight hours a day over the past thirty-five years. Clearly one can say that, thanks to the dullness of his career, if John Doe B had to relive his life a few thousand times since graduation from dental school, the range of possible out-comes would be rather narrow (assuming he is properly insured). At the best, he would end up drilling the rich teeth of the New York Park Avenue residents, while the worst would show him drilling those of some semideserted town full of trailers in the Catskills. Furthermore, assuming he graduated from a very prestigious teeth-drilling school, the range of out-comes would be even more compressed. As to John Doe A, if he had to relive his life a million times, almost all of them would see him performing janitorial activities (and spending endless dollars on fruitless lottery tickets), and one in a million would see him winning the New Jersey lottery.

The idea of taking into account both the observed and unobserved possible outcomes sounds like lunacy. For most people, probability is about what may happen in the future, not events in the observed past; an event that has already taken place has 100% probability, i.e., certainty. I have discussed the point with many people who platitudinously accuse me of confusing myth and reality. Myths, particularly well-aged ones, as we saw with Solon's warning, can be far more potent (and provide us with more experience) than plain reality.