The Red Swan

A political economy of Nassim Nicholas Taleb

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'Why didn't you walk around the hole?' asked the Tin Woodman.
'I don't know enough,' replied the Scarecrow, cheerfully. 'My head is stuffed with straw, you know, and that is why I am going to Oz to ask him for some brains.'
–L. Frank Baum (1900)

She didn't know what he knew, what she could take for granted: she tried, once, referring to Nabokov's doomed chess-player Luzhin, who came to feel that in life as in chess there were certain combinations that would inevitably arise to defeat him, as a way of explaining by analogy her own (in fact somewhat different) sense of impending catastrophe (which had to do not with recurring patterns but with the inescapability of the unforeseeable)... –Salman Rushdie (1989)

PERHAPS BY CHANCE ALONE Nassim Nicholas Taleb's best-selling *The Black Swan: The Impact of the Highly Improbable* , followed now by the just released *Antifragile*, captures the zeitgeist of 9/11 and the foreclosure collapse: If something of a paradox, bad things unexpectedly happen routinely.

For better and for worse, *Black Swan* caustically critiques academic economics, which serve, more I must admit in my view than Taleb's, as capitalist rationalization rather than as a science of discovery.

Taleb crushes mainstream quantitative finance, but fails as spectacularly on a number of accounts. To the powerful's advantage, at one and the same time he mathematicizes Francis Fukuyama's end of history and claims epistemological impossibilities where others, who have been systemically marginalized, predicted precisely to radio silence.

Power, after all, is the capacity to avoid addressing a counternarrative.

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A 'BLACK SWAN' is an unexpected event of great impact that many an observer rationalizes after the fact. While related, Taleb's swan differs from Karl Popper's. Popper proposed the search for a black swan as the proper means of testing the proposition that all swans are white. Falsification offered a work-around for the problem of induction, whereby we mistakenly

generalize conclusions on the basis of a few observations.

Taleb is more concerned with the reasons for, and consequences of, the difficulties academics and financial analysts have in assimilating unexpected events into their models. According to Taleb, many researchers confuse the *frequency* of events with their likely *effect*. In tweed or pinstripe, they repeatedly confound low frequency and low impact. As a result, anomalies are ignored.

Practitioners transform the fallacy back into a mathematical given. The Gaussian measures of risk most researchers use exclude Black Swans as out beyond the distributions they assume beforehand.

Taleb, for instance, sticks it to Robert Merton, Jr., Nobel laureate, father of learning portfolio theory, and Long-Term Capital Management founding partner, whose Gaussian risk models, Taleb says, ruled out large deviations, leading LTCM to take on the monstrous risk that sank the firm. Models—however elegant their formalism—rarely fit reality when built on false premises.

The details are worth exploration.

Under the Gaussian (or normal or bell curve) distribution, the arithmetic mean stabilizes as the population increases. Most of the population is distributed about the mean, with only a small fraction found in the extreme tails. As we can effectively ignore these infrequent 'outliers', the population becomes characterized by a particular bound of known dispersion.

Take a 'population' of coin flips. The Gaussian emerges by two effects Taleb shines in explaining. First, if the outcomes—heads or tails—have an equal and, on each flip, independent chance, it would be highly unlikely we would end up with many of the same kind in a row the more flips we make. The unlikelihood explains why the tails of the distribution are so small, and why these extreme deviations precipitously decline in frequency the more flips we add. What, after all, are the chances we hit 32 heads in a row? Or 320?

In the second effect, the various combinations by which half heads/half tails can be produced increase the frequencies for the more mixed outcomes. The combinatorial explains why the frequencies around the mean are so large. There are a lot of ways of producing half heads/half tails: for four flips, for instance, HHTT, HTHT, TTHH, THTH, HTTH, and THHT. For forty flips, many, many more.

The Gaussian arbitrarily sets the "standard" deviation, the range -1σ to 1σ straddling the mean, as containing 68.27% of the population. The more standard deviations added, that is, the more we move away from the hump of the curve toward the tails, the more exponentially the number of observations added declines. The second and third deviations, for instance, hold 95.45% and 99.73% of values, respectively. The sharp drop-off emphasizes how much the observations are concentrated about the mean and the great unlikelihood of outliers or, at the most extreme, Black Swans.

Populations differ in their specifics, of course. Each's Gaussian curve is defined by the equation $f(x) = ae^{-(x-b)^2/2c^2}$, with a the curve's amplitude, b its position along the x-axis, c the width of the curve, and e Euler's number. The curve's characteristic kurtosis and skew are dependent in part on the population's inherent variation and, if constructed by sampling, the

size of the sample taken.

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THERE ARE A NUMBER OF IRONIES in Taleb's treatment of the bell curve. He identifies an essentialism in the Gaussian view, which treats what it views as the utter unlikelihood of Black Swans as something real. The thinking of the biometricians behind the modern statistical derivation of the curve was in fact in direct opposition. As Ernst Mayer describes it, Darwinism switched biologists out of an essentialist thinking, which saw the mean form as a real archetype and deviations thereof as counterfeit, to viewing reality in the variation of a population and the construct in the mean.

Without explanation Taleb says he accepts the application Darwin's half-cousin Francis Galton and colleagues made of the Gaussian to genetics and heredity, probably, if we must attach a reason, because biological measurements often approximate the distribution. Taleb, however, sees in its application to social systems a sham. Human societies are inherently uncertain, he says, free of the law of large numbers, which underlies the Gaussian. On what grounds he frames biological systems as tidier than their social counterparts is unclear. Biological systems are routinely lurching through regime shifts that stretch out and pop normal distributions.

At the same time, his assertion about human societies fails inspection. By the very statistical physics Taleb claims can circumvent Gaussian gaffes, Rodrick Wallace and Robert Fullilove show regression models explain violence and other risk behaviors at multiple geographic scales across the U.S. Wallace and Fullilove conclude racial and economic apartheids stateside constrain behavioral dynamics across population and place.

In other words, social systems can *impose* the kind of structure that turns populations Gaussian in nature, even through the country's various demographic shifts, under some conditions back to the founding of the republic. Manhattan's Lower East Side, for instance, has been home to impoverished populations of black slaves, immigrant Jews, and, now, Loisaida.

In a third irony, Taleb sets the social origins of Gaussian statistics in the aspirations of the 18th century European middle class, a sheeple, in Taleb's characterization, that bet on a future of mediocre living against its fear of divergent outcomes. He attaches Saint-Simon, Proudon and Marx to the political hope of a statistical *aurea mediocritas*. He spins Marx, the revolutionary punctuated equilibrist, into a straw man who champions at one and the same time the fallacy of the average man—average in everything he does—and the glorification of mediocrity found in *la loit des erreurs*, wherein even the standard deviation was thought more error than natural variation.

"No wonder Marx fell for Adolphe Quetelet's ideas," Taleb concludes QED. As if industrial countries with the highest Gini scores don't also suffer some of the worst indices in every social and health category, affecting, if by dint of spatial contagion alone, rich and poor alike. As if rich people are by definition also brilliant, etc., a recapitulation of the fallacy of the average man in reverse. As if copious wealth doesn't also select for sloppy thinking, Taleb's own complaint

elsewhere in the book.

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THE MANDELBROTIAN OR FRACTAL, in contrast, rejects the notion of a quantifiable dispersion of known and 'standard' deviations on which Gaussian statistics, including correlation and regression, depend. Even the latter's notion of statistical significance is, to Taleb, reified. How can a sample be considered 'significant' when compared to a distribution that isn't real?

Benoît Mandelbrot identified the fractal—repeating patterns across scales—as the geometry of the Black Swan. While Gaussian probabilities collapse toward the tails, fractals (somewhat) preserve probabilities across scales—even toward the tails—better conserving the possibility of extreme events. In other words, the fractal is, unlike the Gaussian, invariant to scale.

Taleb claims the fractal as how nature works, as Platonic a notion as the geometry he condemns. Yes, snails, leaves, snowflakes, shorelines, lightening, and peacocks, among many examples, exhibit fractal patterns, but not all of nature need fold in on itself in this way. Scale effects abound. As ecologist Simon Levin describes, some characteristics are specific to one scale and not others. Taleb concedes fractality has its limits. He also concedes we are unable to say where to draw the line for any one fractal:

Even as we can scale the fractal with non-ordinal exponents, say, 1.5 or 3.2, the fractal isn't something we observe, but something we can only guess or infer from the data we collect. In other words, despite Taleb's efforts to naturalize fractals—and by extension Black Swans—they are as ideational as Gaussian 'mediocrity'. It isn't that we can predict Black Swans, fractal or no, as by Taleb's tautology, if we can predict it, it isn't a Black Swan, but, Taleb continues, that we should acknowledge they exist and we should budget or bet accordingly.

There have long existed alternatives apparently off Taleb's radar, however. We could ask, for instance, if he's such an empiricist, why not let the data he repeatedly refers to speak for themselves? Markov-chain Monte Carlo analyses of millions of trials can approximate the distribution under which the system as a whole is generated and against which we can contrast our sample set, including for so-called Grey Swan systems we might actually be able to predict. Indeed, there are nonparametric analogs to ANOVA, regression and correlation: Kruskal-Wallis, ANOSIM, kernel regression, Spearman's rank correlation, etc. The Popperian nulls Taleb champions are in the meantime increasingly abandoned for a Bayesian structure, whereby probabilities are assigned (and reassigned with each new datum) to a *series* of hypotheses.

Even Taleb's central dichotomy smells. From the Wallace and Fullilove example alone, we can see a regression structure operating at multiple scales. A fractal series of Gaussian distributions.

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OUR OBJECTIONS TO TALEBS' TREATMENT needn't be confined to technicalities. If we follow Taleb's lead and historicize his own line of thought we discover a particular *political* logic.

Taleb, channeling Allen Ginsberg's Moloch, appears to exist in an acosmos in which his metaphysics are affirmed only by the money he can make off it. He says he came to abandon the notion we can discover the market's laws of history. He knows only that bad things happen regularly, if rarely, and with devastating impact. Half of the market's earnings over the past fifty years accrued across ten separate days of trading. So over the long haul, Taleb shorts the market even if he doesn't know the reasons why it intermittently (and catastrophically) collapses.

He does identify brokers' premise of a steady rate of return as one such self-fulfilling cause, producing events that happen precisely because they weren't expected. Conversely, he claims, what we already know doesn't happen because we make ready for it.

But Taleb makes a mash of the political economy of knowledge. For we need ask, *who* knows and who acts on that knowledge? At my end of the pool, in epidemiology, many practitioners know, for one, that turning poultry and livestock into monocultural widgets helps produce deadly epizootics, a conclusion suppressed here in the United States of Agribusiness with Lysynkoist ferocity.

Because treating the market as a black box has paid off for him, Taleb, putting his money where his brain is, characterizes reality for all practices and purposes as random. But surely just because something doesn't go according to plan doesn't mean no cause exists. This Taleb acknowledges, but defines the failure of prediction—of appropriating information—as an estemic opacity, that is, as equivalent to physical randomness.

Taleb derides utopianists who fail to assimilate such ambiguity and by a Plantonic fallacy confuse the narrative map for the territory,

> So I disagree with the followers of Marx and those of Adam Smith: the reason free markets work is because they allow people to be lucky, thanks to aggressive trial and error, not by giving rewards or '"incentives" for skill. The strategy is, then, to tinker as much as possible and try to collect as many Black Swan opportunities as you can.

But can we conclude his own treatment here as doing otherwise? With every commercial on TV, and every business book, capitalists immanentize the eschaton, promising transcendental fulfillment with every bar of soap and financial model sold.

We need ask again, free markets are free (and generously trial and error) *for whom*? Capital parlays stealing the majority's degrees of freedom—its capacity to organize the means of production on its own terms—into wealth for a few. Everyone else without capital pays the price. On a $1 a day, there is little room for trial and error without the severest consequences. These people don't exist here, however. Repeatedly throughout his books Taleb shows himself unable to think outside his own class, which includes the academic enemies against whom he rails. I find this telling.

There is too the inconvenience that the market has little do with innovation. Doug Henwood describes initial public offerings, ostensibly initiated to raise the funds companies need to grow, raise little, if any, capital. The largest firms, which regularly retire hundreds of billions of

dollars more in stock than they issue, finance research and production by way of in-house funding streams. Stock is instead a means by which the wealthy negotiate ownership, and attendant claims on societal power, among themselves.

In that case, then, Taleb's conclusion about trial and error resonates for all the wrong reasons, "I then realized that the great strength of the free-market system is the fact that company executives don't need to know what's going on," as much a rationale for incompetence as indemnifying executives of the responsibilities of an economic Maxwell's demon who tracks every transition.

Flippant stochasticity 'works' well if there exist mechanisms for self-correction. Almost all such corrections, however, are presently externalized. Consumer, worker, nature, governments—always someone else—must pick up the cost of rentier bad judgment or willful malfeasance. The 'freer' economies are—that is, the more deregulated—the *more* executives *should* know what they are doing, from the prole viewpoint anyway. Otherwise, contrary to *Antifragile*'s core argument, the greater the impact of executive failures the larger society suffers.

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TALEB IDENTIFIES A BIOLOGICAL SOURCE of our innumeracy,

> We do not spontaneously learn that *we don't learn that we don't learn.* The problem lies in the structure of our minds: we don't learn rules, just facts, and only facts. Metarules (such as the rule that we have tendency to not learn rules) we don't seem to be good at getting. We scorn the abstract; we scorn it with passion.

Perhaps metarules aren't rules either, however. Indeed, Taleb's complaint appears directed at a particular Anglo-American cultural moment, integral to the kind of technocist capitalism Taleb embraces.

We know rare events aren't synonymous with uncertainty. There are any number of astronomical events we can predict: comets, simultaneous planetary transits, reversals in Earth's axial tilt, etc. In the other direction, randomness can happen at many temporal scales, including, when continuous, as stochastic noise. What Taleb is trying to get at here, however, is that rare *and* random events surprise us worst, if particularly because they are camouflaged by the workaday. We can't, or refuse to, get our minds wrapped around that failure.

Taleb sees in the Gaussian approaches an attempt to quantify what is in actuality is unknowable risk. Such efforts typically suffer the *ludic fallacy*, whereby the odds of an event are defined by games of chance with known denominators. We know, for instance, that any side of a fair die has 1/6 a chance upon a throw. Can we really prescribe risk for something much more complex—for which we can't describe—such as a pandemic or collapse in the housing market?

In this way, Taleb repeatedly positions himself as a slayer among Gaussian dragons. His braggadocio appeals to this transplanted New Yorker of childhood heroes Giorgio Chinaglia and Reggie Jackson, but whatever their pose and style, scientists, like athletes, are, as Joseph

Campbell quotes Oswald Sprengler, integral parts of their historical moments,

> "Supposing...that Napoleon himself, as 'empirical person' had fallen at Marengo—then that which he *signified* would have been actualized in some other form." The hero [Campbell continues], who in this sense and to his degree has become depersonalized, incarnates, during the period of his epochal action, the dynamism of the culture process...And insofar as the hero's act coincides with that for which his society is ready, he seems to ride on the great rhythm of the historical process.

Where does Taleb's ride take him? He diagnoses a triplet of opacities predictions suffer. Many, perhaps Campbell himself, fill in what history refuses to divulge, producing an illusion of understanding, in which specific events stand in for historical circumstance. Or they produce a retrospective distortion that imports wishful revisionism. Or an overvaluation of factual interaction, from which grand schema are inflated puff by Platonic puff.

Taleb's 'novel' preoccupation with revolutionary outcomes, abandoning essentialist quasi-equilibria, is dialecticism's old hat. And yet it's also the latter's diametric opposition, for Taleb has turned humanity's struggle with itself into no history at all. In Taleb's world, regimes—economic and otherwise—aren't overturn by due cause but by chance alone.

By virtue of excising causality—and blame and responsibility—Taleb, even as he assures us he wishes he wouldn't have to, reframes the nature of the world in an essentialist stochasticity. The world is beyond our capacity to act on it. Despite rejecting determinism, if only as something we can act on, Taleb channels his Wall Street colleagues' contempt. The world matters only as it is filtered through the market, which, like God, is both necessary and unfathomable. And everybody else must act as a means to its ends.

The key point here is that the Black Swan isn't merely a statistical phenomenon. It is an idea that can be bent to serve its masters.

In their post-9/11 incarnation Donald Rumsfeld's infamous known and unknown unknowns embodied a strategic objective. The security state aimed to turn *causes* it knew full well precipitate bad outcomes for which it itself is responsible—25% of the world's population using 75% of the world's natural resources, for instance—into so much stochastic noise to which we cannot place a name or act on. At the same time, it aimed to transubstantiate the bad *outcomes* into specific coordinates in time and place to which to deploy squads of Jack Bauers, James Bonds, Jason Bournes, and Justin Biebers.

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TALEB TOOK HIS DOCTORATE IN DERIVATIVES, but ended up betting against them as they precipitate negative Black Swans whose mathematical errors compound losses. At first, Taleb traded against the instruments' technical inefficiencies—one instrument against another—before abandoning the horse race approach for a more insurance-like stance against the entire class of models, along the lines of the financial freaks of Michael Lewis's sideshow.

The October 1987 market collapse left Taleb a very rich man, with enough fuck-you money

to quit the trading floor but remain in the quant world of data that he says "thinkers" can't see. He became a cafe flâneur, a self-styled limousine philosopher who, in his middlebrow way, could both bash middlebrow academics and intellectualize greed. The latter emerges as an entelechy, rather than—with 662 American bases in countries around the world—by primitive accumulation.

"There is more money," Taleb echoes William Gibson's Hubertus Bigend,

> in designing a shoe than in actually making it: Nike, Dell and Boeing can get paid for just thinking, organizing, and leveraging their know-how and ideas while subcontracted factories in developing countries do the grunt work and engineers in cultured and mathematical states do the noncreative technical grind. The American economy has leveraged itself heavily on the idea generation, which explains why losing manufacturing jobs can be coupled with a rising standard of living.

Whatever we may say of Taleb, he *is* efficient, packing in many an absurdity in so few lines.

It isn't intellectual property that's parlayed into capital, for one. In 2005, for instance, industrial designer Dan Brown patented a new wrench whose prongs encircle a screw like a camera shutter. Sears, which first sold Brown's wrench, offshored the design Walmart-style to a Chinese manufacturer, and now, daring Brown to sue, sells the knockoff under the Craftsman brand at a more competitive price. "I'm in favor of free trade," Brown recently told the *New York Times*, "The person who's out-innovated loses." What Brown misses is that the *theft*, not the patent, is now the intellectual innovation.

Brown isn't an anomaly. His expropriation is emblematic of a systemic deformity. As Giovanni Arrighi explains it, capitalism entered one long if shifting crisis in the early 1970s. For the first decade intensive competition induced falling rates of profit. Organized labor could still at this point put up a good fight against capital's attempts to shift such losses onto workers via productivity gains and other givebacks. In the Anglo-American sphere, Margaret Thatcher and Ronald Reagan broke labor's national reach, with the aim of depressing wages and benefits.

A capitalism now less bound by such annoying overhead as labor rights and environmental standards, Arrighi continues, switched into an overproduction crisis. When income is concentrated into the hands of the few, effective demand collapses.

This second crisis was mitigated—and ultimately exacerbated—two ways. Finance's not-so-fictitious speculation stumbled from bubble to bubble, spreading surplus capital and producing booms—and inequality—that covered up the economy's underlying ill-health. Demand meanwhile was itself turned into a market for new financial instruments. Workers were extended comical lines of credit, their debts themselves speculated on, a bubble popped by the housing collapse, severely degrading the economy and leaving millions penurious.

Keynesian intervention—for anyone other than the biggest banks—was viewed by an albeit divided capital class as too much a political risk. It would open the door to reversing labor's fortunes. In other words, at least until the Occupy movement took off, the kleptocrats were perfectly comfortable with, and some maniacal about, a pauperized population. Better to rule a banana republic of 'right-to-work' than share what remains of a declining empire.

David Harvey describes how capital spatially parlayed its structural risk. Reintegrating the Soviet bloc into circuits of capital; the economic liberalization of China (and just about every other country); interlinking the world's financial markets; and innovations in transportation and communication, including containerization, eased capital flows, extended lines of production and distribution, and press-ganged millions more into the global industrial reserve army. Once such conditions are in place, the globe becomes a proverbial toy,

> Why invest in low-profit production when you can borrow in Japan at a zero rate of interest and invest in London at 7 per cent while hedging your bets on a possible deleterious shift in the yen-sterling exchange rate?

The more capital surplus produced as a result, however, and the larger the extent across which it is produced, the greater (and faster) the reinvestment required, the fewer the relative opportunities to do so, and the greater the risks must be taken to somehow somewhere recapitalize—privatizing fire departments, marketing credit cards to prepubescents—as a result increasing the precariousness of the entire apparatus.

The rot, then, isn't found merely in the schemes of desk scalpers such as Nicholas Leeson and Kareem Serageldin covering up bad bets, in the likes of higher-ups Jeffrey Skilling and Jon Corzine, or even in the infrastructural corruption of Libor and Timothy Geithner's New York Federal Reserve. The *system* is the rot.

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TALEB ARGUES HUMANITY is moving increasingly into a world defined by Black Swans rather than by centroidal gravity. Winner-takes-all tournaments in politics and economics, yes, but in the 'harder' version he omits, a socialism for the rich. Cumulative advantages—whether it be in finance or in academic reputation—are politically protected. Those without such initial capital drop out. Precocity or genius matters little. Social resources, whether or not won by merit, do. Conversely, those who lose continue to mount losses in a ratchet downwards.

So the dynamics of inequality feed on their own momentum. Any Marxist could tell you that. But despite all the evidence to the contrary, the details available even in more mainstream outlets than Arrighi and Harvey, Taleb rejects it as an outcome of the system itself. After all,

> one had only to look around to see that these large corporate monsters dropped like flies. Take a cross section of dominant corporations at any particular time; many of them will be out of business a few decades later, while firms nobody ever heard of will have popped onto the scene from some garage in California or from some college dorm…[A]lmost all [the] large corporations were located in the most capitalist country on earth, the United States. The more socialist a country's orientation, the easier it was for the large [failing] corporate monsters to stick around.

Taleb transubstantiates luck into an equalitarianism that destroys even the largest company in favor of the smallest "little guys". A system *structured* around the most vicious exploitation,

with Gini scores in the stratosphere, is now the most equalitarian. It's the legend of Microsoft and Facebook—frogs kissed by Lady Luck into princes.

But the system remains, whatever the turnover. Capital and governmental subsidies are rolled over from one technological regime to the next. Exxon, BP and GE, paying no taxes, have a stranglehold on the political economy, whatever Valdez or Gulf spill may come. Diseconomies of scale, inherent to capital accumulation, are politically protected. Cumulative advantage is a class prerogative continually financed by expropriating labor, who, in Taleb's world, don't even qualify as the "little guys" to whom he repeatedly alludes.

In other words, Taleb suffers his own case of epistemic opacity, imparting to chance well-documented processes of which he knows nothing or to which he turns a blind eye.

To Taleb, capitalism's problems emerge by stupid thinking or by chance. True enough on both accounts, but there is as well primitive accumulation, corruption, political expediency, and intrinsic structural contradictions, the costs of which are externalized to workers, consumers, governments and the environment. It's always someone else who picks up the bill, permitting bad economics to masquerade as bad luck, off of which Taleb himself wins big betting against. From this vantage, Taleb has a vested interest in letting systemic failure off the hook.

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WILLFUL IGNORANCE of the market's historical context—after all we can't track history—colors more than Taleb's statistical, and by extension political, assumptions. His behavioral proclivities are nigh on pronoid. Taleb, adding insult to injury, writes in parable of a regular "compassionate" prank. He'd give a taxi driver a $100 bill as a tip,

> I'd watch him unfold the bill and look at it with some degree of consternation ($1 million certainly would have been better but it was not within my means). It was also a simple hedonistic experiment: it felt elevating to make someone's day with the trifle of $100.

As if his ilk hadn't already structurally punked the immigrant into a hemorrhoid driving sixteen hours a day. I'm sure the driver appreciated the fare, but the self-aggrandizement—at the heart of every $10,000-tip-for-the-waitress story—speaks to a mélange of guilt, fear and contempt. Tithes to the gods of fate.

Tellingly Taleb ends the tips, "We all become stingy and calculating when our wealth grows and we start taking money seriously." *We* do, do we? Even such ineffectual redistribution, a contemptuous tease, becomes anathema the greater the inequality. For those increasingly in the know about how utterly preposterous their prosperity, tithing apparently only alerts angry gods where to strike.

To his credit, Taleb destroys conservative ideologues, who are none too conservative, "just phenomenally skilled at self-deception by burying the possibility of a large, devastating loss under the rug." On the other hand, one can't help but think them truly conservative when the whole system is dedicated to protecting them against losses, "[W]hen 'conservative' bankers

make profits, they get the benefits; when they are hurt, we pay the costs," producing, as I've described elsewhere, moral hazards of apocalyptic proportions.

Indeed, the whole notion of compensation is out-of-whack, even within the confines of a capitalist economy dedicated to theft. Bankers are paid annual bonuses for short-term profits they lose once a Black Swan hits,

> [T]he tragedy of capitalism is that since the quality of the returns is not observable from past data, owners of companies, namely shareholders, can be taken for a ride by the managers who show returns and cosmetic profitability but in fact might be taking hidden risks.

Of course, while Taleb's point is worth salvaging—capitalism incentivizes cons—the rest of us, the poisoned and dispossessed, the billions who literally don't know how they are to survive the month, can only snigger low and slow at Taleb's view of 'tragedy'.

Even the most thoughtful of allies will find it hard to blind themselves to the breadth of Taleb's myopia. He misses that the money he makes off shorting these conservatives—his second-order gains—is also folded into the system's protection. The loot begs whether organized opposition of any seriousness, inclusive of waitresses and hemorrhoidal cab drivers, their Swans spotted with blood, would bother to parse the difference.

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FOLLOWING BERTRAND RUSSELL, Taleb uses our friend the turkey to illustrate the dangers of induction. The poultry assumes, or rather Taleb assumes the poultry assumes, a friendly farmer who feeds him every day is a generalizable rule until the day before Thanksgiving, when the bird undergoes the most radical of revised beliefs.

Taleb, however, confounds *prediction* and *projection*. The turkey's expectation is a righteous projection as he is in fact fed everyday save his last. There is also missing the notion other streams of data exist with which to update a model. Assuming a model of mind perhaps beyond their means, the smartest turkeys, for instance, might notice cohort limits. There are no turkeys above a certain age class, boding ill. The world is full of animals whose behaviors are apparently attuned to, or canalized for, rare catastrophic events, among them the apocryphal but apparently true stories of animals alerted to earthquakes and tsunamis.

In effect, Taleb refuses his opponents the right to the data (and to the wherewithal) with which he conveniently outfits himself. He is right that even many with such access refuse to let data lead them out of their statistical assumptions. And contingencies *are* important, a contention to which we will return. But so are the historical constraints under which protagonists accrue their experience. The three together—history, chance and consciousness—operate at a variety of scales of time and space, often undergoing synergistic shifts depending on their interactions, to produce the context in which circumstances emerge and decisions are made.

Despite his pronouncement upon the indeterminancy of history, one with which he rejects

Marxism, Taleb ascribes to communist projects the very determinancy he refuses as the engine of history. "Faced with an opponent who presents communism as a solution to the crises of capitalism," Jodi Dean describes such narratives,

> the invoker of history posits a necessary sequence, as if revolutions were shielded from contingency. He starts with a fact, a unique, specifiable object, and builds from the fact a series of consequences and effects. These consequences and effects are necessary and unavoidable: if Lenin, then Stalin; if revolution, then gulag; if Party, then purges...If it happened once, it will happen again, and there is nothing we can do about it.

In short, Taleb, as others, commits his own inductive fallacy. Even if Marx *believed* in determinancy—on the contrary if the first page of the *Brumaire* is any indication—it doesn't mean he was *subjected* to it.

Chairman Dean may be the titular head of a party that presently exists more in spirit than in deed, but the intent here embraces Marx's notion of humanity's contingency, "'[P]arty' does not name an instrument for carrying out the iron laws of history," Dean relays Bruno Bosteels, "but the 'flexible organization of a fidelity to events in the midst of unforseeable circumstances.'"

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TALEB IDENTIFIES A NUMBER OF BIASES by which the bell curve deceives. By the *confirmation bias* we search or cite data that confirm our hypothesis (in this case, the expectation Black Swans are unimportant). By the *narrative fallacy* we trade in the absence of data about historical processes for a logically consistent but ill-supported story. By the *round-trip fallacy* we confuse the absence of evidence for a Black Swan, by their nature rare indeed, as evidence of their absence.

The biases serve as the epistemological bases for Karl Popper's negative empiricism. The turkey's hypothesis about humanity's—or at least his owner's—congeniality isn't found in a series of confirmatory observations—each day another White Swan—but in the one observation—the Black Swan or in this case Charred Turkey—that disproves it.

Taleb delivers here. The absurdity of a confirmational search (or investment) strategy is illustrated by Hempel's paradox. The logically equivalent contention "all non-white objects are not swans" can be supported by just about every object we see. See that brown desk? That means no black swan! That green bulb? No black swan! But we've proven (and learned) nothing, save perhaps how easily we are seduced by evidentiary fallacies.

Taleb's example, however, is flawed in an interesting way. Divorced of Russell's anthropomorphism, the (free-range) turkey lived a relatively happy life, of much longer duration than many of his wild brethren, until the fateful day—one we all face—he died. Taleb's stockbrokers aren't refuted by the market crashes (the days on which they touch their faces), but in the suffering the system imparts everyday on the rest of the world. If Taleb replied, as he likely would, that these were false equivalences or utterly tangential to the proposition at hand he'd only prove my point.

I'm getting at the greater game in which such decisions are made. What happens when much of society is organized around delivering a Gaussian world to rich people, even at the risk of destroying that society with every 5% of rate of return added? As we touched on, the costs are routinely vented elsewhere: union busting, flat wages, a reserved army of unemployed, productivity ratchets, and environmental damage. That is, the catastrophe isn't arrived upon only when the system fails—and fails spectacularly, Taleb's beat—but also when it succeeds in delivering on its prime directives.

As Naomi Klein describes it, disaster capitalists pivot on such failures. The collapse in ecological and social resilience neoliberalism causes brings about another market opportunity. It can serve as a declensionist rationale for privatizing the entirety of the commons capital plunders. It can quite literally save capital's day, often at the expense of accelerating collapse.

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LET'S RETURN TO THE BIASES Taleb says underwrites the failure to incorporate Black Swans into many a worldview.

Taleb contends our tendency to confabulate connections among incomplete data as any number of existential anxieties (and academic egos). But by the narrative fallacy we place ourselves as our own false gods,

> Explanations bind facts together. They make them all the more easily remembered; they help them *make more sense*. Where this propensity can go wrong is when it increases our *impression* of understanding.

He contends avoiding theories the more difficult and critical proposition,

> [*N*]*ot theorizing* is an act...theorizing can correspond to the absence of willed activity, the "default" option. It takes considerable effort to see facts (and remember them) while withholding judgment and resisting explanations.

Storytelling—however wrong—may embody an ancient adaptation, embedded even within our most basic of brain chemistry. Taleb describes the side effects of L-DOPA injections, which turn some patients into compulsive gamblers who see patterns within random numbers. Taleb's epistemic opacity at the craps table.

But it's more than chemistry per se and, as Taleb describes, perhaps buried deep in the way organisms handle data. Information is costly to obtain and store. Compression is essential. Ordering—narrating—bytes reduces the cost of storage. In a fundamental perversity we risk trading away truth for reducing data dimensionality (ironically an objective celebrated in multivariate statistics under the assumption we can draw greater understanding from lower-dimensional data). Black Swan blindness may be the outcome,

> The more you summarize, the more order you put in, the less randomness. Hence *the same condition*

that makes us *simplify pushes us to think that the world is less random than it actually is.*

The contention begs the question whether we can distinguish what we do from what we are doing it to. At what point do mind and matter merge? Elsewhere (here and here) we've asked whether reductionist cures—pills and vaccines—select for holistic diseases—HIV, influenza, and malaria among them—not merely as a matter of what our interventions do to pathogens out in the field, but of how we conceive our models of disease and the resulting interventions.

Taleb contends in our confabulations we routinely affirm the consequence, using *a posteriori* data in our historical reconstructions or feats of memory, a problem well-parsed by evolutionary biologists in principle if not always in practice. How then do we deal with the logically coherent viewpoints which match observations but perpetuate the round trip fallacy?

Taleb's question, while a good one, misses the political economy of narratives. Some are politically convenient, others—bipartisan—are prime directives of a system's order of things. These speak to the power of counternarratives, which, for those as coherent as the dominant paradigm, represent an alternate reality existing in the same time and place. They stand as testable alternatives, if dangling and unfulfilled.

Taleb champions negative empiricism as an antidote that can produce results that hold as well in Tennessee as in France. But what if running an experiment is another type of narrative, wherein protocols and the associated formalism are themselves hitched to a historical trajectory and made urgent and compulsive, to return to Joseph Campbell, by societal necessity? And which questions *do* we ask? And how is refutation decided upon (even philosophers of science such as Rebecca Goldstein are abandoning Popper on this point)? And what of the geographically dependent phenomena—including perception itself—or culturally specific responses?

In other words, counternarratives are marginalized as much for what they say about the context in which they are judged as the specific proposition they address.

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OSTENSIBLY TALEB'S BOOK addresses the neglect of the Black Swan. But Taleb shows the narrative fallacy also positions us into attaching importance to Black Swans that truly are unlikely. As Taleb describes, surveys show people are more likely to pay for terrorism insurance than plain insurance. The same might be said for what was until recently my bread-and-butter, pandemic influenza. Indeed, a veritable cottage industry has arisen around debunking influenza fever, as it were: Marc Siegel, Philip Alcabes, Joseph Mercola, and Nate Silver, among others.

The arguments amass around two poles. First, there is no evidence circulating influenzas are dangerous despite the hype. H5N1 is for the birds, H1N1 (2009) wasn't virulent, and even H1N1 (1918)'s deaths were largely caused by bacteria for which we now have antibiotics. Second, the fear around influenza serves the political agenda of the security state.

I'll add the fact scientists up and down the phenomenological scale—molecular biologists,

geneticists, veterinarians, wildlife biologists, medical doctors, public health officials—have used influenza to better integrate analyses and interventions, if not for influenza than for other pathogens, cannot serve as *post hoc* support for the premise influenza is dangerous.

But the debunkers can themselves be debunked.

Pandemics teach us that preparing for the worst is the prudent option. Imagine the reaction if only feeble preparations were made in the face of a truly deadly pandemic. The cost of a Type II error, thinking no pandemic possible with one imminent, is catastrophically greater than that of its Type I sibling, thinking a pandemic imminent with none in the offering, as seen, for instance, in Edwin Kilbourne's 1976 swine flu dud.

Nor should we expect scientists to wait to issue warnings until a human-to-human strain emerged, as Siegel suggests. Erring on the side of absolute certainty would not allow time enough to ramp up a proper public health response.

But does such an asymmetry speak to influenza's danger? It would be irresponsible to claim a 1918 virulence inevitable, but just as irresponsible—citing 1957 and 1968—to claim it impossible (particularly as most of the world claims only limited access to antibiotics). While some may confuse allusions to 1918 for predictions, the pandemic represents an important precautionary cap. Up to 100 million people, whatever the etiology, died during an influenza pandemic, fairly recently in historical terms. It would be foolish to forget that, as we did for most of the 20th century.

Such comparisons, as several skeptics frame it, do have their dangers, but perhaps not only in the way they intended. For instance, the livestock industry fallaciously references 1918, claiming that as the 1918 virus emerged with no agribusiness about, by definition agribusiness had nothing to do with H1N1 (2009).

Apropos Paul Davies, who puts it in a cosmological context, there is a difference between predicting a pandemic will hit and being unable to rule out that it won't. The skeptics also confuse, as Taleb raises, the frequency of pandemics with their likely impact:

Virulence, the damage a pathogen causes its host, is population- and even individual-specific. That variation, however, can't be used as some sort of soft-pedaling determinism, as evolution makes its trade in massive volume, with millions infected at a time, a denominator which would offer little comfort to the families of the 5% who are killed should a deadly pandemic erupt. A large literature, reviewed here, documents the pathogenic mechanisms by which H5N1, for instance, directly liquidates avian viscera—using lab and field strains alike—even if not every bird turns to duck soup. And even the latter protection—whether immune- or species-specific, or by stochastic chance alone—is provisional.

Indeed, what made the bird flu outbreaks at Lake Qinghai in 2006 so surprising was the way H5N1 destroyed bar-headed geese that were previously largely impervious before the virus entered the Chinese poultry industry. Evolution is a moving target, not an identity.

Skeptics meanwhile have themselves moved the target, as if wishful efforts to move it out of influenza's range. First, it was, 'epizootic influenza is relegated to birds.' Then, when H5N1 emerged, it was, 'it only hit a few humans and is sequestered to East Asia.' Then, 'it has spread

across Eurasia and Africa, but it hasn't gone human-to-human.' Then, when H1N1 (2009) emerged, 'agricultural influenzas do go human-to-human, but they aren't virulent.' We are down to a final card, a virulent human-to-human strain, as if every evolutionary step in that direction represented the possibility's refutation.

In the meantime, critics in the field of Foucauldian biopolitics, viewing disease through the prisms of social power, make a category error. Neither the disorganized response to the H1N1 pandemic, nor the political capital accrued (or deployed) during the outbreak prove the virus no threat. Despite what might very well be political agendas, apparent around pandemics throughout history, the source of societal anxiety is in part embedded in the nature of epidemics themselves, fears engendered long before neoliberal capitalism. Viruses *do* spread. H1N1 (2009) crossed the Pacific in a record-setting nine days. We can't use the manipulation of that anxiety—however odious its sources—to refute the epidemiology, even if the reporting on the virus is part and parcel of that epidemiology.

Indeed, the disorganization around responding to influenza actualizes a decade-long campaign to *minimize* what is a veritable menagerie of influenzas newly emergent in vertically integrated and heavily capitalized livestock. In the interests of agribusiness, UN representatives offered *ad hoc* denials about the role industrial hog play in the emergence of H1N1 before any investigation was launched (and ultimately never pursued). The Smithfield Foods farms in Veracruz may have appeared "too compelling to be overlooked," but they were, for all intents and purposes. Mexican authorities tested thirty samples *Smithfield* collected months later, and found, surprise, nothing.

So, then, a logical, if unfair, inference would be that the skeptics, channeling Winston Churchill, are working in the interests of an agricultural sector aiming to spin the pandemic as little but fear itself. Again unfairly, their critiques beg whether they throw in with Leo Strauss' notion of the necessary lie, convergent with the interests of the livestock industry.

Philip Alcabes claims there is an industry in negative epidemiological Black Swans despite little evidence in its favor. On the one hand, that's true. In preparing for alleged threats, the biosecurity industry reifies fantasies of terrorism one new sloppy Level 4 lab at a time. But influenza is a self-organized phenomenon with a track record of regular pandemics, some more dangerous than others, across different species and orders of ecological organization: from among migratory birds on the ice cap to a variety of agricultural regimes, smallholder to agribusiness.

Outbreaks of *new* recombinants aren't at this point predictable but are still ever-imminent and demonstrably, if at this point retrospectively, specific to agro-ecological shifts. In other words, the virus's evolutionary trajectories are responsive to their context, which, given the stakes, should be investigated rather than offhandedly dismissed as either inconsequential or opaque.

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FIXATING ON A BLACK SWAN leads to overestimating its odds, a Taleb assertion influenza skeptics would embrace. However, failing to acknowledge one, or in the case of these same skeptics dismissing one, can lead to underestimating it, also a Taleb conjecture. Many of us confound different kinds of accidents. We typically insure against likely outcomes of small impact as opposed to unlikely ones of grave impact. That is, our estimations of likelihood and impact are knowledge-dependent, which, in turn, affect likelihood and impact.

The layer Taleb misses here is there is a political economy to such estimates, turning Black Swans into Red ones. A society may fixate on terrorism because it acts as a political enzyme that organizes and justifies institutions.

"There is a phrase ascribed to St. Augustin and Stalin: 'In a besieged citadel, all dissidence is treason,'" Raúl Ruiz introduces his 1978 adaptation of Pierre Klossowski's novel on ecclesiastical conflicts in the Catholic Church, "Thus my counter-argument: 'To survive, institutions must behave as besieged citadels.'"

Such impetuses are often reciprocal. Post-9/11, George W. Bush and Osama bin Ladin were religious oilagarchs using God to justify spending gobs of cash killing rivals. Monied murder as a moral imperative. Ten years later the Kremlin objected to Hilary Clinton's accusations of a stolen election while Russian television covered police across the U.S. beating peaceful Occupy demonstrators in advance of another structurally rigged election. In other words, it appeared two antagonists attempting to outsource their internal contradictions to mutual advantage.

Taleb describes some of the empirical psychology behind what he would view here as our particular manifestation of the narrative fallacy. But in doing so he oversimplifies the divide between our emotional and cognitive brains. Indeed, as we describe here, a large literature describes their functional integration, however disparate their initial origins. Emotion in humans has often been viewed as a 'primitive' form of consciousness upon which later forms were built.

Rodrick Wallace and Mindy Fullilove proposed simultaneous shifting global broadcasts linked by crosstalk embody an exaptation of this 'primitive' consciousness into a partnership with more modern evolutionary structures. Emotion serves as a context for 'rational' consciousness. There must exist, then, an executive mechanism for shifting gears between slow rational consideration and the shortcut high function rate of emotional response, that is, a circuit breaker to turn over the control of behavior to older but more rapid systems. In there we have the paradigmatic conflicts between 'heart and mind' or 'flight or fight'.

We might forgive Taleb his stumble here if only because he also makes an important dig against the neurobiologists' mereological fallacy, which confounds brain anatomy for the mental function. But his false dichotomies are mission critical too, and why the Red Swan survives Taleb's biological attack.

For one, Taleb claims we can circumvent the evolutionary impulse for the narrative fallacy by cutting off our pasts. Unfortunately for Taleb's anti-theoretical theory, the past sets the present by more than path dependency. Indeed, the past, as William Faulkner put it, isn't even the past. It is active around and about us in transformed states, embedded in the now as Louis

Althusser's historical present, shaping a future albeit neither deterministic nor repeatable.

If history cycles it does so, depending on the system observed, at frequencies and amplitudes we cannot facilely model. But it does, however, reemerge. To bend the stick to make the greater point, imagine, as Philip K. Dick asks us, a wheel barrow that rolls up an incline. It returns on itself at a different place, a distinction we saw Salman Rushdie makes but see Taleb can't. Influenza pandemics, to return to our epizootic touchstone, regularly materialize, some even sharing molecular symplesiomorphies. But they do so responding to different contexts, each depending on their round's thatch of passing ecosocial circumstances.

In asking us to cut ourselves off from a past that still exits, Taleb trades off the risk we learn the wrong lessons for the risk we abandon learning, as if, as we touched on, the act of astigmatic experimentation he proposes isn't itself a type of historically loaded storytelling.

He wishes we'd abandon narrating large blocks of time for a story that abandons storytelling (and remains a kind of storytelling nonetheless). "Our emotional apparatus is designed for linear causality…Our intuitions are not cut out for nonlinearities," Taleb writes, as we tend toward the sensational rather than the relevant and toward results rather than process, which would seem, then, to refute Taleb. As we tend too, István Mészáros hits Taleb's problem on the nose, toward the episodic rather than the structural.

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TALEB DESCRIBES THE DANGERS of lumpy rewards. People who take chances might hit the jackpot but are treated for the most part until then, if not always should they fail to reach their goal, as grand failures exorcized by relations for missing the steady paycheck. In spite of his own investment strategy—suffering steady losses until his short pays off—Taleb fails to accommodate the political effort put into a deeply polarizing society that steadily rewards big lumps to the richest, *however* badly they invest.

Of course, Taleb's books—stuffed with innuendos, ribald insults, overgeneralizations, and contradictions—instantiate many of the vices he describes. Perhaps more substantively, however, there is too the issue that the theory of no theory is a theory in and of itself, with an ideological freight that weighs upon our most basic efforts at collecting data.

"There is an obvious difference between recounting a fact, such as 'This cathedral was built in 1612.' And registering a value-judgment, such as 'This cathedral is a magnificent specimen of baroque architecture,'" Terry Eagleton appears to concede,

> But suppose I made the first kind of statement while showing an overseas visitor around England, and found that it puzzled her considerably. Why, she might ask, do you keep telling me the dates of the foundation of all these buildings? Why this obsession with origins? In the society I live in, she might go on, we keep no record at all of such events: we classify out buildings instead according to whether they face north-west or south-east…All of our descriptive statements move within an often invisible network of [such] value categories…It is not just as though we have something called factual knowledge which may then be distorted by particular interests and judgements, although this is certainly possible; it is also that without particular interests we would

> have no knowledge at all, because we would not see the point of bothering to get to know anything. Interests are *constitutive* of our knowledge, not merely prejudices which imperil it. The claim that knowledge should be 'value-free' is itself a value-judgement.

Even the very senses on which Taleb asks us to rely—see Diane Ackerman to Errol Morris—are laden (or empowered depending on one's view) with cultural baggage. We develop historically contingent habits of seeing (and even smelling and tasting).

Richard Nisbett's group tracked how cognition translates values into data and back again. The team reviewed an extensive literature on empirical studies of basic cognitive differences between individuals raised in what they call 'East Asian' and 'Western' cultural heritages. In something of an overgeneralization, Nisbett views Western-based pattern cognition as 'analytic' and East-Asian as 'holistic.' But with a geography of human thinking he found

- Social organization directs attention to some aspects of the perceptual field at the expense of others.
- What is attended to influences metaphysics.
- Metaphysics guides tacit epistemology, that is, beliefs about the nature of the world and causality.
- Epistemology dictates the development and application of some cognitive processes at the expense of others.
- Social organization can directly affect the plausibility of metaphysical assumptions, such as whether causality should be regarded as residing in the field or in the object.
- Social organization and social practices can directly influence the development and use of cognitive processes such as dialectical vs. logical ones.

Nisbett's team concludes that tools of thought embody a culture's intellectual history, that these tools have theories build into them, and that users accept these theories, albeit unknowingly, when they use the tools.

So the *post-hoc* rationalization Taleb justifiably seeks avoiding is replaced by a *pre-hoc* rationalization that is embodied by a unspoken and politically freighted cultural consensus.

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SILENT EVIDENCE PERVADES history and so, Taleb theorizes, torpedoes any theory of history. In a book whose best-selling status was conferred by a timely housing collapse, Taleb paraphrases Balzac, himself in Taleb's view a luck of the literary draw, on such evidence, "Success is presented cynically, as the produce of wile and promotion or the lucky surge of interest for reasons completely external to the works themselves."

We tend to connect causes to winners who we believe embody or shape history, whose prayers, or, for the secular, whose choices, acts and character, were rewarded. But what, Taleb reminds us Cicero asked by way of Diagoras, "of those who prayed, then drowned?" It isn't

prayer or its material analogs that move history so much as luck. The greater the impact and the more lethal the risks run—real or reputational—the more victims wasted and the less visible the silent evidence.

It's a good point that comes at a cost. There's something of a false dichotomy in there, one that fractures sources of causality. In epidemiology, 'losers' routinely plow the way for 'winners', who act on such openings, even as opportunities are in part dumb luck. 'Silent' local/seasonal influenzas do not refute pandemic strains. They are recognized as an integral part of the process of pandemicity, part and parcel of influenza's contingent and path-dependent exploration through its evolutionary space, until the right genomic combo meets up with the right agroecological environment.

Taleb, robbing Peter to pay Paul, specializes in such false zero sums. Cancer victims—more dying each day than all others killed by Hurricane Katrina—don't vote, Taleb grieves, as many are dead by the next election. So they are repeatedly robbed in research dollars (and by extension killed in ever greater numbers). As if cancer patients have no families to speak for them. As if Richard Nixon didn't launch what is now a veritable war on cancer. As if the pharmaceutical industry isn't swimming in Big Oil-like subsidies. But more germane to the point here, as if a city lost to flooding doesn't ruin millions of lives, including those of the cancer patients who live there.

Underlying Taleb's arguments is the logic of neoliberalism's Hobessian austerity, pitting victims against each other for the few budgetary crumbs lobbyists fail to win their corporate clients.

In the other direction, Taleb continues, survivors embody their own refutation, confounding a good run of luck for something more intrinsic, "The fact that you survived is a condition that may weaken your interpretation of the properties of the survival, including the shallow notion of 'cause.'"

Our very trajectory as a species may have inculcated the worst of impulses, Taleb contends. Many of our ancestors ran foolish risks that killed most others, but by virtue of surviving by dumb luck alone they were able to become our ancestors. Rejecting the kind of pan-adaptationism he champions elsewhere in the book, Taleb sees our folly in assuming risk-taking the means by which we got here rather than in spite of it. Bending the stick too far, Taleb contends, "Evolution is a series of flukes, some good, some bad. You only see the good. But in the short term, it is not obvious which traits are really good for you, particularly if you are in the Black Swan-generating environment of Extremistan," Taleb's neologism for an environment that typically obliterates silent evidence.

Taleb proposes the fallacy of silent evidence is in part underpinned by a anthropic bias. That we exist and persist appears sampling enough to conclude the odds are in our favor. There must be a reason why we exist, a force in our favor, we delude ourselves. We compute odds from the vantage of the winning gambler, not the whole table.

Paul Davies discusses a similar misconception in exobiology. We might jump upon our existence as evidence other intelligent beings are posting cat videos out there in the universe. If,

however, biogenesis is a rare event, with many failures to that account, then few, if any, of even those biota that make it across such a boundary are likely to make it through a second trajectory that also produces intelligence.

What Taleb misses here is that some of us here on Earth can reify the delusion the odds are in their favor. Given the ginormous disparities in morbidity and mortality between the rich and the rest of the world, the story the rich tell themselves—in one version or another, that the poor are dumb and lazy—is by policy and practice imposed as a biological reality one closed hospital or structural adjustment program at a time.

Is it any wonder Taleb and Big Tobacco shill and fellow *New York Times* bestselling author Malcolm Gladwell profile each other? Each stakes the claim our social problems are nothing of the sort and are in actuality mathematical perversions dumb innumerates can't see. Gladwell's classic prison guard solution—fire the few abusive guards—is a neoliberal apologetics for a system that by percent imprisons five times more blacks than the greater population. Abusing the poorest is that system's natural order, and prison its rationalization, with enough 'bad-apple' deniability to indemnify itself. Gladwell's pragmatic technocrat, aiming to run the police state more efficiently, is an ideologue by another name.

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TALEB'S WAR ON THE NARRATIVE FALLACY makes him some interesting enemies.

"Clearly," he writes,

> you cannot manufacture more information than the past can deliver; if you buy one hundred copies of *The New York Times*, I am not for certain that it would help you gain incremental knowledge of the future.

Spoken like a sly—and provincial—Upper East Sider. Taleb confounds a cultural OCD with a falsifiable mode of investigation. Science is all about extracting information out of the past. Cosmology, chemistry, phylogenetics, geology, climatology, among others, are all about revising models of reality past and present and yes, dare we say, future by adding information with each new find or method developed (or even by reexamining old information).

"Evolution has not obliterated its tracks as more advanced animals and plants have appeared through geological time," writes paleontologist Richard Fortey,

> There are, scattered over the globe, organisms and ecologies which still survive from earlier times. These speak to us of seminal events in the history of life. They range from humble algal mats to hardy musk oxen that linger on in the tundra as last vestiges of the Ice Age. The history of life can be approached through the fossil record; a narrative of forms that have vanished from the earth. But it can also be understood through its survivors, the animals and plants that time has left behind...

In one extraordinary example after another, Fortey describes the shoulders-of-giants understanding that develops from integrating deep time data,

> [The horseshoe crab] narrative would not be complete without exploring the extraordinary coagulating properties of its blood a little further, because this affects the very survival of the species…[In 1956 Fred Bang] noticed how *Limulus* clotted dramatically when infected by a particular bacterium. Subsequent research showed that the crab's blood had an extraordinary sensitivity to a vast range of micro-organisms that are found almost everywhere in nature—known as gram-negative bacteria. A few cubic centimeters of seawater may contain hundreds of thousands of these tiny organisms. Since some of these bacteria are also agents of disease in humans, this property was of immediate interest. It seems that a hypersensitivity to microbial enemies helps to protect the crabs in their natural habitat—as soon as the bacteria enter a wound their defences were up.

Yet Taleb bends the stick so far as to claim the natural sciences are unscientific. For Taleb there may be *no* reason why the bubonic plague, for instance, didn't kill more people, as some epidemiologists have asked,

> People will supply quantities of cosmetic explanations involving theories about the intensity of the plague and "scientific models" of epidemics. Now, try the weakened causality argument that I have just emphasized…: had the bubonic plague killed more people, the observers (us) would not be here to observe. So it may not necessarily be the property of the diseases to spare humans [*NB*: a mode of thinking models of virulence have actually long abandoned]. Whenever your survival is in play, don't immediately look for causes and effects. The main identifiable reason for our survival of such diseases might simply be inaccessible to us…

Ecology and epidemiology incorporate demographic and environmental stochasticities, colinearities and contingencies, all well beyond the froth around quasi-equilibria. And yet hundreds of years of such modeling—across assumptions, formalisms, distributions and data—show outbreaks—the plague included—specific to particular molecular, ecological and social mechanisms, albeit each specific to a particular historical constellation in time, space and circumstance.

But perhaps we are converging on something. "Note here," Taleb uncharacteristically defers,

> I am not saying causes do not exist; do not use this argument to avoid trying to learn from history. All I am saying is that it *not so simple*; be suspicious of the "because" and handle it with care—particularly in situations where you suspect silent evidence.

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IN HIS PLATONIC ANTI-PLANTONICISM, Taleb traffics in caricatures. Here, Dr. John, the staid electrical engineer hired by an insurance company to compute "risk management," and, there, Fat Tony, the tawkative Brooklynite, who, yes, with hairy fingers and a gold wrist-chain,

specializes in bankruptcies.

Taleb offers Dr. John and Fat Tony the scenario of a fair coin flipped 99 times coming up heads every time. What is the chance the next flip lands tails? Dr. John dismisses the trivial question, one half, of course. Uneducated Tony, who suffered through the rough-and-tumble of the proverbial street, and who reappears in *Antifragile* as Taleb's wishful alter ego, claims less than 1%, of course, 'The coin gotta be loaded.'

To Taleb, Dr. John suffers from a bout of the ludic fallacy intrinsic to his species, basing chance and risk on games of known outcomes. We know a fair coin falls on heads on average 50% of the time. On enough rolls, a die falls on '3', 1/6 of the time.

Dr. John frames the problem solely upon these strictures without assimilating outside sources of variation. He ignores the untrustworthiness of the problem's narrator. He ignores the possibility the results show the assumption of a fair die false. In broader terms, when it is comes to probabilities in the real world we often know nothing about the denominator of the system we are trying to characterize, "In real life you do not know the odds; you need to discover them."

A fair point, and yet, by way of the very narrative fallacy he flays, Taleb imparts Fat Tony and other allies with powers of induction they do not have. For instance, he confuses his Pentagon colleagues for Sun Tzu, "Indeed for many, the successful defense policy is the one that manages to eliminate potential dangers without war, such as the strategy of bankrupting the Russians through the escalation on defense spending."

And so Taleb disappears the massive U.S. intelligence failure that missed the fall of the Soviet Union. Poof! There goes the Strangelovian Red Queen of the military-industrial complex, based on a game theory that several times threatened to mutually-assured-destroy the world, which survived its psychotic premises, to reappropriate Taleb, by luck alone, however crazy-like-a-fox the generals are spun.

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TO TALEB THE LUDIC FALLACY is another version of the narrative and silent evidence problems. Researchers assume a context for producing odds, often wrongly if with increasing precision. The real test, Taleb qualifies, isn't found in narration but in prediction. But it begs the question *what* we are to predict, and how and why. However Taleb spins it, the narration is still in there, thrown back into the methodology and variables chosen.

The computer, the Internet, the laser, Taleb declares, were Black Swans, unappreciated at their conception and only later retrospectively placed within master narratives. But Taleb appears to fall for the very fallacy he condemns. For in the other direction, what he, and others, may view as Black Swans were in actuality readily projected by the kinds of counternarratives to which we alluded at the start. I came across this piece on New Orleans's flooding by Mike Davis, our modern-day Jeremiah,

> New Orleans had spent decades preparing for inevitable submersion by the storm surge of a class-five hurricane. Civil defense officials conceded they had ten thousand body bags on hand to deal with the worst-case scenario. But no one seemed to have bothered to devise a plan to evacuate the city's poorest or most infirm residents. The day before the hurricane hit the Gulf Coast, New Orlean's daily, the Times-Picayune, ran an alarming story about the "large group mostly concentrated in poorer neighborhoods" who wanted to evacuate but couldn't.

It's not what you think, though. Check the date. A year before Katrina, Davis reports here on what were by then shopworn warnings. Before the housing collapse, Brooksley Born requested the derivatives market be more tightly regulated. There are epidemiological analogs. No scientist can predict agribusiness-based influenzas if, by dint of a finely tuned system of rewards and punishments, he or she refuses to look at agribusiness' role in influenza cladogenesis. To a deafening silence, some of us tried, even before 2009's NAFTA-linked H1N1 strain.

In other words, there is an inverse to the epistemic opacity Taleb describes as an overestimation of what we know and an underestimation of uncertainty, compressing the range of the future's uncertain states. In this political economy one finds an overestimation of what we *don't* know. Climate denial is the least of it.

Of course, there is something to Taleb's complaint. The industry of experts runs on unfalsifiable predictions. Taleb catalogs the excuses. You can claim incomplete information. You can claim a anomaly (even as your predictions discount Black Swans to begin with). You can squirm and wriggle to a claim of almost-right. When you are right, it's from a deep understanding. When you are wrong, it's by way of circumstantial chance.

Indeed, the excuse can be built right into the model. As Scott Patterson describes it, the complicated algorithms underlying the swap derivatives behind the housing collapse served as a shield against the kind of scrutiny and regulation and even internal checks that might have blocked a collapse but would have also refuted the models. The quants—the Dr. Johns, thinking as expediently as any Fat Tony—barricaded themselves inside the models.

Internally validated projections can still decay with time and increasing variability, as Taleb notes. But it's a whole other business—and often corporate anathema —to attempt parameterizing variables external to the assumptions underlying the models. Including the detrimental effects of predatory lending on swap prices, for instance, would imply the banks were libel for such practices (when the latter, at this point by protocol, are to be quietly externalized off the balance sheets).

Taleb does accuse statisticians of their own version of the narrative fallacy, but it's entirely on technicist terms. You can fit any series of data with a curve, which captures nothing of the cause of the pattern. As if statisticians aren't aware of the difference between correlation and causation. As if the kinds of extreme outcome statistics Taleb favors don't suffer from the same problem. He also charges statistics suffers a boundary problem: what might be linear in one interval or scale might be curvilinear at another, again as if this is news. That some researchers might forget this in any one instance isn't grounds enough for blackguarding the discipline.

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SO ON THE ONE HAND, Taleb rejects traditional statistics' oversimplifications, which trade truth for false precision. On the other, Taleb rejects more nuanced approaches as muddled. He follows up a word or two about Karl Popper's attack on historicism by waylaying the social sciences as soft, "slightly above aesthetics and entertainment, like butterfly or coin collecting."

What the merchant misses is that historicism, practiced also by the evolutionary biologists he embraces, needn't be deterministic in its outlook and projections to be of assistance. Characterizing era-specific constraints and contingencies, many of whose effects continue today in one or another form, helps us in understanding complex systems and, if Katrina and influenza are suitable examples, what may happen next. There's nothing soft about researchers grappling with such difficultly adult problems.

Among Taleb's other heroes, including Edward Lorenz, tellingly Robert Trivers, and neoliberal icon Friedrich Hayek, Henri Poincaré occupies a special place. His nonlinearities impose limits on forecasting. As one projects further into the future, one needs increasing precision about the system you're modeling until the forecast demands infinite precision.

It's an excellent point, which misses the point entirely. Modeling complex systems that are beyond our capacity for such precision isn't necessarily about predicting or even projecting. It's about understanding systems in such a way that when they shift from one regime into another, even by way of stochastic noise, we can grasp the nature of the shifts so as to reduce our reaction time.

Much new ecology has centered about transitory dynamics—events and processes occurring in the short term (and out of equilibrium). But these limits do not take away from what we can learn from the eigen set at equilibrium. The set speaks to the latent structure of the system even if by some Monte Carlo effect a future, were we to run the system multiple times, might end up in a variety of places.

Taleb misses the distinction between prediction and understanding, confounding the former with causality. In some sense, it's an issue of scale. Information, to use the physics formalism, saves work. Even if we cannot track every moment of every molecule, understanding the effects of temperature and pressure on a gas gives us comprehension at another scale, another point to which we will return.

Taleb quotes Poincaré to the effect that we can only make out things qualitatively, "some property of systems can be *discussed*, but not computed." Emergent systems can, however, be computed and their dynamics characterized even if only within an order of magnitude. The finance quants who claim a precise future deserve their opprobrium, but Taleb forgets that the claims, however well-meaning, are also often about selling units or rationalizing theft.

Many natural and social scientists, on the other hand, are attempting to get some kind of handle on the nature of reality, often about systems that rarely cooperate but about which we can learn much. Indeed, for them, failure *is* an option. Models fail by being badly derived or by bad data. But others fail by systemic instabilities that the model's failure illuminates. And every once in a while researchers, not by luck but by virtue of their analysis, strike the bull's-eye.

My favorite example is that of Robin Bush and Walter Fitch's model predicting seasonal influenza strains (which, apropos our pandemic skeptics, speaks to influenza's emergent repeatability). Their team found eighteen codons in the HA1 domain of H3 hemagglutinin subjected to positive selection. The viral lineages undergoing the greatest number of mutations in those eighteen proved progenitors of future H3 lineages in nine of eleven recent influenza seasons.

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THE TECHNICAL REPEATEDLY BLEEDS here into the political. Taleb explicitly connects Friedrich Hayek's attack on what the latter thought as the absurdity of a statistical social science to socialism's penchant for Platonic fiat. While there are certainly differences between the natural and social sciences, Taleb's divide, which we've already addressed, is factiously arbitrary, denying humanity even cause and effect!

As we saw, Jodi Dean addressed the notion of assigning to socialism the determinism to which its opponents object. There are, however, other presumptions braided into the critique. A planned economy, for instance, doesn't mean micromanaging every transaction. In the other direction, the "free" market is in actuality assiduously planned, organizing social production into enriching the wealthiest. Corporations that survive do so in part by deploying armies of lobbyists and PACs to legislate subsidies and other sources of cumulative advantage.

Taleb glibly pretends otherwise. Corporate busts are beautiful things, you see. Overconfident corporations benefit the rest of us by spreading money they don't (or won't) have. Indeed, "corporations can go bust as often as they like, thus subsidizing us consumers by transferring wealth into our pockets—the more bankruptcies, the better it is for us," Taleb writes on the eve of the bank bailouts and five years after Enron's implosion left thousands of its employees on the street, their pensions imploded.

The extent to which Taleb embodies what he despises is amusing. He criticizes the Platonification by which scholars confuse their methods for reality, the map for the landscape, but in such a way that reflects his own capture, "To clarify, Platonic is top-down, formulaic, closed-minded, self-serving, and commoditized; a-Platonic is bottom-up, open-minded, skeptical, and empirical." Taleb repeatedly plants his empiricism in economic variables, such as GDP and stock returns, which confound the state of production or circulation with capitalist ownership and expropriation.

With good cause Taleb rejects the rationalist presumptions behind neoclassical economics, but stretches that out even to the very notion of mathematical tractability. Dissident economists—and mainstream animal ecologists—routinely assimilate runaway bubbles and compounding contradictions in a mathematically rigorous way. That's how, for instance, we learned vaccines can select *for* influenza virulence and *against* immunal resistance. Many modelers can and do track the ways economies crash, prey-predator ecosystems collapse, and pathogens outwit us.

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TALEB ASSERTS OUR PROBLEM isn't just that we can't predict the future, but, unlike Helenus, we can't even predict the past. So really, why bother?

> [E]ven if history were a nonrandom series generated by some "equation of the world," as long as reverse engineering such an equation does not seem within human possibility, it should be deemed random and not bear the name "deterministic chaos." Historians should stay away from chaos theory and the difficulties of reverse engineering except to discuss general properties of the world and learn the limit of what they can't know...
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> Just as Popper attacked the historicists in their making claims about the future, I have just presented the weakness of the historical approach is knowing the *past* itself.

Funny that the erudite Taleb later badmouths philosophers who pontificate on Wittgenstein instead of grappling with data, as his point here fits Wittgenstein's anti-Plantonicism to a T. But Taleb here throws out the baby with the bathwater. In the past year, scientists, reverse-engineers extraordinaire, have discovered, among many, *many* things, a *Nyasasaurus* fossil that set the earliest known dinosaur back fifteen million years, bird flu H5N1 can evolve an infectious mammalian phenotype, and a parasitic phorid fly that causes bees to abandon their hives.

We learn gobs all the time, with real world applications. The Bush-Fitch paper predicting influenza strains helps select vaccine strains. Alternately characterizing *where* strains emerge and spread can help vaccine deployment. Indeed, what Taleb misses is that scientists can make generalizations about past events and make predictions about the likely future, flawed as these may be, only by trying to track down the minutiae he fences off as unknowable variables in an equation of the world we can't possibly capture.

Despite his caveats, Taleb rejects causality under the guise unexplained variation is synonymous with randomness rather than as something to be discovered as a scientific objective, "The moment we try turn history into anything other than the enumeration of accounts to be enjoyed with minimal theorizing, the more we get into trouble." And yet this is exactly the kind of theorizing that permitted Taleb his stories about our evolved psychologies. Or what of the silent evidence that speaks to the events and processes that led Taleb into accepting the Victorian program underlying much of modern thought?

Yes, there are many possible processes involved in producing historical pattern, but that doesn't mean causality isn't at that pattern's center. Nor does it mean we can't use ever-accumulating data to revise which hypothesis best explains what happened and, however contingent and specific to each era, how history moves. Indeed, as we will soon address, even stochasticity can arise by due cause.

Taleb's contention "we are being driven by history, all the while thinking that we are doing the driving" only begs what is this historical process driving us? He has spent much of the book badmouthing theories of history only to offer one himself with little explanation. One presumes

it's the contingency theory of history. Weird shit happens. True enough, but however much contingency emerges humans make decisions for better and for worse with profound impact on humanity and the planet.

No one storm can be predicted, but it would be ludicrous to assume Hurricane Sandy, directed inland by an atmospheric stop arising out of the Arctic's melting ice, didn't arise in great part by anthropogenic climate change. Was it the luck of the draw the oil and gas industry has locked energy alternatives out of subsidies and political support? Accumulative advantages—however much changing hands over the decades across personages, companies and even industries—are a class inheritance. Taleb, back to the strategic uses of unknowns, inserts stochastic foam for the meticulously PAC-tended plots of the political economy.

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HIS THEORY OF HISTORY takes a second form,

> We are gliding into disorder, but not necessarily bad disorder. This implies that we will see more periods of calm and stability, with most problems concentrated into a small number of Black Swans,

which Taleb states a few pages earlier are accruing with increasing frequency. The 20th century wasn't the deadliest, Taleb writes. Its wars were infrequent when calculated as a percentage of the total population. The Cold War, you see, was this refreshing calm of proxy combat and ever-looming nuclear holocaust. Very Steven Pinker. But to Taleb the wars were also characterized by increasing devastation.

Taleb weighs in less sanguine on the economy, however. Capitalism's globalization interlocks multiple fragilities, producing only the appearance of stability and grand inevitability. That is, by virtue of geographic interconnection and a weakening socio-ecological resilience, the economy is producing negative Black Swans at a greater rate.

Even if we were to take these history lessons at their face value, in actuality, perhaps unbeknownst even to himself, Taleb throws in with the Red Swan instead: Whatever their stochastic components, the context in which anomalies rise or fall is *political* in nature, as countries or economies react to events and circumstances in large part of their own making. Military Keynesism and now the arms trade produce a market for war. Neoliberalism busted unions and truncated regulations, permitting capital freer reign.

These policies, which relatively small groups of people *worked out together and implemented*, changed the nature of the workaday in which billions of people around the world live out their lives. Remove veritable wetlands and overbuild on the societal floodplains and the anomalous 100-year flood increases in frequency. But in Taleb's vision, we change the world whether or not we understand all the consequences, and then must scratch our heads over the world changing.

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OF WHAT USE IS A BLACK SWAN we can't by definition track?

We can rank our beliefs by their likely impact, maximize serendipity, try and err, make multiple bets, and assimilate our ignorance, self-help bromides Taleb elaborates on in his new book. He also champions an epistemocracy, a society governed around an awareness of our ignorance rather than what we think we know. It's a difficult road as a leader rarely rallies support around his or her fallibility. We think, Taleb contends, better the wrong direction together than the right alone: "psychopaths rally followers."

A good point that emphasizes the difficulty science faces as a political force in the U.S. One finds liberals routinely championing the results science converges on as due falsification of religious clap-trap against, say, evolution and climate change. But science itself need put its own sacred cows under routine scrutiny as a matter of course, a failsafe anti-science zealots repeatedly maneuver liberals into abandoning.

Taleb, however, bends the stick too far. Rob Urie, for one, unpacks American individualism in the other direction, connecting the psychopathologies arising out of solitary confinement to our social ideals,

> An irony lost on most Americans is that the U.S. has the highest proportion of its prison population living in solitary confinement in the world while we also celebrate individualism as our most basic political and economic identity. Solitary confinement is rightly considered torture by the civilized world. And while social isolation is different from individualism, 'individualism' has no meaning in isolation—it is socially defined in its base existence and in the presumed self-knowledge by which it is endorsed. What violence then does economic individualism do to social existence when its factual incarnation is unambiguously torture?...
>
> The industry of academic economics is even more culpable in promoting not just the existing economic facts but also the implausible social ontology of capitalism. Capitalist economists have spent thirty years advancing 'micro-foundations' as the fundamental objects of economic life where individual actions sum to social outcomes. Again, isolated 'individuals' don't function socially. How then do isolated individuals aggregate to produce social outcomes? And if these 'individuals' aren't isolated in that they exist socially, in what way are social outcomes then the sum of the actions of isolated individuals? As deeply embedded as the concept of 'individual' is in the Western psyche, we don't appear to exist at all outside of social existence.

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IS THERE, THEN, an alternative to the solitary confinement Taleb and his colleagues demand of us? How does the Red Swan to which we have several times alluded change our perspective?

By all appearances dialectical biologists Richard Levins and Richard Lewontin, who for five decades have applied their approaches to studying biological systems, take Taleb head on,

> Randomness has been associated with lack of causality, and with unpredictability and thus of irrationality, a lack of purpose, and the existence of free will. It has been invoked as the negation of lawfulness and therefore of any scientific understanding of society. It then becomes a justification

> for a reactionary passivity. As the bumper sticker says, "Shit happens." So stop complaining. For the most part, however, randomness and causation, chance and necessity, are not mutually exclusive opposites but interpenetrate.

A car crash, for instance, involves two drivers whose trips were determinate and even planned. The crash is 'random' only as the two cars' trajectories were independent. So contra Taleb, the quantum notion of randomness isn't synonymous with causal independence. The latter point is particularly acute for mesoscale, heterogeneous systems, such as ecosystems and societies, which Levins and Lewontin describe as characterized by, "a very large number of individually weak forces…essentially independent," with respect to each other.

Randomness, then, should always be defined in terms of its scale or to other objects. In Levins and Lewontin's example, Franklin Roosevelt's death was no accident as to the state of his body but random as to the international politics of his day.

Determinacy, meanwhile, can arise out of randomness. All the molecules of a chair need not shift together—causing the chair to jump in Taleb's example—for the sum total to produce Newtonian objects. If we can't predict every mutation, we can still infer exposing organisms to radiation and toxic chemicals will produce more mutations.

Levins and Lewontin offer a third example. Months before the Chernobyl accident, the plant's director assured an interviewer only 1-in-10,000-years odds of an accident. Sounds crazy, given what followed. But at the level of Europe's 1000 reactors, an accident at those odds should happen once every ten years. "A chance event with low probability," the dialectical duo write, "becomes a determinate certainty when there are a large number of opportunities."

Causality can be found in the aggregate. And the Black Swan can turn deterministic. It's why influenza spotters are so deeply concerned even in the face of heartening uncertainty.

Conversely, Levins and Lewontin continue, randomness can arise out of determinacy. Computers, in their example, can generate random numbers. But these are more accurately pseudo-random as their generative rule is deterministic (and their sequence repeatable). But they are random in relation to the simulation for which one is using them.

Finally, random processes are bounded. Not everything goes. Randomness in real life is constrained by states of origin. In contradiction to Taleb's sweeping pronouncements, boundaries as they apply to social processes are the focus of fruitful research. So while humanity, and society more generally, is no machine—and here Levins and Lewontin, prefiguring Urie, strike at the core—"The error is to take the individual as causally prior to the whole and not to appreciate that the social has causal properties within which individual consciousness and action are framed."

Indeed, one can apply their observation to *The Black Swan* itself,

> While the consciousness of an individual is not determined by his or her class position but is influenced by idiosyncratic factors that appear as random, those random factors operate within a domain and with probabilities that are constrained and directed by social forces.

In other words, Taleb's books stand as their own refutation.

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