

Epilogue

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SOLON TOLD YOU SO

Beware the London Traffic Jams

A couple of years after we left him looking at John smoking a cigarette with a modicum of *schadenfreude*, Nero's skepticism ended up paying off. Simultaneously as he beat the 28% odds, up to the point of complete cure, he made a series of exhilarating personal and professional victories. Not only did he end up sampling the next level of wealth but he got the riches right when other Wall Street hotshots got poor, which could have allowed him to buy the goods they owned at very large discounts, if he wanted to. But he acquired very little, and certainly none of the goods Wall Streeters usually buy. But Nero did engage in occasional excess.

Friday afternoon traffic in London can be dreadful. Nero started spending more time there. He developed an obsession with traffic jams. One day he spent five hours moving west from his office in the city of London toward a cottage in the Cotswolds, where he stayed most weekends. The frustration prompted Nero to get a helicopter-flying license, through a crash course in Cambridgeshire. He realized that the train was probably an easier solution to get out of town for the weekend, but he felt the urge for a pet extravagance. The other result of his frustration was his no less dangerous commuting on a bicycle between his flat in Kensington and his office in the city.

Nero's excessive probability-consciousness in his profession somehow did not register fully into his treatment of physical risk. For Nero's helicopter crashed as he was landing it near Battersea Park on a windy day. He was alone in it. In the end the black swan got its man.

Postscript

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THREE AFTERTHOUGHTS IN THE SHOWER

Owing to the subject's tentacles and its author's ruminating nature, this book keeps growing like a living object. I will add in this section a few post-thoughts I've had in the shower and in the few boring philosophy lectures I've attended (without wanting to offend my new colleagues in the thinking business, I discovered that listening to a speaker reciting *verbatim* his lecture notes makes me invariably daydream).

FIRST THOUGHT: THE INVERSE SKILLS PROBLEM

The higher up the corporate ladder, the higher the compensation to the individual. This might be justified, as it makes plenty of sense to pay individuals according to their contributions. However, and in general (provided we exclude risk-bearing entrepreneurs), the higher up the corporate ladder, the *lower* the evidence of such contribution. I call this the *inverse rule*.

I will be deriving the point by mere logical arguments. [Chapter 2](#) made the distinction between those skills that are visible (like the abilities of a dentist) and those that present more difficulty in nailing down, especially when the subject belongs to a randomness-laden profession (say, one that includes the occasional practice of Russian roulette). The degree of randomness in such an activity and our ability to isolate the contribution of the individual determine the visibility of the skills content. Accordingly, the cook at the company headquarters or the factory worker will exhibit their direct abilities with minimal uncertainty. These contributions may be modest but they are clearly definable. A patently incompetent professional cook who cannot distinguish salt from sugar or who tends to systematically overcook the meat would be easily caught, provided the diners have functioning taste buds. And if he gets it right by luck once, it also will be hard for him to get it right by sheer chance a second, third, and a thousandth time.

Repetitiveness is key for the revelation of skills because of what I called *ergodicity* in [Chapter 8](#)—the detection of long-term properties, particularly when these exist. If you bang one million dollars at your next visit to Las Vegas at the roulette table in one single shot, you will not be able to ascertain from this single outcome whether the house has the advantage or if you were particularly out of the gods' favor. If you slice your gamble into a series of one million bets of one dollar each, the amount you recover will systematically show the casino's advantage. This is the core of sampling theory, traditionally called the *law of large numbers*.

To view it in another way, consider the difference between judging *on process* and judging *on results*. Lower-ranking persons in the enterprise are judged on both process and results—in fact, owing to the repetitive aspect of their efforts, their process converges rapidly to results. But top management is only paid

on result—no matter the process. There seems to be no such thing as a foolish decision if it results in profits. “Money talks,” we are often told. The rest is supposed to be philosophy.

Now take a peek inside the chief executive suite. Clearly, the decisions there are not repeatable. CEOs take a small number of large decisions, more like the person walking into the casino with a single million-dollar bet. External factors, such as the environment, play a considerably larger role than with the cook. The link between the skill of the CEO and the results of the company are tenuous. By some argument, the boss of the company may be unskilled labor but one who presents the necessary attributes of charisma and the package that makes for good MBA talk. In other words, he may be subjected to the monkey-on-the-typewriter problem. There are so many companies doing all kinds of things that some of them are bound to make “the right decision.”

It is a very old problem. It is just that, with the acceleration of the power law-style winner-takes-all effects in our environment, such differences in outcomes are more accentuated, more visible, and more offensive to people’s sense of fairness. In the old days, the CEO was getting ten to twenty times what the janitor earned. Today, he can get several thousand times that.

I am excluding entrepreneurs from this discussion for the obvious reason: These are people who stuck their necks out for some idea, and risked belonging to the vast cemetery of those who did not make it. But CEOs are not entrepreneurs. As a matter of fact, they are often *empty suits*. In the “quant” world, the designation *empty suit* applies to the category of persons who are good at looking the part but nothing more. More appropriately, what they have is skill in getting promoted within a company rather than pure skills in making optimal decisions—we call that “corporate political skill.” These are people mostly trained at using PowerPoint presentations.

There is an asymmetry, as these executives have almost nothing to lose. Assume that two equally charismatic, empty-suit-style twin brothers manage to climb the corporate ladder to get two different jobs in two different corporations. Assume that they own good-looking suits, that they have MBAs, and that they are tall (the only truly visible predictor of corporate success is to be taller than average). They flip coins in secret and randomly take completely opposite actions, leading to great failure for one and great success for the other. We end up with a mildly wealthy, but fired, executive and his extremely wealthy, and still operating, twin brother. The shareholder bore the risk; the executives got the reward.

The problem is as old as leadership. Our attribution of heroism to those who took crazy decisions but were lucky enough to win shows the aberration—we continue to worship those who won battles and despise those who lost, no matter the reason. I wonder how many historians use luck in their interpretation of success—or how many are conscious of the difference between process and result.

I insist that it is not society’s problem but that of the investors. If shareholders are foolish enough to pay someone \$200 million to just wear a good-looking suit and ring a bell, as they did with the New York Stock Exchange’s Richard Grasso in 2003, it is their own money they part with, not yours and mine. It is a corporate governance issue.

The situation is not much better in a bureaucratic economy. Outside the capitalistic system, presumed talent flows to the governmental positions, where the currency is prestige, power, and social rank. There, too, it is distributed disproportionately. The contributions of civil servants might be even more difficult to judge than those of the executives of a corporation—and the scrutiny is smaller. The central banker lowers interest rates, a recovery ensues, but we do not know whether he caused it or if he slowed it down. We can’t even know that he didn’t destabilize the economy by increasing the risk of future inflation. He can always fit a theoretical explanation, but economics is a narrative discipline, and explanations are easy to fit retrospectively.

The problem may not be incurable. It is just that we need to drill into the heads of those who measure the contribution of executives that what they see is not necessarily what is there. Shareholders, in the end, are the ones who are fooled by randomness.

SECOND THOUGHT: ON SOME ADDITIONAL BENEFITS OF RANDOMNESS

Uncertainty and Happiness

Have you ever had a weeknight dinner in New York City with a suburban commuter? Odds are that the shadow of the schedule will be imprinted in his consciousness. He will be tightly aware of the clock, pacing his meal in such a way that he does not miss the 7:08 because after that one, there are no more express trains and he would be reduced to taking the 7:42 local, something that appears to be very undesirable. He will cut the conversation short around 6:58, offer a quick handshake, then zoom out of the restaurant to catch his train with maximal efficiency. You will also be stuck with the bill. Since the meal is not finished, and the bill is not ready, your manners will force you to tell him that it's on you. You will also finish the cup of decaffeinated skim cappuccino all alone while staring at his empty seat and wondering why people get trapped by choice into such a life.

Now deprive him of his schedule—or randomize the time of departures of the trains so they no longer obey a fixed and known timetable. Given that what is random and what you do not know are functionally the same, you do not have to ask the New York area Metropolitan Transit Authority to randomize their trains for the purpose of the experiment: Just assume that he is deprived of knowledge of the various departure times. All he would know is that they operate about every, say, thirty-five minutes. What would he do under such a scenario? Although you might still end up paying for dinner, he would let the meal follow its natural course, then leisurely walk to the nearby station, where he would have to wait for the next train to show up. The time difference between the two situations will be a little more than a quarter of an hour. Another way to see the contrast between a known and an unknown schedule is to compare his condition to that of another diner who has to use the subway to go home, for an equivalent distance, but without a known and fixed schedule. Subway riders are freer of their schedule, and not just because of the higher frequency of trains. Uncertainty protects them from themselves.

Chapter 10 showed, with the illustration of Buridan's donkey, that randomness is not always unwelcome. This discussion aims to show how some degree of unpredictability (or lack of knowledge) can be beneficial to our defective species. A slightly random schedule prevents us from optimizing and being exceedingly efficient, particularly in the wrong things. This little bit of uncertainty might make the diner relax and forget the time pressures. He would be forced to act as a *satisficer* instead of a *maximizer* (Chapter 11 discussed Simon's satisficing as a blend of satisfying and maximizing)—research on happiness shows that those who live under a self-imposed pressure to be optimal in their enjoyment of things suffer a measure of distress.

The difference between satisficers and optimizers raises a few questions. We know that people of a happy disposition tend to be of the satisficing kind, with a set idea of what they want in life and an ability to stop upon gaining satisfaction. Their goals and desires do not move along with the experiences. They do not tend to experience the internal treadmill effects of constantly trying to improve on their consumption of goods by seeking higher and higher levels of sophistication. In other words, they are neither avaricious nor insatiable. An optimizer, by comparison, is the kind of person who will uproot himself and change his official residence just to reduce his tax bill by a few percentage points. (You would think that the entire point of a higher income is to be free to choose where to live; in fact it seems, for these people, wealth causes them to increase their dependence!) Getting rich results in his seeing flaws in the goods and services he buys. The coffee is not warm enough. The cook no longer deserves the three stars given to him by the Michelin guide

(he will write to the editors). The table is too far from the window. People who get promoted to important positions usually suffer from tightness of schedules: Everything has an allotted time. When they travel, everything is “organized” with optimizing intent, including lunch at 12:45 with the president of the company (a table not too far from the window), the Stairmaster at 4:40, and opera at 8:00.

Causality is not clear: The question remains whether optimizers are unhappy because they are constantly seeking a better deal or if unhappy people tend to optimize out of their misery. In any case, randomness seems to operate either as a cure or as Novocain!

I am convinced that we are not made for clear-cut, well-delineated schedules. We are made to live like firemen, with downtime for lounging and meditating between calls, under the protection of protective uncertainty. Regrettably, some people might be involuntarily turned into optimizers, like a suburban child having his weekend minutes squeezed between karate, guitar lessons, and religious education. As I am writing these lines I am on a slow train in the Alps, comfortably shielded from traveling businesspersons. People around me are either students or retired persons, or those who do not have “important appointments,” hence not afraid of what they call wasted time. To go from Munich to Milan, I picked the seven-and-a-half-hour train instead of the plane, which no self-respecting businessperson would do on a weekday, and am enjoying an air unpolluted by persons squeezed by life.

I came to this conclusion when, about a decade ago, I stopped using an alarm clock. I still woke up around the same time, but I followed my own personal clock. A dozen minutes of fuzziness and variability in my schedule made a considerable difference. True, there are some activities that require such dependability that an alarm clock is necessary, but I am free to choose a profession where I am not a slave to external pressure. Living like this, one can also go to bed early and not optimize one’s schedule by squeezing every minute out of one’s evening. At the limit, you can decide whether to be (relatively) poor, but free of your time, or rich but as dependent as a slave.

It took me a while to figure out that we are not designed for schedules. The realization came when I recognized the difference between writing a paper and writing a book. Books are fun to write, papers are painful. I tend to find the activity of writing greatly entertaining, given that I do it without any external constraint. You write, and may interrupt your activity, even in mid-sentence, the second it stops being attractive. After the success of this book, I was asked to write papers by the editors of a variety of professional and scientific journals. Then they asked me how long the piece should be. What? How long? For the first time in my life, I experienced a loss of pleasure in writing! Then I figured out a personal rule: For writing to be agreeable to me, *the length of the piece needs to remain unpredictable*. If I see the end of it, or if I am subjected to the shadow of an outline, I give up. I repeat that our ancestors were not subjected to outlines, schedules, and administrative deadlines.

Another way to see the beastly aspect of schedules and rigid projections is to think in limit situations. Would you like to know with great precision the date of your death? Would you like to know who committed the crime before the beginning of the movie? Actually, wouldn’t it be better if the length of movies were kept a secret?

The Scrambling of Messages

Besides its effect on well-being, uncertainty presents tangible informational benefits, particularly with the scrambling of potentially damaging, and self-fulfilling, messages. Consider a currency pegged by a central bank to a fixed rate. The bank’s official policy is to use its reserves to support it by buying and selling its currency in the open market, a procedure called *intervention*. But should the currency rate drop a tiny bit, people will immediately get the message that the intervention failed to support the currency and that the devaluation is coming. A pegged currency is not supposed to fluctuate; the slightest downward fluctuation

is meant to be a harbinger of bad news! The rush to sell would cause a self-feeding frenzy leading to certain devaluation.

Now consider an environment where the central bank allows some noise around the official band. It does not promise a fixed rate, but one that can fluctuate a bit before the bank starts intervening. A small drop would not be considered to bear much information. The existence of noise leads us to avoid reading too much into variations. *Fluctuat nec mergitur* (it fluctuates but does not sink).

This point has applications in evolutionary biology, evolutionary game theory, and conflict situations. A mild degree of unpredictability in your behavior can help you to protect yourself in situations of conflict. Say you always have the same threshold of reactions. You take a set level of abuse, say seventeen insulting remarks per week, before getting into a rage and punching the eighteenth offender in the nose. Such predictability will allow people to take advantage of you up to that well-known trigger point and stop there. But if you randomize your trigger point, sometimes overreacting at the slightest joke, people will not know in advance how far they can push you. The same applies to governments in conflicts: They need to convince their adversaries that they are crazy enough to sometimes overreact to a small peccadillo. Even the magnitude of their reaction should be hard to foretell. Unpredictability is a strong deterrent.

THIRD THOUGHT: STANDING ON ONE LEG

I have been periodically challenged to compress all this business of randomness into a few sentences, so even an MBA can understand it (surprisingly, MBAs, in spite of the insults, represent a significant portion of my readership, simply because they think that my ideas apply to other MBAs and not to them).

This brings to mind Rabbi Hillel's story, when he was asked by someone particularly lazy if Hillel could teach him the Torah while the student was standing on one leg. Rabbi Hillel's genius is that he did not *summarize*; instead, he provided the core generator of the idea, the axiomatic framework, which I paraphrase as follows: *Don't do to others what you don't want them to do to you; the rest is just commentary.*

It took me an entire lifetime to find out what my generator is. It is: *We favor the visible, the embedded, the personal, the narrated, and the tangible; we scorn the abstract.* Everything good (aesthetics, ethics) and wrong (Fooled by Randomness) with us seems to flow from it.

***To my mother,
Minerva Ghosn Taleb***

ACKNOWLEDGMENTS FOR THE FIRST EDITION

First, I would like to thank friends who can be considered rightful coauthors. I am grateful to New York intellectual and expert in randomness Stan Jonas (I do not know any other designation that would do him justice) for half a lifetime of conversations into all subjects bordering on probability with the animation and the zeal of the neophyte. I thank my probabilist friend Don Geman (husband of Helyette Geman, my thesis director) for his enthusiastic support for my book; he also made me realize that probabilists are born, not made—many mathematicians are capable of computing, but not understanding, probability (they are no better than the general population in exerting probabilistic judgments). The real book started with an all-night conversation with my erudite friend Jamil Baz during the summer of 1987, as he discussed the formation of “new” and “old” money among families. I was then a budding trader and he scorned the arrogant Salomon Brothers traders who surrounded him (he was proved right). He instilled in me the voracious introspection about my performance in life and really gave me the idea for this book. Both of us ended up getting doctorates later in life, on an almost identical subject matter. I have also dragged many people on (very long) walks in New York, London, or Paris, discussing some parts of this book, such as the late Jimmy Powers, who helped nurture my trading early on, and who kept repeating “anyone can buy and sell,” or my encyclopedic friend David Pastel, equally at ease with literature, mathematics, and Semitic languages. I have also engaged my lucid Popperian colleague Jonathan Waxman in numerous conversations on the integration of Karl Popper’s ideas into our life as traders.

Second, I have been lucky to meet Myles Thompson and David Wilson, when they both were at J. Wiley & Sons. Myles understood that books need not be written to satisfy a predefined labeled audience, but that a book will find its own unique set of readers—thus giving more credit to the reader than the off-the-rack publisher. As to David, he believed enough in the book to push me to take it into its natural course, free of all labels and taxonomies. David saw me the way I view myself: someone who has a passion for probability and randomness, who is obsessed with literature but happens to be a trader, rather than a generic “expert.” He also saved my idiosyncratic style from the dulling of the editing process (for all its faults, the style is mine). Finally, Mina Samuels proved to be the greatest conceivable editor: immensely intuitive, cultured, aesthetically concerned, yet nonintrusive.

Many friends have fed me with ideas during conversations, ideas that found their way into the text. I can mention the usual suspects, all of them prime conversationalists: Cynthia Shelton Taleb, Helyette Geman, Marie-Christine Riachi, Paul Wilmott, Shaiy Pilpel, David DeRosa, Eric Briys, Sid Kahn, Jim Gatheral, Bernard Oppetit, Cyrus Pirasteh, Martin Mayer, Bruno Dupire, Raphael Douady, Marco Avellaneda, Didier Javice, Neil Chriss, and Philippe Asseily.

Some of these chapters were composed and discussed as part of the “Odeon Circle,” as my friends and I met with a varying degree of regularity (on Wednesdays at 10 p.m. after my Courant class) at the bar of the restaurant Odeon in Tribeca. Genius loci (“the spirit of the place”) and outstanding Odeon staff member Tarek Khelifi made sure that we were well taken care of and enforced our assiduity by making me feel guilty on no-shows, thus helping greatly with the elaboration of the book. We owe him a lot.

I must also acknowledge the people who read the MS, diligently helped with the errors, or contributed to the elaboration of the book with useful comments: Inge Ivchenko, Danny Tosto, Manos Vourkoutiotis, Stan

Metelits, Jack Rabinowitz, Silverio Foresi, Achilles Venetoulas, and Nicholas Stephanou. Erik Stettler was invaluable in his role as a shadow copy editor. All mistakes are mine.

Finally, many versions of this book sat on the Web, yielding sporadic (and random) bursts of letters of encouragement, corrections, and valuable questions, which made me weave answers into the text. Many chapters of this book came in response to readers' questions. Francesco Corielli from Bocconi alerted me on the biases in the dissemination of scientific results.

This book was written and finished after I founded Empirica, my intellectual home, "Camp Empirica," in the woods in the back country of Greenwich, Connecticut, which I designed to fit my taste and feel like a hobby: a combination of an applied probability research laboratory, athletic summer camp, and, not least, a trading operation (I had experienced one of my best professional years while writing these lines). I thank all the like-minded people who helped fuel the stimulating atmosphere there: Pallop Angsupun, Danny Tosto, Peter Halle, Mark Spitznagel, Yuzhao Zhang, and Cyril de Lambilly as well as the members of Paloma Partners such as Tom Witz, who challenged our wisdom on a daily basis, and Donald Sussman, who supplied me with his penetrating judgment.

ACKNOWLEDGMENTS FOR THE UPDATED SECOND EDITION

Out of the Library

The book helped me break out of my intellectual isolation (not being a full-time academic offers plenty of benefits, such as independence and the avoidance of the dull parts of the process, but it comes at the cost of seclusion). I made many interesting dinner companions and pen pals among lucid thinkers through the first edition, and, thanks to them, I was able to make a second pass on some of the topics. In addition, I have gotten closer to my dream life thanks to the stimulation of discussion with people who share my interests; I feel that I need to pay the book back for that. There seems to be some evidence that conversations and correspondence with intelligent people is a better engine for personal edification than plain library-ratting (human warmth: Something in our nature may help us grow ideas while dealing and socializing with other people). Somehow there was the *pre-and post-Fooled* life. While the acknowledgments for the first edition hold more than ever, I would like to add here my newly incurred debt.

Shrinking the World

I first met Robert Shiller in person as we were seated next to each other at a breakfast panel discussion. I found myself inadvertently eating all the fruits on his plate and drinking his coffee and water, leaving him with the muffins and other unfashionable food (and nothing to drink). He did not complain (he may have not noticed). I did not know Shiller when I featured him in the first edition and was surprised by his accessibility, his humility, and his charm (by some heuristic one does not expect people who have vision to be also personable). He later drove me to a bookstore in New Haven, showed me *Flatland*, a scientific parable dealing with physics that he read when he was in high school, and told me to keep this book as it was in the first edition: short, personal, as close to a novel as possible, something I kept in mind throughout the exercise of this reworking (he tried to convince me to not do this second edition, I begged him to do a second one of his own *Irrational Exuberance*, be it only for my own consumption; I think that I won both points). Books have bubble dynamics of the type discussed in [Chapter 10](#), a matter that makes an extra edition of an existing book far more likely to break through the critical point than a new one (network externalities make religions and fads fare incrementally better in their second editions than brand-new ones). The physicist and crash theorist Didier Sornette provided me with convincing arguments for the effectiveness of a second version; we are surprised that book publishers who thrive on informational cascades are not conscious of the point.

During much of the rewriting of this book I was under the energizing influence of two intense dinner conversations in Italy with Daniel Kahneman, which had the effect of “pushing” me to the next critical point of intellectual drive, after I saw that his work went so much deeper than mere rational choice under uncertainty. I am certain that his influence on economics (including the Nobel medal) focused people away from the breadth and depth and the general applicability of his discoveries. Economics is boring stuff, but *His work matters* I kept telling myself, not just because he is an empiricist, not just because of the contrast of the relevance of his work (and personality) with those of the other recent Nobel economists, but because of its far-reaching implications on far worthier questions: (a) He and Amos Tversky helped stand on its head the notion of man that we owe to the dogmatic rationalism of the Hellenistic age and which held for

twenty-three centuries, with all the damaging consequences that we know of now; (b) Kahneman's important work is on utility theory (in its different stages) with consequences on such significant things as happiness. Now understanding happiness is a *real* pursuit.

I had lengthy discussions with Terry Burnham, the biologist and evolutionary economist and co-author of *Mean Genes*, that unpretentious introduction to evolutionary psychology, who coincidentally turned out to be best friends with Jamil Baz, the childhood friend who was my sounding board with my early introspections on randomness two decades ago. Peter McBurney got me involved with the Artificial Intelligence community, which seems to fuse together the fields of philosophy, cognitive neuroscience, mathematics, economics, and logic. He and I started a voluminous correspondence on the various theories of rationality. Michael Schrage, one of my reviewers, is the epitome of the modern (hence scientific) intellectual—he has a knack of reading everything that seems to matter. He offers the conversation of a true intellectual, shielded from the straitjacket of academic pressures. Ramaswami Ambarish and Lester Siegel showed me (with their suspiciously unnoticed work) that if we are fooled by randomness with respect to plain performance, then performance differential is even harder to pin down. The writer Malcolm Gladwell sent me into some interesting parts of the literature on intuition and self-knowledge. Art De Vany, the insightful and brilliantly colorful economist who specializes in nonlinearities and rare events, started his introductory letter to me with the shibboleth “I despise textbooks.” It is encouraging to see someone with such depth in his thinking who can also have fun in life. The economist William Easterly showed me that randomness contributed to illusionary causes in economic development. He liked the link between being a skeptical empiricist and disliking monopolies on knowledge by institutions like governments and universities. I am grateful to Hollywood agent Jeff Berg, an enthusiastic reader, for his insights on the wild type of uncertainty that prevails in the media business. I have to thank the book for allowing me to have insightful dinner discussions with Jack Schwager, who seems to have thought of some of the problems longer than anybody alive.

Thank You, Google

The following people have provided me with help on this text. I was very fortunate to have Andreea Munteanu as an incisive reader and valuable sounding board; she spent hours away from her impressive derivatives job checking the integrity of the references on Google. Amanda Gharghour also helped with the search. I was also lucky to have Gianluca Monaco as the Italian translator; he found mistakes in the text that it would have taken me a century to detect (a cognitive scientist and book-translator-turned-student-of-mathematical-finance, he called up the publisher and appointed himself the translator). My collaborator, the philosopher of science Avital Pilpel, provided me with invaluable help with technical probability discussions. Elie Ayache, another Levantine-trader-mathematician-physicist-turned-philosopher-of-science-probability-markets (though without the neurobiology), made me spend numerous hours at Borders Books in both the philosophy section and the science section. Flavia Cymbalista, Sole Marittimi (now Riley), Paul Wilmott, Mark Spitznagel, Gur Huberman, Tony Glickman, Winn Martin, Alexander Reisz, Ted Zink, Andrei Pokrovsky, Shep Davis, Guy Riviere, Eric Schoenberg, and Marco Di Martino provided comments on the text. George Martin was, as usual, an invaluable sounding board. The readers Carine Chichereau, Bruce Bellner, and Illias Katsounis, gracefully e-mailed me extensive errata. I thank Cindy, Sarah, and Alexander for support and the reminder that there are other things than probability and uncertainty.

I also have to thank my second home, the Courant Institute of Mathematical Sciences, for providing me with the right atmosphere to pursue my interests and teach and coach students while retaining my intellectual independence, particularly Jim Gatheral, who took the habit of heckling me while co-teaching the class. I am indebted to Paloma's Donald Sussman and Tom Witz for their unusual insights; I am truly

impressed by their heroic ability to understand the “black swan.” I also thank the Empirica members (we ban the use of the word *employees*) for fostering a climate of fierce and ruthless, truly cut-throat intellectual debate in the office. My coworkers make sure that not a single comment on my part can go without some sort of challenge.

I insist once again that without David Wilson and Myles Thompson this book would have never been initially published. But without Will Murphy, Daniel Menaker, and Ed Klagsbrun, who revived this book, it would have been dead. I thank Janet Wygal for her thoroughness (and patience) and Fleetwood Robbins for his assistance. Given their zeal, I doubt that many mistakes are left; however, those that remain are mine.

A TRIP TO THE LIBRARY

Notes and Reading Recommendations

NOTES

I confess that, as a practitioner of randomness, I focused primarily on the defects of my *own* thinking (and that of a few people I've observed or tracked through time). I also intended the book to be playful, which is not very compatible with referencing every idea to some scientific paper to give it a degree of respectability. I take the liberty in this section to finesse a few points and to provide select references (of the “further reading” variety)—but references linked to matters that I directly experienced. I repeat that this is a personal essay, not a treatise.

On completion of this compilation I discovered the predominance of matters relating to human nature (mostly empirical psychology) over things mathematical. Sign of the times: I am convinced that the next edition, hopefully two years from now, will have plenty of references and notes in neurobiology and neuroeconomics.

PREFACE

Hindsight bias: a.k.a Monday morning quarterback. See Fischhoff (1982).

Clinical knowledge: The problem of clinicians not knowing what they do not know, and not quite figuring it out. See Meehl (1954) for the seminal introduction. “It is clear that the dogmatic, complacent assertion sometimes heard from clinicians that ‘naturally’ clinical prediction, being based on ‘real understanding’ is superior, is simply not justified by the facts to date.” In his testing, in all but one case, predictions made by actuarial means were equal to or better than clinical methods. Even worse: In a later paper, he changed his mind about that one exception. Since Meehl’s work there has been a long tradition of examination of expert opinions, confirming the same results. This problem applies to about every profession—particularly journalists and economists. We will discuss in further notes the associated problem of self-knowledge.

Montaigne vs Descartes: I thank the artificial intelligence researcher and omnivorous reader Peter McBurney for bringing to my attention the discussion in Toulmin (1990). On that I have to make the sad remark that Descartes was originally a skeptic (as attested by his demon thought experiment) but the so-called Cartesian mind corresponds to someone with an appetite for certainties. Descartes’ idea in its original form is that there are very few certainties outside of narrowly defined deductive statements, not that everything we think about needs to be deductive.

Affirming the consequent: The logical fallacy is generally presented as follows.

If p then q

Therefore, p

(All people in the Smith family are tall; he is tall therefore he belongs to the Smith family).

The track record of the general population in correctly making such inference is exceedingly poor. Although it is not customary to quote textbooks, I refer the reader to the excellent Eysenck and Keane (2000) for a list of the research papers on the different difficulties—up to 70% of the population can make such a mistake!

The millionaire mind: Stanley (2000). He also figured out (correctly) that the rich were “risk takers” and inferred (incorrectly) that risk taking made one rich. Had he examined the population of failed entrepreneurs he would have also inferred (correctly) that the failed entrepreneurs too were “risk takers.”

Journalists are “practical”: I heard at least four times the word *practical* on the part of journalists trying to justify their simplification. The television show that wanted me to present three stock recommendations wanted something “practical,” not theories.

PROLOGUE

Mathematics conflicts with probability: One is about certainties, the other about the exact opposite. This explains the disrespect held by pure mathematicians for the subject of probability for a long time—and the difficulty in integrating the two. It is not until recently that it was termed “the logic of science”—the title of the posthumous Jaynes (2003). Interestingly, this book is also perhaps the most complete account of the mathematics of the subject—he manages to use probability as an expansion of conventional logic.

The prominent mathematician David Mumford, a Fields medalist, repents for his former scorn for probability. He writes in *The Dawning of the Age of Stochasticity* (Mumford, 1999): “For over two millennia, Aristotle’s logic has ruled over the thinking of Western intellectuals. All precise theories, all scientific models, even models of the process of thinking itself, have in principle conformed to the straight-jacket of logic. But from its shady beginnings devising gambling strategies and counting corpses in medieval London, probability theory and statistical inference now emerge as better foundations for scientific models, especially those of the process of thinking and as essential ingredients of theoretical mathematics, even the foundations of mathematics itself. We propose that this sea change in our perspective will affect virtually all of mathematics in the next century.”

Courage or foolishness: For an examination of that notion of “courage” and “guts,” see Kahneman and Lovallo (1993). See also a discussion in Hilton (2003). I drew the idea from Daniel Kahneman’s presentation in Rome in April 2003 (Kahneman, 2003).

Cognitive errors in forecasting: Tversky and Kahneman (1971), Tversky and Kahneman (1982), and Lichtenstein, Fischhoff and Phillips (1977).

Utopian/tragic: The essayist and prominent (scientific) intellectual Steven Pinker popularized the distinction (originally attributable to the political scholar Thomas Sowell). See Sowell (1987), Pinker (2002). Actually, the distinction is not so clear. Some people actually believe, for instance, that Milton Friedman is a utopist in the sense that all ills come from governments and that getting rid of government would be a great panacea.

Fallibility and infallibilism: Peirce (in a prospectus for a never written book), writes, “Nothing can be more completely contrary to a philosophy, the fruit of a scientific life, than infallibilism, whether arrayed in the old ecclesiastical trappings, or under its recent ‘scientific’ disguise.” (Brent, 1993). For a brief and very readable acquaintance to the works of Peirce, Menand (2001). It draws on his sole biography, Brent (1993).

CHAPTER 1

Relative compared to absolute position: See Kahneman, Knetsch and Thaler (1986). Robert Frank is an interesting researcher who spent part of his career thinking about the problem of status, rank, and relative income: See Frank (1985), and the very readable Frank (1999). The latter includes discussions on the interesting proposer/responder problem where people forego windfall profits in order to deprive others of a larger share. One person proposes to the other a share of, say, \$100. She can accept or refuse. If she refuses, both get nothing.

Even more vicious results have been shown by researchers who studied how much people would *pay* to lower other people’s income: See Zizzo and Oswald (2001). On that also, see Burnham (2003) (he ran an experiment measuring the testosterone levels in economic exchange).

Serotonin and pecking order: Frank (1999) includes a discussion.

On the social role of the psychopath: See Horrobin (2002). While it may have some extreme views on the point, the book reviews discussions of the theories around the success realized by the psychopaths. Also, see Carter (1999) for a presentation of the advantage some people have in being separated from the feeling of empathy and compassion.

Social emotions: Damasio (2003): “One of the many reasons why people become leaders and others followers, why so many command respect, has little to do with knowledge or skills and a lot to do with how some physical traits and the manner of a given individual promote certain emotional responses in others.”

Literature on emotions: For a review of the current scientific ideas, see the excellent compact Evans (2002). Evans belongs to the new breed of the philosopher/essayist contemplating large themes with a scientific mind. Elster (1998) goes into the broad social implications of emotions. The bestselling Goleman (1995) offers a surprisingly complete account (the fact that it is a bestseller is surprising: We are aware of our irrationality but it does not seem to help).

CHAPTER 2

Possible worlds: Kripke (1980).

Many worlds: See the excellently written Deutsch (1997). I also suggest a visit to the author’s rich website. The earlier primary work can be found in DeWitt and Graham (1973), which contains Hugh Everett’s original paper.

Economics of uncertainty and possible states of nature: See Debreu (1959). For a presentation of lattice state-space methods in mathematical finance, see Ingersoll (1987) (well structured though dry and very, very boring, like the personality of its author), and the more jargon-laden Huang and Litzenberger (1988). For an economics-oriented presentation, see Hirshleifer and Riley (1992).

For the works of Shiller: See Shiller (2000). The more technical work is in the (originally) controversial Shiller (1981). See also Shiller (1990). For a compilation: Shiller (1989). See also Kurz (1997) for a discussion of endogenous uncertainty.

Risk and emotions: Given the growing recent interest in the emotional role in behavior, there has been a growing literature on the role of emotions in both risk bearing and risk avoidance: The “risk as feeling” theory: See Loewenstein, Weber, Hsee and Welch (2001), and Slovic, Finucane, Peters and MacGregor (2003a). For a survey, see Slovic, Finucane, Peters and MacGregor (2003b). See also Slovic (1987).

For a discussion of the affect heuristic: See Finucane, Alhakami, Slovic and Johnson (2000).

Emotions and cognition: For the effect of emotions on cognition, see LeDoux (2002).

Availability heuristic (how easily things come to mind): Tversky and Kahneman (1973).

Real incidence of catastrophes: For an insightful discussion, see Albouy (2002).

On sayings and proverbs: Psychologists have long examined the gullibility of people in social settings facing well-sounding proverbs. For instance, experiments since the 1960s have been made where people are asked whether they believed that a proverb is right, while another cohort is presented the opposite meaning. For a presentation of the hilarious results, see Myers (2002).

Epiphenomena: See the beautiful Wegner (2002).

CHAPTER 3

Keynes: Keynes' *Treatise on Probability* (Keynes, 1989, 1920) remains in many people's opinion the most important single work on the subject—particularly considering Keynes' youth at the time of composition (it was published years after he finished it). In it he develops the critical notion of subjective probability.

***Les gomme*s:** Robbe-Grillet (1985).

Pseudoscientific historicism: For an example, I suggest Fukuyama (1992).

Fears built into our genes: This is not strictly true—genetic traits need to be culturally activated. We are wired for some fears, such as fears of snakes, but monkeys who have never seen a snake do not have it. They need the sight of the fear in the facial features of another monkey to start getting scared (LeDoux, 1998).

Amnesia and risk avoidance: Damasio (2000) presents the case of David the amnesic patient who knew to avoid those who abused him. See also Lewis, Amini and Lannon (2000). Their book presents a pedagogic discussion of “camouflaged learning,” in the form of implicit memory, as opposed to explicit memory (neocortical). The book portrays memory as a correlation in neuron connectivity rather than some CD-style recording—which explains the revisions of memory by people after events.

Why don’t we learn from our past history?: Two strains of literature. (1) The recent “stranger to ourselves” line of research in psychology (Wilson 2002). (2) The literature on “immune neglect,” Wilson, Meyers and Gilbert (2001) and Wilson, Gilbert and Centerbar (2003). Literally, people don’t learn from their past reactions to good and bad things.

Literature on bubbles: There is a long tradition, see Kindleberger (2001), MacKay (2002), Galbraith (1991), Chancellor (1999), and of course Shiller (2000). Shiller with a little work may be convinced to do a second edition.

Long-term capital management: See Lowenstein (2000).

Stress and randomness: Sapolsky (1998) is a popular, sometimes hilarious presentation. The author specializes among other things on the effect of glucocorticoids released at times of stress on the atrophy of the hippocampus, hampering the formation of new memory and brain plasticity. More technical, Sapolsky (2003).

Brain asymmetries with gains/losses: See Gehring and Willoughby (2002). See the works of Davidson on the anterior brain asymmetry (a clear summary and popular presentation in Goleman 2003). See also Shizgal (1999).

The dentist and prospect theory: Kahneman and Tversky (1979). In this seminal discussion they present agents as interested in differences and resetting their pain/pleasure level at zero as “anchor.” The gist of it is that “wealth” does not matter, almost only differences in wealth, since the resetting cancels the effect of the accumulation. Think of John hitting wealth of \$1 million from below or above and the impact on his well-being. The difference between utility of wealth and utility of changes in wealth is not trivial: It leads to dependence on the observation period. In fact the notion, taken to its limit, leads to the complete revision of economic theory: Neoclassical economics will no longer be useful beyond mathematical exercises. There have been vigorous such discussions in the hedonistic literature as well: See Kahneman, Diener and Schwarz (1999).

CHAPTER 4

Public and scientific intellectual: Brockman (1995) offers presentations by the “who’s who” in the new scientific intellectual tradition. See also his website, www.edge.org. For a physicist’s position on the culture wars, Weinberg (2001). For a presentation of a public intellectual, see Posner (2002). Note that Florida Atlantic University offers a Ph.D. to become a public intellectual—literary, since scientists need no such artifice.

The hoax: Sokal (1996).

The Selfish Gene: Dawkins (1989, 1976). Hegel: In Popper (1994).

Exquisite cadavers: Nadeau (1970).

The generator: www.monash.edu.au.

Language and probability: There is a very large connection between language and probability; it has been studied by thinkers and scientists via the sister methods of entropy and information theory—one can reduce the dimensionality of a message by eliminating redundancy, for instance; what is left is measured as information content (think of zipping a file) and is linked to the notion of “entropy,” which is the degree of disorder, the unpredictable that is left. Entropy is a very invasive notion as it relates to aesthetics and thermodynamics. See Campbell (1982) for a literary presentation, and Cover and Thomas (1991) for a scientific one, particularly the discussion on the “entropy of English.” For a classic discussion of entropy and art, Arnheim (1971), though the connection between entropy and probability was not yet clear at the time. See Georgescu-Roegen (1971) for a (perhaps) pioneering discussion of entropy in economics.

CHAPTER 5

The firehouse effect and the convergence of opinions: There are plenty of discussions in the psychology literature of such convergence of opinions, particularly in the area of mate selection or what Keynes calls “the beauty contest,” as people tend to choose what other people choose, causing positive-feedback loops.

An interesting manifestation is the autokinetic effect. When people gaze at a stationary light in a room they see it moving after a while and can estimate the amount of movement, not knowing that it is an optical illusion. When isolated the subjects give wildly varying speeds of movement; when tested in a group they

converge to a common speed of movement: See Plotkin (1998). Sornette (2003) gives an interesting account of the feedback loops that result from herding written in light, but with extremely intuitive mathematics.

Biology of imitation: See Dugatkin (2001).

Evolution and small probabilities: Evolution is principally a probabilistic concept. Can it be fooled by randomness? Can the least skilled survive? There is a prevalent strain of Darwinism, called naive Darwinism, that believes that any species or member of a species that dominates at any point has been selected by evolution because they have an advantage over others. This results from a common misunderstanding of local and global optima, mixed with an inability to get rid of the belief in the law of small numbers (overinference from small data sets). Just put two people in a random environment, say a gambling casino, for a weekend. One of them will fare better than the other. To a naive observer the one who fares better will have a survival advantage over the other. If he is taller or has some trait that distinguishes him from the other, such trait will be identified by the naive observer as the explanation of the difference in fitness. Some people do it with traders—make them compete in a formal competition. Consider also the naive evolutionary thinking positing the “optimality” of selection—the founder of sociobiology does not agree with such optimality when it comes to rare events: E. O. Wilson (2002) writes: “The human brain evidently evolved to commit itself emotionally only to a small piece of geography, a limited band of kinsmen, and two or three generations into the future. To look neither far ahead nor far afield is elemental in a Darwinian sense. *We are innately inclined to ignore any distant possibility not yet requiring examination. It is, people say, just good common sense.* Why do they think in this shortsighted way? “The reason is simple: It is a hardwired part of our Paleolithic heritage. For hundreds of millennia, those who worked for short-term gain within a small circle of relatives and friends lived longer and left more offspring—even when their collective striving caused their chiefdoms and empires to crumble around them. The long view that might have saved their distant descendants required a vision and extended altruism instinctively difficult to marshal.”

See also Miller (2000): “Evolution has no foresight. It lacks the long-term vision of drug company management. A species can’t raise venture capital to pay its bills while its research team . . . Each species has to stay biologically profitable every generation, or else it goes extinct. Species always have cashflow problems that prohibit speculative investments in their future. More to the point, every gene underlying every potential innovation has to yield higher evolutionary payoffs than competing genes, or it will disappear before the innovation evolves any further. This makes it hard to explain innovations.”

CHAPTER 6

Fooled by negative skewness: The first hint of an explanation for the popularity of negatively skewed payoffs comes from the early literature on behavior under uncertainty, with the “small number problem.” Tversky and Kahneman (1971) write: “We submit that people view a sample randomly drawn from a population as highly representative, that is, similar to a population in all essential characteristics.” The consequence is the inductive fallacy: overconfidence in the ability to infer general properties from observed facts, “undue confidence in early trends,” the stability of observed patterns and deriving conclusions with more confidence attached to them than can be warranted by the data. Worst, the agent finds causal explanations or perhaps distributional attributes that confirm his undue generalization. It is easy to see that the “small numbers” get exacerbated with skewness since most of the time the observed mean will be

different from the true mean and most of the time the observed variance will be lower than the true one. Now consider that it is a fact that in life, unlike a laboratory or a casino, we do not observe the probability distribution from which random variables are drawn: We only see the realizations of these random processes. It would be nice if we could, but it remains that we do not measure probabilities as we would measure the temperature or the height of a person. This means that when we compute probabilities from past data we are making assumptions about the skewness of the generator of the random series—all data is conditional upon a generator. In short, with skewed packages, the camouflage of the properties comes into play *and* we tend to believe what we see. Taleb (2004).

Philosopher sometimes playing scientist: Nozik (1993).

Hollywood economics: De Vany (2003).

People are sensitive to sign rather than magnitude: Hsee and Rottenstreich (2004).

Lucas critique: Lucas (1978).

CHAPTER 7

Niederhoffer's book: Niederhoffer (1997).

Goodman's riddle of induction: One can take the issue of induction into a more difficult territory with the following riddle. Say the market went up every day for a month. For many people of inductive taste it could confirm the theory that it is going up every day. But consider: It may confirm the theory that it goes up every day then crashes—what we are witnessing is not an ascending market but one that *ascends then crashes*. When one observes a blue object it is possible to say that one is observing something blue until time *t*, beyond which it is green—that such object is not blue but “grue.” Accordingly, by such logic, the fact that the market went up all this time may confirm that it will crash tomorrow! It confirms that we are observing a rising-crashing market. See Goodman (1954).

Writings by Soros: Soros (1988).

Hayek: See Hayek (1945) and the prophetic Hayek (1994), first published in 1945.

Popper's personality: Magee (1997), and Hachohen (2001). Also an entertaining account in Edmonds and Eidinow (2001).

CHAPTER 8

The millionaire next door: Stanley (1996).

Equity premium puzzle: There is an active academic discussion of the “equity premium” puzzle, taking the “premium” here to be the outperformance of stocks in relation to bonds and looking for possible explanations. Very little consideration was given to the possibility that the premium may have been an optical illusion owing to the survivorship bias—or that the process may include the occurrence of black swans. The discussion seems to have calmed a bit after the declines in the equity markets after the events of 2000–2002.

CHAPTER 9

Hot-hand effect: Gilovich, Vallone and Tversky (1985).

Stock analysts fooled by themselves: For a comparison between analysts and weather forecasters, see Tazsaka and Zielonka (2002).

Differences between returns: See Ambarish and Siegel (1996). The dull presenter was actually comparing “Sharpe ratios,” i.e., returns scaled by their standard deviations (both annualized), named after the financial economist William Sharpe, but the concept has been commonly used in statistics and called “coefficient of variation.” (Sharpe introduced the concept in the context of the normative theory of asset pricing to compute the expected portfolio returns given some risk profile, not as a statistical device.) Not counting the survivorship bias, over a given twelve-month period, assuming (very generously) the Gaussian distribution, the “Sharpe ratio” differences for two uncorrelated managers would exceed 1.8 with close to 50% probability. The speaker was discussing “Sharpe ratio” differences of around .15! Even assuming a five-year observation window, something very rare with hedge fund managers, things do not get much better.

Value of the seat: Even then, by some attribution bias, traders tend to believe that their income is due to their skills, not the “seat,” or the “franchise” (i.e., the value of the order flow). The seat has a value as the New York Stock Exchange specialist “book” is worth quite large sums: See Hilton (2003). See also Taleb (1997) for a discussion of the time and place advantage.

Data mining: Sullivan, Timmermann and White (1999).

Dogs not barking: I thank my correspondent Francesco Corielli from Bocconi for his remark on meta-analysis.

CHAPTER 10

Networks: Arthur (1994). See Barabasi (2002), Watts (2003).

Nonlinear dynamics: For an introduction to nonlinear dynamics in finance, see Brock and De Lima (1995), and Brock, Hsieh and LeBaron (1991). See also the recent, and certainly the most complete, Sornette (2003). Sornette goes beyond just characterizing the process as fat-tailed and saying that the probability distribution is different from the one we learned in Finance 101. He studies the transition points: Say a book's sales become close to a critical point from which they will really take off. Their dynamics, conditional on past growth, become predictable.

The Tipping Point: Gladwell (2000). In the article that preceded the book (Gladwell, 1996) he writes: "The reason this seems surprising is that human beings prefer to think in linear terms I can remember struggling with these same theoretical questions as a child, when I tried to pour ketchup on my dinner. Like all children encountering this problem for the first time, I assumed that the solution was linear: That steadily increasing hits on the base of the bottle would yield steadily increasing amounts of ketchup out the other end. Not so, my father said, and he recited a ditty that, for me, remains the most concise statement of the fundamental nonlinearity of everyday life: 'Tomato ketchup in a bottle—None will come and then the lot'll.' "

Pareto: Before we had a generalized use of the bell curve, we took the ideas of Pareto with his distribution more seriously—its mark is the contribution of large deviations to the overall properties. Later elaborations led to the so-called Pareto-Levy or Levy-Stable distributions with (outside of special cases) some quite vicious properties (no known error rate). The reasons economists never liked to use it is that it does not offer tractable properties—economists like to write papers in which they offer the illusion of solutions, particularly in the form of mathematical answers. A Pareto-Levy distribution does not provide them with such luxury. For economic discussions on the ideas of Pareto, see Zajdenweber (2000), Bouvier (1999). For a presentation of the mathematics of Pareto-Levy distributions, see Voit (2001), and Mandelbrot (1997). There is a recent rediscovery of power law dynamics. Intuitively a power law distribution has the following property: If the power exponent were 2, then there would be 4 times more people with an income higher than \$1 million than people with \$2 million. The effect is that there is a very small probability of having an event of an extremely large deviation. More generally given a deviation x , the incidence of a deviation of a multiple of x will be that multiple to a given power exponent. The higher the exponent the lower the probability of a large deviation.

Spitznagel's remark: In Gladwell (2002).

Don't take "correlation" and those who use the word seriously: The same "A." of the lighthearted variety taught me a bit about the fallacy of the notion of correlation. "You do not seem to be correlated to anything" is the most common blame I've received when carrying my strategy of shooting for rare events.

The following example might illustrate it. A nonlinear trading instrument, such as a put, will be positively correlated to the underlying security over many sample paths (say the put expires worthless in a bear market as the market did not drop enough), except of course upon becoming in the money and crossing the strike, in which case the correlation reverses with a vengeance. The reader should do himself a favor by not taking the notion of correlation seriously except in very narrow matters where linearity is justified.

CHAPTER 11

Probability “blindness”: I borrow the expression from Piattelli-Palmarini (1994).

Discussion of “rationality”: The concept is not so easy to handle. As the concept has been investigated in plenty of fields, it has been developed the most by economists as a normative theory of choice. Why did the economists develop such an interest in it? The basis of economic analysis is a concept of human nature and rationality embodied in the notion of *homo economicus*. The characteristics and behavior of such *homo economicus* are built into the postulates of consumer choice and include nonsatiation (more is *always* preferred to less) and transitivity (global consistency in choice). For instance, Arrow (1987) writes, “It is note-worthy that the everyday usage of the term ‘rationality’ does not correspond to the economist’s definition as transitivity and completeness, that is maximization of something. The common understanding is instead the complete exploitation of information, sound reasoning, and so forth.”

Perhaps the best way to see it for an economist is the maximization leading to a unique solution.

Even then, it is not easy. Who is maximizing what? To begin, there is a conflict between collective and individual rationality (“tragedy of the commons” seen by Keynes in his parable of the stadium where one’s optimal strategy is to stand up, but collectively the optimal strategy is for everyone to remain seated). Another problem is seen in Arrow’s voter’s impossibility theorem. Consider also the following voter problem: People vote but the probability adjusted gains from voting can be less than the effort expended in going to the polling place. See Luce and Raiffa (1957) for a discussion of these paradoxes.

Note that the literature on rational choice under uncertainty is very extensive, cutting across fields, from evolutionary game theory to political science. But as John Harsanyi put it bluntly, *It is normative, and meant to be so*. This is a heroic statement: Saying that economics has abandoned its scientific pretensions and accepted that it does not describe how people *do* act but rather how they *should* act. It means that it has entered the realm of something else: philosophy (though not quite ethics). As such, an individual can accept it fully and should aim to act like the neoclassical man. If he can.

Ultimate/proximate as a solution to some rationality problems: Evolutionary theorists distinguish between proximate and ultimate cause.

Proximate cause: I eat *because* I am hungry.

Ultimate cause: If I didn't have an incentive to eat I would have gracefully exited the gene pool.

Now, if one invokes ultimate causes, plenty of behavior deemed locally irrational (like the voter problem above) can be interpreted as rational. It explains altruism: Why would you take a small risk to help a stranger from drowning? Visibly this impetus to help put us where we are today.

See Dawkins (1989, 1976) and Pinker (2002) for additional insights on the difference.

Rationality and scientism: Under the suggestion of my correspondent Peter McBurney I discovered the novel *We* by Yevgeny Zamyatin, a satire on Leninist Russia written in the 1920s and set in the far distant future, at a time when Taylorist and rationalist ideas had succeeded, apparently, in eliminating all uncertainty and irrationality from life.

Bounded rationality: Simon (1956), Simon (1957), Simon (1987a), and Simon (1987b).

Birth of the neurobiology of rationality: Berridge (2003) introduces a neurobiological dimension to rationality using two of Daniel Kahneman's four utilities (the experienced, remembered, predicted, and decision utilities) and setting irrationality if the decision utility exceeds the predicted one. There is a neural dimension to such irrationality: dopamine activity in the mesolimbic brain.

Compilation of the heuristics and biases papers in four volumes: Kahneman, Slovic and Tversky (1982), Kahneman and Tversky (2000), Gilovich, Griffin and Kahneman (2002), and Kahneman, Diener and Schwarz (1999).

Two systems of reasoning: See Sloman (1996), and Sloman (2002). See the summary in Kahneman and Frederick (2002). For the affect heuristic, see Zajonc (1980), and Zajonc (1984).

Evolutionary psychology/sociobiology: The most readable is Burnham and Phelan (2000). See Kreps and Davies (1993) for the general framework of ecology as optimization. See also Wilson (E. O., 2000), Winston (2002), the cartoons of Evans and Zarate (1999), Pinker (1997), and Burnham (1997).

Modularity: For the seminal work, see Fodor (1983) in philosophy and cognitive science, Cosmides and Tooby (1992) in evolutionary psychology.

The Wason selection task (written about in nearly every book on evolutionary psychology) is as follows. Consider the following two tests:

Problem 1: Suppose that I have a pack of cards, each of which has a letter written on one side and a number written on the other side. Suppose in addition that I claim that the following rule is true: *If a card has a vowel on one side, then it has an even number on the other side*. Imagine that I now show you four cards from the pack: E 6 K 9. Which card or cards should you turn over in order to decide whether the rule is true or false?

Problem 2: You are a bartender in a town where the legal age for drinking is twenty-one and feel responsible for the violations of the rules. You are confronted with the following situations and would have to ask the patron to show you either his age or what he is drinking. Which of the four patrons would you have to question?

1, drinking beer; 2, over twenty-one; 3, drinking Coke; 4, under 21.

While the two problems are identical (it is clear that you need to check only the first and last of the four cases) the majority of the population gets the first one wrong and the second one right. Evolutionary psychologists believe that the defects in solving the first problem and ease in the second show evidence of a cheater detection module—just consider that we adapted to the enforcement of cooperative tasks and are quick at identifying free riders.

Criteria of modularity: I borrow from the linguist Elisabeth Bates' presentation (Bates, 1994) of Fodor's nine criteria of modularity (ironically Bates is a skeptic on the subject). The information-processing criteria are: encapsulation (we cannot interfere with the functioning of a module), unconsciousness, speed (that's the point of the module), shallow outputs (we have no idea of the intermediate steps), and obligatory firing (a module generates predetermined outputs for predetermined inputs). The biological criteria that distinguish them from learned habits are: ontogenetic universals (they develop in characteristic sequence), localization (they use dedicated neural systems), and pathological universals (modules have characteristic pathologies across populations). Finally, modularity's most important property is its domain specificity.

Books on the physical brain: For the hierarchy reptilian/limbic/neocortical, see causal descriptions in

Ratey (2001), Ramachandran and Blakeslee (1998), Carter (1999), Carter (2002), Conlan (1999), Lewis, Amini, and Lannon (2000), and Goleman (1995).

Emotional Brain: Damasio (1994) and LeDoux (1998). Bechara, Damasio, Damasio, and Tranel (1994) show the degradation of the risk-avoidance behavior of patients with damage in their ventromedial frontal cortex, a part of the brain that links us to our emotions. Emotions seem to play a critical role both ways. For the new field of neuroeconomics, see discussions in Glimcher (2002) and Camerer, Loewenstein and Prelec (2003).

Sensitivity to losses: Note that losses matter more than gains, but you become rapidly desensitized to them (a loss of \$10,000 is better than ten losses of \$1,000). Gains matter less than losses, and large gains even less (ten gains of \$1,000 are better than one gain of \$10,000).

Hedonic treadmill: My late friend Jimmy Powers used to go out of his way to show me very wealthy investment bankers acting miserably after a bad day. How good is all this wealth for them if they adjust to it to such a point that a single bad day can annihilate the effect of all these past successes? If things do not accumulate well then it follows that humans should follow a different set of strategies. This “resetting” shows the link to prospect theory.

Debate: Gigerenzer (1996), Kahneman and Tversky (1996), and Stanovich and West (2000). The evolutionary theorists are deemed to hold a Panglossian view: Evolution solves everything. Strangely, the debate is bitter not because of large divergences of opinions but because of small ones. *Simple Heuristics That Make Us Smart* is the title of a compilation of articles by Gigerenzer and his peers (Gigerenzer, 2000). See also Gigerenzer, Czerlinski and Martignon (2002).

Medical example: Bennett (1998). It is also discussed in Gigerenzer, Czerlinski and Martignon (2002). The heuristics and biases catalogue it as the base rate fallacy. The evolutionary theorists split into domain general (unconditional probability) as opposed to domain specific (conditional).

Behavioral finance: See Schleifer (2000) and Shefrin (2000) for a review. See also Thaler (1994b) and the original Thaler (1994a).

Domain-specific adaptations: Our lungs are a domain-specific adaptation meant to extract oxygen from the air and deposit it into our blood; they are not meant to circulate blood. For evolutionary psychologists the same applies to psychological adaptations.

Opaque process: For psychologists in the heuristics and biases tradition, System 1 is opaque, that is, not self-aware. This resembles the encapsulation and unconsciousness of modules discussed earlier.

Flow: See Csikszentmihalyi (1993) and Csikszentmihalyi (1998). I am quoting both to be safe but I don't know if there are differences between the books: The author seems to rewrite the same global idea in different ways.

Underestimation of possible outcomes: Hilton (2003).

The neurobiology of eye contact: Ramachandran and Blakeslee (1998) on the visual centers that project to the amygdala: "Scientists recording cell responses in the amygdala found that, in addition to responding to facial expressions and emotions, the cells also respond to the direction of eye gaze. For instance, one cell may fire if another person is looking directly at you, whereas a neighboring cell will fire only if that person's gaze is averted by a fraction of an inch. Still other cells fire when the gaze is way off to the left or the right. This phenomenon is not surprising given the important role that gaze direction plays in primate social communications—the averted gaze of guilt, shame or embarrassment; the intense, direct gaze of a lover, or the threatening stare of an enemy."

CHAPTER 12

Pigeons in a box: Skinner (1948).

Illusion of knowledge: Barber and Odean (2001) presents a discussion of the literature on the tendency to make a stronger inference than warranted by the data, which they call "Illusion of Knowledge."

CHAPTER 13

Arabic skeptics: al-Ghazālī (1989).

Rozan's book: Rozan (1999).

Mental accounting: Thaler (1980) and Kahneman, Knetsch and Thaler (1991).

Portfolio theory (alas): Markowitz (1959).

The conventional probability paradigm: Most of the conventional discussions on probabilistic thought,

especially in the philosophical literature, present minor variants of the same paradigm with the succession of the following historical contributions: Chevalier de Méré, Pascal, Cardano, De Moivre, Gauss, Bernoulli, Laplace, Bayes, von Mises, Carnap, Kolmogorov, Borel, De Finetti, Ramsey, *etc.* However, these concern the problems of *calculus* of probability, perhaps fraught with technical problems, but ones that are hair-splitting and, to be derogatory, *academic*. They are not of much concern in this book—because, in spite of my specialty, they do not seem to provide any remote usefulness for practical matters. For a review of these, I refer the reader to Gillies (2000), Von Plato (1994), Hacking (1990), or the more popular and immensely readable *Against the Gods* (Bernstein, 1996), itself drawing heavily on Florence Nightingale David (David, 1962). I recommend Bernstein's *Against the Gods* as a readable presentation of the history of probabilistic thought in engineering and the applied hard sciences but completely disagree with its message on the measurability of risks in the social sciences.

I repeat the point: To philosophers operating in probability *per se*, the problem seems one of calculus. In this book the problem of probability is largely a matter of knowledge, not one of computation. I consider these computations a mere footnote to the subject. The real problem is: Where do we get the probability from? How do we change our beliefs? I have been working on the “gambling with the wrong dice” problem: It is far more important to figure out what dice we are using when gambling than to develop sophisticated computations of outcomes and run the risk of having, say, dice with nothing but 6s. In economics, for instance, we have very large models of risk calculations sitting on very rickety assumptions (actually, not rickety but plain wrong). They smoke us with math, but everything else is wrong. Getting the right assumptions may matter more than having a sophisticated model.

An interesting problem is the “value at risk” issue where people imagine that they have a way to understand the risk using “complicated mathematics” and running predictions on rare events—thinking that they were able from past data to observe the probability distributions. The most interesting behavioral aspect is that those who advocate it do not seem to have tested their past predicting record, another Meehl type of problem.

Thinkers and philosophers of probability: Perhaps the most insightful book ever written on the subject remains the great John Maynard Keynes' *Treatise on Probability* (Keynes, 1989, 1920), which surprisingly has not collected dust—somehow everything we seem to discover appears to have been said in it (though, characteristic of Keynes, in a convoluted way). In the usual supplied lists of thinkers of probability, Shackle, who refined subjective probability, is often undeservedly absent (Shackle, 1973). Most authors also omit the relevant contributions of Isaac Levi on subjective probability and its links to belief (Levi, 1970), which should be required reading in that area (it is impenetrable but is worth the exercise). It is a shame because Isaac Levi is a probability *thinker* (as opposed to probability *calculator*). The epistemologist of probability Henry Kyburg (Kyburg, 1983) is also absent (too difficult to read).

One observation about philosophers as compared to scientists is that they do seem to work in a very heterogeneous and compartmented manner: Probability in philosophy is dealt with in different branches: logic, epistemology, rational choice, philosophy of mathematics, philosophy of science. It is surprising to see Nicholas Rescher delivering an insightful presidential address of the American Philosophical Association on the topic of luck (later published as a book called *Luck*, see Rescher, 1995) without discussing much of the problems in the philosophical and cognitive literature on probability.

Problems with my message: Note that many readers in the technical professions, say engineering,

exhibited some difficulty seeing the connection between probability and belief and the importance of skepticism in risk management.

CHAPTER 14

Stoicism: Modern discussions in Becker (1998) and Banateanu (2001).

POSTSCRIPT

Uncertainty and pleasure: See Wilson, et. al. (2005) for the effect of randomness on the prolongation of positive hedonic states.

Looks and success: See (Shahami, et. al., 1993; Hosoda et. al., 1999). My friend Peter Bevelin wrote to me: “When I’m thinking about misjudgment of personalities I am always reminded of Sherlock Holmes in Arthur Conan Doyle’s *The Sign of Four*. “It is of the first importance not to allow your judgment to be biased by personal qualities. I assure you that the most winning woman I ever knew was hanged for poisoning three little children for their insurance-money, and the most repellent man of my acquaintance is a philanthropist who has spent nearly a quarter of a million upon the London poor.”

Maximizing: Psychology literature has focused on maximizing in terms of choice, not so much in these terms of actual optimization. I go beyond by looking at the activity of optimization in daily life. For a synthesis and review of the hedonic impact of maximizing and why “less is more,” see Schwartz (2003). See also Schwartz, et. al. (2002). For the causal link between unhappiness and the pursuit of material benefits, see Kasser (2002).

Date of your death: I owe this last point to Gerd Gigerenzer.

Unpredictable behavior: See Miller (2000) for the discussion of the point in biology. See also Lucas’s (1978) applications to a random monetary policy that thwarts expectations.

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Footnotes

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Chapter 7

*What I call empiricism does not simply mean “just look at reality”: it implies the rigorous avoidance of hasty generalizations outside what you saw, your “empiricism.” This covers the relation between the past and the future (the past might not be a representative sample of the future, but it also concerns other generalizations we take for granted, in medicine, politics, and science).

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*Popper was not the originator of these ideas on asymmetry: a class of skeptical thinkers such as Sextus Empiricus, Aenesidemus, or al-Ghazālī came up with the ideas before him, as well as Mill and Hume. But Popper rephrased the problem in-dependently and put it in modern terms.

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NEW YORK TIMES BESTSELLING AUTHOR OF
THE BLACK SWAN



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Acknowledgments

PROCRUSTES

Procrustes, in Greek mythology, was the cruel owner of a small estate in Corydalus in Attica, on the way between Athens and Eleusis, where the mystery rites were performed. Procrustes had a peculiar sense of hospitality: he abducted travelers, provided them with a generous dinner, then invited them to spend the night in a rather special bed. He wanted the bed to fit the traveler to perfection. Those who were too tall had their legs chopped off with a sharp hatchet; those who were too short were stretched (his name was said to be Damastes, or Polyphemon, but he was nicknamed Procrustes, which meant “the stretcher”).

In the purest of poetic justice, Procrustes was hoisted by his own petard. One of the travelers happened to be the fearless Theseus, who slayed the Minotaur later in his heroic career. After the customary dinner, Theseus made Procrustes lie in his own bed. Then, to make him fit in it to the customary perfection, he decapitated him. Theseus thus followed Hercules’s method of paying back in kind.

In more sinister versions (such as the one in Pseudo-Apollodorus’s *Bibliotheca*), Procrustes owned two beds, one small, one large; he made short victims lie in the large bed, and the tall victims in the short one.

Every aphorism here is about a Procrustean bed of sorts—we humans, facing limits of knowledge, and things we do not observe, the unseen and the unknown, resolve the tension by squeezing life and the world into crisp commoditized ideas, reductive categories, specific vocabularies, and prepackaged narratives, which, on the occasion, has explosive consequences. Further, we seem unaware of this backward fitting, much like tailors who take great pride in delivering the perfectly fitting suit—but do so by surgically altering the limbs of their customers. For instance, few realize that we are changing the brains of schoolchildren through medication in order to make them adjust to the curriculum, rather than the reverse.

Since aphorisms lose their charm whenever explained, I only hint for now at the central theme of this book—I relegate further discussions to the postface.

These are stand-alone compressed thoughts revolving around my main idea of *how we deal, and should deal, with what we don't know*, matters more deeply discussed in my books *The Black Swan* and *Fooled by Randomness*.*

* My use of the metaphor of the Procrustes bed isn't just about putting something in the wrong box; it's mostly that inverse operation of changing the wrong variable, here the person rather than the bed. Note that every failure of what we call "wisdom" (coupled with technical proficiency) can be reduced to a Procrustean bed situation.

NOTICE

Aphorisms are different from conventional text. The author recommends reading no more than four aphorisms in one sitting. It is also preferable to select these randomly.

PRELUDES

The person you are the most afraid to contradict is yourself.

An idea starts to be interesting when you get scared of taking it to its logical conclusion.

People are much less interested in what you are trying to show them than in what you are trying to hide.

Pharmaceutical companies are better at inventing diseases that match existing drugs, rather than inventing drugs to match existing diseases.

To understand the liberating effect of asceticism, consider that losing all your fortune is much less painful than losing only half of it.

To bankrupt a fool, give him information.

Academia is to knowledge what prostitution is to love; close enough on the surface but, to the nonsucker, not exactly the same thing.*¹

In science you need to understand the world; in business you need others to misunderstand it.

I suspect that they put Socrates to death because there is something terribly unattractive, alienating, and nonhuman in thinking with too much clarity.

Education makes the wise slightly wiser, but it makes the fool vastly more dangerous.

The test of originality for an idea is not the absence of one single predecessor but the presence of multiple but incompatible ones.

Modernity's double punishment is to make us both age prematurely and live longer.

An erudite is someone who displays less than he knows; a journalist or consultant, the opposite.

Your brain is most intelligent when you don't instruct it on what to do—something people who take showers discover on occasion.

If your anger decreases with time, you did injustice; if it increases, you suffered injustice.

I wonder if those who advocate generosity for its rewards notice the inconsistency, or if what they call generosity is an attractive investment strategy.*²

Those who think religion is about “belief” don't understand religion, and don't understand belief.

Work destroys your soul by stealthily invading your brain during the hours not officially spent working; be selective about professions.

In nature we never repeat the same motion; in captivity (office, gym, commute, sports), life is just repetitive-stress injury. No randomness.

Using, as an excuse, others' failure of common sense is in itself a failure of common sense.

Compliance with the straitjacket of narrow (Aristotelian) logic and avoidance of fatal inconsistencies are not the same thing.

Economics cannot digest the idea that the collective (and the aggregate) are disproportionately less predictable than individuals.

Don't talk about "progress" in terms of longevity, safety, or comfort before comparing zoo animals to those in the wilderness.

If you know, in the morning, what your day looks like with any precision, you are a little bit dead—the more precision, the more dead you are.

There is no intermediate state between ice and water but there is one between life and death: employment.

You have a calibrated life when most of what you fear has the titillating prospect of adventure.

Procrastination is the soul rebelling against entrapment.

Nobody wants to be perfectly transparent; not to others, certainly not to himself.



Erudition without bullshit, intellect without cowardice, courage without imprudence, mathematics without nerdiness, scholarship without academia, intelligence without shrewdness, religiosity without intolerance, elegance without softness, sociality without dependence, enjoyment without addiction, religion without tolerance, and, above all, nothing without skin in the game.

*¹ I need a qualifier here. There are exceptions, but there are also many known cases in which a prostitute falls in love with a client.

*² A generous act is precisely what should aim at no reward, neither financial nor social nor emotional; deontic (unconditional observance of duties), not utilitarian (aiming at some collective—or even individual—gains in welfare). There is nothing wrong with “generous” acts that elicit a “warm glow” or promise salvation to the giver; these are not to be linguistically conflated with deontic actions, those emanating from pure sense of duty.

COUNTER NARRATIVES

People don't like it when you ask them for help; they also feel left out when you don't ask them for help.

The best revenge on a liar is to convince him that you believe what he said.

When we want to do something while unconsciously certain to fail, we seek advice so we can blame someone else for the failure.

France took Algeria hoping for a country to eat cassoulet, and instead France is now eating couscous.

It is harder to say *no* when you really mean it than when you don't.

Never say *no* twice if you mean it.

We tend to define rudeness less by the words used (what is said) than by the status of the recipient (to whom it is addressed).

Your reputation is harmed the most by what you say to defend it.

The only objective definition of aging is when a person starts to talk about aging

The only objective definition of aging is when a person starts to talk about aging.

They will envy you for your success, for your wealth, for your intelligence, for your looks, for your status—but rarely for your wisdom.

Most of what they call humility is successfully disguised arrogance.

Much of the difference between what is work and what is leisure is branding.

If you want people to read a book, tell them it is overrated.

You never win an argument until they attack your person.

The modern hypocrite gives the designation “respect” to what is nothing but fear of the powerful.

Nothing is more permanent than “temporary” arrangements, deficits, truces, and relationships; and nothing is more temporary than “permanent” ones.

The first one who uses “but” has lost the argument.

The most painful moments are not those we spend with uninteresting people; rather, they are those spent with uninteresting people trying hard to be interesting.

Hatred is love with a typo somewhere in the computer code, correctable but very hard to find.

Most mistakes get worse when you try to correct them.

I wonder whether a bitter enemy would be jealous if he discovered that I hated someone else.

The main reason to go to school is to learn how *not* to think like a professor.

The characteristic feature of the loser is to bemoan, in general terms, mankind's flaws, biases, contradictions, and irrationality—without exploiting them for fun and profit.

The test of whether you really liked a book is if you reread it (and how many times); the test of whether you really liked someone's company is if you are ready to meet him again and again—the rest is spin, or that variety of sentiment now called self-esteem.

If someone is making an effort to ignore you, he is not ignoring you.

We ask “why is he rich (or poor)?” not “why isn't he richer (or poorer)?”; “why is the crisis so deep?” not “why isn't it deeper?”

One of life's machinations is to make some people both rich and unhappy, that is, jointly fragile and deprived of hope.

Hatred is much harder to fake than love. You hear of fake love; never of fake hate.

Sometimes people ask you a question with their eyes begging you to not tell them the truth.

The opposite of manliness isn't cowardice; it's technology.

Usually, what we call a "good listener" is someone with skillfully polished indifference.

In your prayers substitute "Protect us from evil" with "Protect us from those who improve things for a salary."

It is the appearance of inconsistency, and not its absence, that makes people attractive.

You remember emails you sent that were not answered better than emails that you did not answer.

Never read a book review written by an author whose books you wouldn't read.

People reserve standard compliments for those who do not threaten their pride; the others they often praise by calling "arrogant."

The dream of having computers behave like humans is coming true, with the transformation, in a single generation, of humans into computers.

Since Cato the Elder, a certain type of maturity has shown up when one starts blaming the new generation for "shallowness" and praising the previous one for its "values."

Almost all those caught making a logical fallacy interpret it as a "disagreement."

It is as difficult to avoid bugging others with advice on how to exercise and other health matters as it is to stick to an exercise schedule.

By praising someone for his lack of defects you are also implying his lack of virtues.

If powerful assholes don't find you "arrogant," it means you are doing something wrong.

When she shouts that what you did was unforgivable, she has already started to forgive you.

Being unimaginative is only a problem when you are easily bored.

People feel deep anxiety finding out that someone they thought was stupid is actually more intelligent than they are.

We call narcissistic those individuals who behave as if they were the central residents of the world; those who do exactly the same in a set of two we call lovers or, better, "blessed by love."

Friendship that ends was never one; there was at least one sucker in it.

Most people fear being without audiovisual stimulation because they are too repetitive when they think and imagine things on their own.

When someone writes "I dislike you but I agree with you," I read "I dislike you because I agree with you."

Unrequited hate is vastly more diminishing for the self than unrequited love.
You can't react by reciprocating.

A government stating, "We will not stand idle in front of atrocities committed by [foreign dictator XYZ]" is typically trying to mitigate the guilt for standing idle in front of more atrocities committed by said XYZ.

For the compassionate, sorrow is more easily displaced by another sorrow than by joy.

Wisdom in the young is as unattractive as frivolity in the elderly.

Some people are only funny when they try to be serious.

It is difficult to stop the impulse to reveal secrets in conversation, as if information had the desire to live and the power to multiply.

It is a very powerful manipulation to let others win the small battles.

If you want strangers to help you, smile. For those close to you, cry.

MATTERS ONTOLOGICAL

Life is about execution rather than purpose.

If you get easily bored, it means that your BS detector is functioning properly; if you forget (some) things, it means that your mind knows how to filter; and if you feel sadness, it means that you are human.

It is a very recent disease to mistake the unobserved for the nonexistent; but some are plagued with the worse disease of mistaking the unobserved for the unobservable.

We need to feel a little bit lost somewhere, physically or intellectually, at least once a day.

The ultimate freedom lies in not having to explain why you did something.

Asking science to explain life and vital matters is equivalent to asking a grammarian to explain poetry.

The good life—the *vita beata*—is like reading a Russian novel: It takes two hundred pages of struggling with the characters before one can start enjoying things. Then the agitation starts to make sense.

It is not possible to have fun when you try.

You exist if and only if you are free to do things without a visible objective, with no justification and, above all, outside the dictatorship of someone else's narrative.

Automation makes otherwise pleasant activities turn into "work."

Thinking that all individuals pursue "selfish" interests is equivalent to assuming that all random variables have zero covariance.

For life to be really fun, what you fear should line up with what you desire.

THE SACRED AND THE PROFANE

You cannot express the holy in terms made for the profane, but you can discuss the profane in terms made for the holy.

Atheism (materialism) means treating the dead as if they were unborn. I won't. By accepting the sacred, you reinvent religion.

Paganism is decentralized theology.

If you can't spontaneously detect (without analyzing) the difference between sacred and profane, you'll never know what religion means. You will also never figure out what we commonly call art. You will never understand anything.

People used to wear ordinary clothes weekdays and formal attire on Sunday. Today it is the exact reverse.

To mark a separation between holy and profane, I take a ritual bath after any contact, or correspondence (even emails), with consultants, economists, Harvard Business School professors, journalists, and those in similarly depraved pursuits; I then feel and act purified from the profane until the next episode.

Religion isn't so much about telling man that there is one God as about preventing man from thinking that he is God.

The fewer the gods, the greater the dogma and theological intolerance. So $n = 0$ (“modern” atheists), $n = 1$ (Sunni purists), $n = 1-2$ (Monophysites), $n = 3-12$ (Greek Orthodoxy), n flex (Ancient Mediterranean Paganism).

The book is the only medium left that hasn’t been corrupted by the profane: everything else on your eyelids manipulates you with an ad.*¹

You can replace lies with truth; but myth is only displaced with a narrative.

The sacred is all about unconditionals; the profane is all about conditionals.*²

The ancient Mediterranean: before monotheism, people changed and exchanged rites and gods as we do ethnic foods.

The source of the tragic in history is in mistaking someone else’s unconditional for conditional—and the reverse.

Atheists are just modern versions of religious fundamentalists: both take religion too literally.

Restaurants get you in with food to sell you liquor; religions get you in with belief to sell you rules (e.g., avoid debt). People can understand the notion of God, not unexplained rules, interdicts, and categorical heuristics.

One categorical: it is easier to fast than diet. You cannot be “slightly” kosher or halal by only eating a small portion of ham.

To be completely cured of newspapers, spend a year reading the previous week’s

newspapers.

*¹ A comment here. After a long diet from the media, I came to realize that there is nothing that's not (clumsily) trying to sell you something. I only trust my library. There is nothing wrong with the ownership of the physical book as a manifestation of human weakness, desire to show off, peacock tail-style signaling of superiority; it's the commercial agenda outside the book that corrupts.

*² For instance, many people said to be unbribable are just too expensive.

CHANCE, SUCCESS, HAPPINESS, AND STOICISM

Success is becoming in middle adulthood what you dreamed to be in late childhood. The rest comes from loss of control.

The opposite of success isn't failure; it is name-dropping.

Modernity needs to understand that being rich and becoming rich are not mathematically, personally, socially, and ethically the same thing.

Corollary: if you socialize with someone with a smaller bank account than yours, you are obligated to converse as if you had exactly the same means, eat in the places where he eats, at no point in time show the pictures of your vacation in Provence or anything that hints at the differential in means.

You don't become completely free by just avoiding to be a slave; you also need to avoid becoming a master.*

Fortune punishes the greedy by making him poor and the very greedy by making him rich.

Quite revealing of human preferences that more suicides come from shame or loss of financial and social status than medical diagnoses.

Business wars are typically lost by both parties; academic wars are won by both sides.

Studying the work and intellectual habits of a “genius” to learn from him is like studying the garb of a chef to emulate his cooking.

“Wealthy” is meaningless and has no robust absolute measure; use instead the subtractive measure “unwealth,” that is, the difference, at any point in time, between what you have and what you would like to have.

You will never know for sure if someone is an asshole until he becomes rich.

Older people are most beautiful when they have what is lacking in the young: poise, erudition, wisdom, phronesis, and this post-heroic absence of agitation.

I went to a happiness conference; researchers looked very unhappy.

What fools call “wasting time” is most often the best investment.

Decline starts with the replacement of dreams with memories and ends with the replacement of memories with other memories.

There is no clearer sign of failure than a middle-aged man boasting of his performance in college.

You want to avoid being disliked without being envied or admired.

Read nothing from the past one hundred years; eat no fruits from the past one

thousand years; drink nothing from the past four thousand years (just wine and water); but talk to no ordinary man over forty. A man without a heroic bent starts dying at the age of thirty.

Some pursuits are much duller from the inside. Even piracy, they say.

Karl Marx, a visionary, figured out that you can control a slave much better by convincing him he is an employee.

I wonder how many people would seek excessive wealth if it did not carry a measure of status with it.

Catholic countries had more serial monogamy than today, but without the need for divorce—life expectancy was short; marriage duration was much, much shorter.

To figure out how well you will do ten years from now relative to someone else, count your enemies, count his, and square the ratio.

The fastest way to become rich is to socialize with the poor; the fastest way to become poor is to socialize with the rich.

The alpha person at a gathering of “high status” persons is often, detectably, the waiter.

You will be civilized on the day you can spend a long period doing nothing, learning nothing, and improving nothing, without feeling the slightest amount of guilt.

Someone who says “I am busy” is either declaring incompetence (and lack of

Someone who says "I am easy" is either declaring incompetence (and lack of control of his life) or trying to get rid of you.

Success in all endeavors requires the absence of specific qualities. 1) To succeed in crime requires absence of empathy, 2) To succeed in banking you need absence of shame at hiding risks, 3) To succeed in school requires absence of common sense, 4) To succeed in economics requires absence of understanding of probability, risk, second-order effects, or about anything, 5) To succeed in journalism requires an inability to think about matters that have even an infinitesimally small chance of being relevant next January, 6) But to succeed in life requires a total inability to do anything that makes you uncomfortable when you look at yourself in the mirror.

The difference between slaves in Roman and Ottoman days and today's employees is that slaves did not need to flatter their boss.

The natural benefit of cellphones, laptops, and other indispensable modern items is the joy one gets finding the object after losing it. Lose your wallet full of credit cards and you will have a chance to have a great day.

You are rich if and only if money you refuse tastes better than money you accept.

Do not socialize with people much richer than you; but if you do, do it in your own territory (restaurants you can afford, wine, etc.).

For most, success is the harmful passage from the camp of the hating to the camp of the hated.

To see if you like where you are, without the chains of dependence, check if you are as happy returning as you were leaving.

You can tell how poor someone feels by the number of times he references “money” in his conversation.

The difference between love and happiness is that those who talk about love tend to be in love, but those who talk about happiness tend to be not happy.

Modernity: we created youth without heroism, age without wisdom, and life without grandeur.

You can tell how uninteresting a person is by asking him whom he finds interesting.

The Web is an unhealthy place for someone hungry for attention.

I wonder if anyone ever measured the time it takes, at a party, before a mildly successful stranger who went to Harvard makes others aware of it.

People focus on role models; it is more effective to find antimodels—people you don’t want to resemble when you grow up.

It is a good practice to always apologize, except when you have done something wrong.

Preoccupation with efficacy is the main obstacle to a poetic, noble, elegant, robust, and heroic life.

Some, like most bankers, are so unfit for success that they look like dwarves dressed in giants’ clothes.

Don't complain too loud about wrongs done you; you may give ideas to your less imaginative enemies.

Most feed their obsessions by trying to get rid of them.

It is as difficult to change someone's opinions as it is to change his tastes.

What we commonly call "success" (rewards, status, recognition, some new metric) is a consolation prize for those who are both unhappy and not good at what they do.

I have the fondest memories of time spent in places called ugly, the most boring ones of places called scenic.

It is good to not feel envy; but better to neither envy nor be envied.

Fitness is certainly the sign of strength, but outside of natural stimuli the drive to acquire fitness can signal some deep incurable weakness.

Charm is the ability to insult people without offending them; nerdiness the reverse.

Those who do not think that employment is systemic slavery are either blind or employed.

They are born, then put in a box; they go home to live in a box; they study by ticking boxes; they go to what is called "work" in a box, where they sit in their cubicle box; they drive to the grocery store in a box to buy food in a box; they go

to the gym in a box to sit in a box; they talk about thinking “outside the box”; and when they die they are put in a box. All boxes, Euclidian, geometrically smooth boxes.



Never hire an A student unless it is to take exams.



Another definition of modernity: conversations can be more and more completely reconstructed with clips from other conversations taking place at the same time on the planet.



The twentieth century was the bankruptcy of the social utopia; the twenty-first will be that of the technological one.



In the days of Suetonius, 60 percent of prominent educators (grammarians) were slaves. Today the ratio is 97.1 percent, and growing.



Efforts at building social, political, and medical utopias have caused nightmares; many cures and techniques came from martial efforts.



The Web’s “connectedness” creates a peculiar form of informational and pseudosocial promiscuity, which makes one feel clean after Web rationing.



In most debates, people seem to be trying to convince one another; but all they can hope for is new arguments to convince themselves.



Did you notice that collecting art is to hobby-painting as watching pornography is to doing the real thing? Only difference is status.



* Versions of this point have been repeated and rediscovered throughout history—the last convincing one by Montaigne.

CHARMING AND LESS CHARMING SUCKER PROBLEMS

The most depressing aspect of the lives of the couples you watch surreptitiously arguing in restaurants is that they are almost always unaware of the true subject of argument.

It seems that it is the most unsuccessful people who give the most advice, particularly for writing and financial matters.

Never get into a business partnership with a retired lawyer unless he has another hobby.

Rumors are only valuable when they are denied.

The problem with academics is that they really think nonacademics find them more intelligent than themselves.

Over the long term, you are more likely to fool yourself than others.

Universities have been progressing from providing scholarship for a small fee into selling degrees at a large cost.

There are two types of people: those who try to win and those who try to win arguments. They are never the same.

The rational heuristic is to avoid any market commentary from anyone who has to work for a living.

People usually apologize so they can do it again.

Mathematics is to knowledge what an artificial hand is to the real one; some amputate to replace.

Modernity inflicts a sucker narrative on activities; now we “walk for exercise,” not “walk” with no justification; for hidden reasons.

Bureaucracy is a construction designed to maximize the distance between a decision-maker and the risks of the decision.

Social media are severely antisocial, health foods are empirically unhealthy, knowledge workers are very ignorant, and social sciences aren't scientific at all.

People tend to whisper when they say the truth and raise their voice when they lie.

For so many, instead of looking for “cause of death” when they expire, we should be looking for “cause of life” when they are still around.

Under opacity, incomplete information, and partial understanding, much of what we don't understand is labeled “irrational.”

It is those who use others who are the most upset when someone uses them.

If someone gives you more than one reason why he wants the job, don't hire him.

Executive programs allow us to watch people who have never worked lecturing those who have never pondered.

Failure of second-order thinking: he tells you a secret and somehow expects you to keep it, when he just gave you evidence that he can't keep it himself.

When people say, "I am investing for the long term," it means they are losing money.

Social networks present information about what people like; more informative if, instead, they described what they don't like.

The fact that people in countries with cold weather tend to be harder working, richer, less relaxed, less amicable, less tolerant of idleness, more (over) organized and more harried than those in hotter climates should make us wonder whether wealth is mere indemnification, and motivation is just overcompensation for not having a real life.

All rumors about a public figure are to be deemed untrue until he threatens to sue.

People are so prone to overcausation that you can make the reticent turn loquacious by dropping an occasional "why?" in the conversation.

Never show a risk number even if it is right

NEVER SHOW A RISK NUMBER, EVEN IF IT IS RIGHT.



I need to keep reminding myself that a truly independent thinker may look like an accountant.

THESEUS, OR LIVING THE PALEO LIFE

The three most harmful addictions are heroin, carbohydrates, and a monthly salary.

The most important aspect of fasting is that you feel deep, undirected gratitude when you break the fast.

My only measure of success is how much time you have to kill.

I wonder if a lion (or a cannibal) would pay a high premium for free-range humans.

A good book gets better on the second reading. A great book on the third. Any book not worth rereading isn't worth reading.

If you need to listen to music while walking, don't walk; and please don't listen to music.

Men destroy each other during war; themselves during peacetime.

Fasting: every human should learn to read, write, respect the weak, take risks in voicing disrespect for the powerful when warranted, and fast.

Sports feminize men and masculinize women.

Technology can degrade (and endanger) every aspect of a sucker's life while convincing him that it is becoming more "efficient."

The difference between technology and slavery is that slaves are fully aware that they are not free.

High Modernity: routine in place of physical effort, physical effort in place of mental expenditure, and mental expenditure in place of mental clarity.

You have a real life if and only if you do not compete with anyone in any of your pursuits.

In real life exams, someone gives you an answer and you have to find the best corresponding questions.

With terminal disease, nature lets you die with abbreviated suffering; medicine lets you suffer with prolonged dying.

We are satisfied with natural (or old) objects like vistas or classical paintings but insatiable with technologies, amplifying small improvements in versions, obsessed about 2.0, caught in a mental treadmill.

Only in recent history has "working hard" signaled pride rather than shame for lack of talent, finesse, and, mostly, *sprezzatura*.

It used to take seven years to figure out if a book is a book or journalism

between covers. Now all one needs is to wait two years. Soon, a few months.

In summary, modernity replaced process with result and the relational with the transactional.

Some ideas are born as you write them down, others become dead.

Their idea of the sabbatical is to work six days and rest for one; my idea of the sabbatical is to work for (part of) a day and rest for six.

What they call “play” (gym, travel, sports) looks like work; the harder they try, the more captive they are.

Life is about early detection of the reversal point beyond which your own belongings (say, a house, country house, car, or business) start owning you.

Most modern efficiencies are deferred punishment.

We are hunters; we are only truly alive in those moments when we improvise; no schedule, just small surprises and stimuli from the environment.

For everything, use boredom in place of a clock, as a biological wristwatch, though under constraints of politeness.

A heuristic on whether you have control of your life: can you take naps?

Decomposition, for most, starts when they leave the free, social, and uncorrupted college life for the solitary confinement of professions and nuclear families.

One of the shortest books I've ever read had 745 pages.

The longest book I've ever read was 205 pages.

For a classicist, a competitive athlete is painful to look at; trying hard to become an animal rather than a man, he will never be as fast as a cheetah or as strong as an ox.

Skills that transfer: street fights, off-path hiking, seduction, broad erudition.
Skills that don't: school, games, sports, laboratory—what's reduced and organized.

Formal education is credentials plus negative knowledge, so it sort of works out on balance.

You exist in full if and only if your conversation (or writings) cannot be easily reconstructed with clips from other conversations.

The English have random Mediterranean weather; but they go to Spain because their free hours aren't free.

It is a curse to have ideas that people understand only when it is too late.


For most, work and what comes with it have the eroding effect of chronic injury.

Real life (*vita beata*) is when your choices correspond to your duties.


Technology is at its best when it is invisible.



The difference between true life and modern life equals the one between a conversation and bilateral recitations.



When I look at people on treadmills I wonder how alpha lions, the strongest, expend the least amount of energy, sleeping twenty hours a day; others hunt for them. *Caesar pontem fecit.**



Every social association that is not face-to-face is injurious to your health.



I fail to see the difference between extreme wealth and overdose.

* Literally, “Caesar built a bridge,” but the subtlety is that it can also suggest that “he had a bridge built for him.”

THE REPUBLIC OF LETTERS

Writing is the art of repeating oneself without anyone noticing.

Most people write so they can remember things; I write to forget.

What they call philosophy I call literature; what they call literature I call journalism; what they call journalism I call gossip; and what they call gossip I call (generously) voyeurism.

If the professor is not capable of giving a class without preparation, don't attend. People should only teach what they have learned organically, through experience and curiosity...or get another job.

Writers are remembered for their best work, politicians for their worst mistakes, and businessmen are almost never remembered.

Critics may appear to blame the author for not writing the book they wanted to read; but in truth they are blaming him for writing the book they wanted, but were unable, to write.

Literature is not about promoting qualities, rather, airbrushing (your) defects.

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For pleasure, read one chapter by Nabokov. For punishment, two.

I was told to write medium-sized books. Yet of the two most successful French novels in history, one is very short (*Le Petit Prince*, 80 pages), the other extra long (Proust's *Recherche*, 3,200 pages), following the statistical arcsine law.

There is a distinction between expressive hypochondria and literature, just as there is one between self-help and philosophy.

You need to keep reminding yourself of the obvious: charm lies in the unsaid, the unwritten, and the undisplayed. It takes mastery to control silence.

No author should be considered as having failed until he starts teaching others about writing.

Hard science gives sensational results with a horribly boring process; philosophy gives boring results with a sensational process; literature gives sensational results with a sensational process; and economics gives boring results with a boring process.

A good maxim allows you to have the last word without even starting a conversation.

A writer told me, "I didn't get anything done today." Answer: try to do nothing. The best way to have only good days is to not aim at getting anything done. Actually almost everything I've written that has survived was written when I didn't try to get anything done.

Just as there are authors who enjoy having written and others who enjoy writing, there are books you enjoy reading and others you enjoy having read.

A genius is someone with flaws harder to imitate than his qualities.

With regular books, read the text and skip the footnotes; with those written by academics, read the footnotes and skip the text; and with business books, skip both the text and the footnotes.

Double a man's erudition; you will halve his citations.

Authors deplete their soul when the marginal contribution of a new book is smaller than that of the previous one.

Losers, when commenting on the works of someone patently more impressive, feel obligated to unnecessarily bring down their subject by expressing what he is not ("he is not a genius, but..."; "while he is no Leonardo...") instead of expressing what he is.

You are alive in inverse proportion to the density of clichés in your writing.

What we call "business books" is an eliminative category invented by bookstores for writings that have no depth, no style, no empirical rigor, and no linguistic sophistication.

Just like poets and artists, bureaucrats are born, not made; it takes normal humans extraordinary effort to keep attention on such boring tasks.

Mathematicians think in symbols, physicists in objects, philosophers in concepts, geometers in images, jurists in constructs, logicians in operators, writers in impressions, and idiots in words.

Remove all empty words from writings, résumés, conversation, except when they aim at courtesy.

The costs of specialization: architects build to impress other architects; models are thin to impress other models; academics write to impress other academics; filmmakers try to impress other filmmakers; painters impress art dealers; but authors who write to impress book editors tend to fail.

It is a waste of emotions to answer critics; better to stay in print long after they are dead.

I wonder why newssuckers don't realize that if news had the slightest predictive and nonanecdotal value journalists would be monstrously rich. And if journalists were really not interested in money they would be writing literary essays.

I can predict when an author is about to plagiarize me, and poorly so when he writes that Taleb “popularized” the theory of Black Swan events.*

Newspaper readers exposed to real prose are like deaf persons at a Puccini opera: they may like a thing or two while wondering, “what’s the point?”

Some books cannot be summarized (real literature, poetry); some can be compressed to about ten pages; the majority to zero pages.

The exponential information age is like a verbally incontinent person: he talks more and more as fewer and fewer people listen.

What we call fiction is, when you look deep, much less fictional than nonfiction; but it is usually less imaginative.

It's much harder to write a book review for a book you've read than for a book you haven't read.

Most so-called writers keep writing and writing with the hope to, some day, find something to say.

A risk you run when you write a book calling journalists BS vendors is that all your reviewers will be BS vendors.

Today, we mostly face the choice between those who write clearly about a subject they don't understand and those who write poorly about a subject they don't understand.

The information-rich Dark Ages: in 2010, 600,000 books were published, just in English, with few memorable quotes. Circa AD zero, a handful of books were written. In spite of the few that survived, there are loads of quotes.

In the past, most were ignorant, one in a thousand were refined enough to talk to. Today, literacy is higher, but thanks to progress, the media, and finance, only one in ten thousand.

We are better at (involuntarily) doing out of the box than (voluntarily) thinking out of the box.

I want to write books that only those who read them claim they did.

Half of suckerhood is not realizing that what you don't like might be loved by someone else (hence by you, later), and the reverse.

It is much less dangerous to think like a man of action than to act like a man of

It is much less dangerous to think like a man of action than to act like a man of thought.



Literature comes alive when covering up vices, defects, weaknesses, and confusions; it dies with every trace of preaching.



In any subject, if you don't feel that you don't know enough, you don't know enough.

* It is also an indicator that he will imitate, “me, too” style, my business.

THE UNIVERSAL AND THE PARTICULAR

What I learned on my own I still remember.

Regular minds find similarities in stories (and situations); finer minds detect differences.

To grasp the difference between Universal and Particular, consider that some dress better to impress a single, specific person than an entire crowd.

We unwittingly amplify commonalities with friends, dissimilarities with strangers, and contrasts with enemies.

Many are so unoriginal they study history to find mistakes to repeat.

There is nothing deemed harmful (in general) that cannot be beneficial in some particular instances, and nothing deemed beneficial that cannot harm you in some circumstances. The more complex the system, the weaker the notion of Universal.

The fool generalizes the particular; the nerd particularizes the general; some do both; and the wise does neither.

You want to be yourself, idiosyncratic; the collective (school, rules, jobs, technology) wants you generic to the point of castration.

True love is the complete victory of the particular over the general, and the unconditional over the conditional.

For an honest person, freedom requires having no friends; and, one step above, sainthood requires having no family.

FOOLED BY RANDOMNESS

Unless we manipulate our surroundings, we have as little control over what and whom we think about as we do over the muscles of our hearts.

It is very difficult to argue with salaried people that the simple can be important and the important can be simple.

Corollary to Moore's Law: every ten years, collective wisdom degrades by half.*¹

A hotshot is someone temporarily perceived to be of some importance, rather than perceived to be of some temporary importance.

God created Monte Carlo and similar places so extremely rich people would come experience extreme envy.

Never rid anyone of an illusion unless you can replace it in his mind with another illusion. (But don't work too hard on it; the replacement illusion does not even have to be more convincing than the initial one.)

The tragedy is that much of what you think is random is in your control and, what's worse, the opposite.

The fool views himself as more unique and others more generic: the wise views

himself as more generic and others more unique.

An academic cannot lose his tenure, but a businessman and risk taker, poor or rich, can go bankrupt. That is the infuriating inequality.

What made medicine fool people for so long was that its successes were prominently displayed and its mistakes (literally) buried.

The sucker's trap is when you focus on what you know and what others don't know, rather than the reverse.

Journalists cannot grasp that what is interesting is not necessarily important; most cannot even grasp that what is sensational is not necessarily interesting.

Medieval man was a cog in a wheel he did not understand; modern man is a cog in a complicated system he thinks he understands.


If a pilot crashes a plane, $n = 1$ is not anecdote; if he doesn't crash the plane, $n = 100$ is anecdote.

The calamity of the information age is that the toxicity of data increases much faster than its benefits.


The role of the media is best seen in the journey from Cato the Elder to a modern politician.*² Do some extrapolation if you want to be scared.

Mental clarity is the child of courage, not the other way around.*³


Probability is the intersection of the most rigorous mathematics and the messiest of life.




To rephrase, every human should at all times have equality in probability (which we can control), not equality in outcome.




Never rid anyone of an illusion unless you can replace it in his mind with another illusion.



Just as statisticians understand the risks of roulette sequences better than carpenters, probabilists understand systemic ecological risks better than biologists.



Most info-Web-media-newspaper types have a hard time swallowing the idea that knowledge is reached (mostly) by removing junk from people's heads.



Finer men tolerate others' small inconsistencies though not the large ones; the weak tolerate others' large inconsistencies though not small ones.



Polemic is a lucrative form of entertainment, as the media can employ unpaid and fiercely motivated actors.



Randomness is indistinguishable from complicated, undetected, and undetectable order; but order itself is indistinguishable from artful randomness.

*¹ Moore's Law stipulates that computational power doubles every eighteen months.

*² Say, Sarah Palin.

*³ The biggest error since Socrates has been to believe that lack of clarity is the source of all our ills, not the result of them.

AESTHETICS

Art is a one-sided conversation with the unobserved.

A golden saddle on a sick horse makes the problem feel worse; pomp and slickness in form make absence of substance nauseating.

The genius of Benoît Mandelbrot is in achieving aesthetic simplicity without having recourse to smoothness.

Beauty is enhanced by unashamed irregularities; magnificence by a façade of blunder.

To understand “progress”: all places we call ugly are both man-made and modern (Newark), never natural or historical (Rome).

We love imperfection, the right kind of imperfection; we pay up for original art and typo-laden first editions.

Most people need to wait for another person to say “this is beautiful art” to say “this is beautiful art”; some need to wait for two or more.

Your silence is only informational if you can speak skillfully.

Almutanabbi boasted that he was the greatest of all Arab poets, but he said so in the greatest of all Arab poems.

Wit seduces by signaling intelligence without nerdiness.

In classical renderings of prominent figures, males are lean and females are plump; in modern photographs, the opposite.

Studying neurobiology to understand humans is like studying ink to understand literature.

Just as no monkey is as good-looking as the ugliest of humans, no academic is worthier than the worst of the creators.

If you want to annoy a poet, explain his poetry.

ETHICS

If you find any reason why you and someone are friends, you are not friends.

Soldiers are more loyal to their comrades (and willing to die for them) than to their country. Academics are more loyal to their peers than to truth.

My biggest problem with modernity may lie in the growing separation of the ethical and the legal.*¹

People reveal much more about themselves while lying than when they tell the truth.

If we are the only animal with a sense of justice, it would clearly be because we also are about the only animal with a sense of cruelty.

Life's beauty: the kindest act toward you in your life may come from an outsider not interested in reciprocation.*²

It is a great compliment for an honest person to be mistaken for a crook by a crook.

We are most motivated to help those who need us the least.

Supposedly, if you are uncompromising or intolerant with BS you lose friends.
But you will also make friends, better friends.

To value a person, consider the difference between how impressive he or she was at the first encounter and the most recent one.

Anything people do, write, or say to enhance their status beyond what they give others shows like a mark on their foreheads, visible to others but not to them.

Meditation is a way to be narcissistic without hurting anyone.

Every angel is an asshole somewhere.

Every asshole is an angel somewhere.

True humility is when you can surprise yourself more than others; the rest is either shyness or good marketing.

The difference between the politician and the philosopher is that, in a debate, the politician doesn't try to convince the other side, only the audience.

We find it to be in extremely bad taste for individuals to boast of their accomplishments; but when countries do so we call it "national pride."

Another marker for charlatans: they don't voice opinions that can get them in trouble.

You can only convince people who think they can benefit from being convinced.

— You can only convince people who think they can prevent from being convinced.

—
Greatness starts with the replacement of hatred with polite disdain.

—
Never call someone an imbecile (or a fucking idiot) unless he causes harm to others/system; there must be a moral dimension to insults.

—
Trust people who make a living lying down or standing up more than those who do so sitting down.

—
Never take advice from a salesman, or any advice that benefits the advice giver.

—
Your duty is to scream those truths that one should shout but that are merely whispered.

—
The tragedy of virtue is that the more obvious, boring, unoriginal, and sermonizing the proverb, the harder it is to implement.

—
It is quite a predicament to be both evil and risk-averse.

—
Even the cheapest misers can be generous with advice.

—
If you lie to me, keep lying; don't hurt me by suddenly telling the truth.

—
It is easy for others, but not for you, to detect the asymmetry between what you gain and what you give by doing, writing, or saying.

—
Don't trust a man who needs an income—except if it is minimum wage.*³

You may outlive your strength, never your wisdom.

Something shoddy: citizenship of convenience, holding the passport of a country for ease of travel or tax treatment without committing to its community.

Weak men act to satisfy their needs, stronger men their duties.

Any action one takes with the aim of winning an award, any award, corrupts to the core.

Religions and ethics have evolved from promising heaven if you do good, to promising heaven while you do good, to making you promise to do good.

For social mobility to work, it needs to be a two-way highway, with a large number of pre-rich and an almost as large one of post-rich.

Avoid calling heroes those who had no other choice.

There are those who will thank you for what you gave them and others who will blame you for what you did not give them.

Envy, like thirst for revenge, is the wicked person's version of our natural sense of injustice.

Ethical man accords his profession to his beliefs, instead of according his beliefs to his profession. This has been rarer and rarer since the Middle Ages.

A prostitute who sells her body (temporarily) is vastly more honorable than

... someone who sells his opinion for promotion or job tenure.

I trust everyone except those who tell me they are trustworthy.

People often need to suspend their self-promotion, and have someone in their lives they do not need to impress. This explains dog ownership.

Trust those who are greedy for money a thousand times more than those who are greedy for credentials.

Pure generosity is when you help the ingrate. Every other form is self-serving.*⁴

I wonder if crooks can conceive that honest people can be shrewder than they.

Trust those who trust you and distrust those who are suspicious of others.

In Proust there is a character, Morel, who demonizes Nissim Bernard, a Jew who lent him money, and becomes anti-Semitic just so he can escape the feeling of gratitude.

Multiplicative generosity: limit your generosity to those who, in turn, given the circumstances, would be equally generous toward others.

Promising someone good luck as a reward for good deeds sounds like a bribe—perhaps the remnant of an archaic, pre-deontic pre-classical morality.

Virtue is when the income you wish to show the tax agency exceeds what you wish to show your neighbor.

The difference between magnificence and arrogance is in what one does when nobody is looking.

Accept the rationality of time, never its fairness and morality.

The nation-state: apartheid without political incorrectness.

In a crowd of a hundred, 50 percent of the wealth, 90 percent of the imagination, and 100 percent of the intellectual courage will reside in a single person—not necessarily the same one.

The bottom half has typically been screwed by the middle class. That's the entire story of Rome.

Just as dyed hair makes older men less attractive, it is what you do to hide your weaknesses that makes them repugnant.

Never buy a product that the owner of the company that makes it doesn't use, or, in the case of, say, medication, wouldn't contingently use.

For soldiers, we use the term "mercenary," but we absolve employees of responsibility with "everybody needs to make a living."

I am rather fed up with those who tell me to be nice and "try to convince" charlatans. The FBI didn't "try to convince" the Mafia to abandon its activities.

English does not distinguish between arrogant-up (irreverence toward the temporarily powerful) and arrogant-down (directed at the small guy).

—

Distributive justice isn't taking from a risk taker who earned honorably, it is keeping his probability of losing back his fortune very high.

—

Someone from your social class who becomes poor affects you more than thousands of starving ones outside of it.

—

It takes a lot of skills to be virtuous without being boring.

*¹ Former U.S. Treasury secretary “bankster” Robert Rubin, perhaps the biggest thief in history, broke no law. The difference between legal and ethical increases in a complex system...then blows it up.

*² The flip side: the worst pain inflicted on you will come from someone who at some point in your life cared about you.

*³ Those in corporate captivity would do anything to “feed a family.”

*⁴ Kantian ethics.

ROBUSTNESS AND ANTIFRAGILITY

To understand how something works, figure out how to break it.

You are only secure if you can lose your fortune without the additional worse insult of having to become humble.*

To test someone's robustness to reputational errors, ask a man in front of an audience if he is "still doing poorly" or if he is "still losing money" and watch his reaction.

General principle: the solutions (on balance) need to be simpler than the problems.

The trick in life (and risk management) is to have as much respect for experience before one acquires said experience as one would after.

Robustness is progress without impatience.

When conflicted between two choices, take neither.

Nation-states like war; city-states like commerce; families like stability; and individuals like entertainment.

The problem with the idea of “learning from one’s mistakes” is that most of what people call mistakes aren’t mistakes.

Robust is when you care more about the few who like your work than the multitude who dislike it (artists); fragile when you care more about the few who dislike your work than the multitude who like it (politicians).

The rationalist imagines an imbecile-free society; the empiricist an imbecile-proof one, or, even better, a rationalist-proof one.

Failure-resistant is achievable; failure-free is not.

Academics are only useful when they try to be useless (say, as in mathematics and philosophy) and dangerous when they try to be useful.

For the robust, an error is information; for the fragile, an error is an error.

The best test of robustness to reputational damage is your emotional state (fear, joy, boredom) when you get an email from a journalist.

The main disadvantage of being a writer, particularly in Britain, is that there is nothing you can do in public or private that would damage your reputation.


The only valid political system is one that can handle an imbecile in power without suffering from it.

Passionate hate (by nations and individuals) ends by rotation to another subject of hate; mediocrity cannot handle more than one enemy. This makes warring

statelings with shifting alliances and enmities a robust system.




You can expect blowups and explosive errors in fields where there is a penalty for simplicity.




I find it inconsistent (and corrupt) to dislike big government while favoring big business—but (alas) not the reverse.



Increasingly, people don't become academics because of intelligence, but rather because of a lower grasp of disorder.



How often have you arrived one, three, or six hours late on a transatlantic flight as opposed to one, three, or six hours early? This explains why deficits tend to be larger, rarely smaller, than planned.



For a free person, the optimal—most opportunistic—route between two points should never be the shortest one.

* My great-great-great-great-great grandfather's rule.

THE LUDIC FALLACY AND DOMAIN DEPENDENCE*¹

I recently had a meal in a fancy restaurant with complicated dishes with fancy names (\$125 per person), then enjoyed a pizza afterward, straight out of the oven, \$7.95. I wonder why the pizza isn't twenty times the price of the complicated dish, since I'd rather have the former—at any price—over the latter.

Sports are commoditized and, alas, prostituted randomness.

When you beat up someone physically, you get exercise and stress relief; when you assault him verbally on the Internet, you just harm yourself.

Just as eating cow meat doesn't turn you into a cow, studying philosophy doesn't make you wiser.

Just as smooth surfaces, competitive sports, and specialized work fossilize mind and body, competitive academia fossilizes the soul.

They agree that chess training only improves chess skills but disagree that classroom training (almost) only improves classroom skills.

People like to eat fish by the water even if the fish was caught far away and transported by trucks.

Upon arriving at the hotel in Dubai, the businessman had a porter carry his luggage; I later saw him lifting free weights in the gym.

Games were created to give nonheroes the illusion of winning. In real life, you don't know who really won or lost (except too late), but you can tell who is heroic and who is not.

Mistakes detected by copy editors are not likely to be noticed by readers, and vice versa.

I suspect that IQ, SAT, and school grades are tests designed by nerds so they can get high scores in order to call each other intelligent.*²

They read Gibbon's *Decline and Fall* on an eReader but refuse to drink Château Lynch-Bages in a Styrofoam cup.

Most can't figure out why one can like rigorous knowledge and despise academics, yet they understand that one can like food and hate canned tuna.

My best example of the domain dependence of our minds, from my recent visit to Paris: at lunch in a French restaurant, my friends ate the salmon and threw away the skin; at dinner, at a sushi bar, the very same friends ate the skin and threw away the salmon.

Fragility: we have been progressively separating human courage from warfare, allowing wimps with computer skills to kill people without the slightest risk to their lives.

There is a small, but not insignificant, detail.

Those who can't do shouldn't teach.

*¹ *Ludic* is Latin for “related to games”; the fallacy prevalent in *The Black Swan* about making life resemble games (or formal setups) with crisp rules rather than the reverse. Domain dependence is when one acts in a certain way in an environment (say, the gym) and a different way in another.

*² Smart and wise people who score low on IQ tests, or patently intellectually defective ones, like former U.S. president George W. Bush, who score high on them (130), are testing the test and not the reverse.

EPISTEMOLOGY AND SUBTRACTIVE KNOWLEDGE

Since Plato, Western thought and the theory of knowledge have focused on the notions of True-False; as commendable as it was, it is high time to shift the concern to Robust-Fragile, and social epistemology to the more serious problem of Sucker-Nonsucker.

The problem of knowledge is that there are many more books on birds written by ornithologists than books on birds written by birds and books on ornithologists written by birds.


Change your anchor to what did not happen rather than what did happen.

The perfect sucker understands that pigs can stare at pearls but doesn't realize he can be in an analog situation.


Those who violate a rule in a logically self-consistent system can only do well if they violate at least one additional logical rule.

It takes extraordinary wisdom and self-control to accept that many things have a logic we do not understand that is smarter than our own.

Knowledge is subtractive, not additive—what we subtract (reduction by what does not work, what *not* to do), not what we add (what to do).*




They think that intelligence is about noticing things that are relevant (detecting patterns); in a complex world, intelligence consists in ignoring things that are irrelevant (avoiding false patterns).




In a conflict, the middle ground is least likely to be correct.




Happiness: we don't know what it means, how to measure it, or how to reach it, but we know extremely well how to avoid unhappiness.




In the medical and social domains, treatment should never be equivalent to silencing symptoms.



The imagination of the genius vastly surpasses his intellect; the intellect of the academic vastly surpasses his imagination.



The ideal *trivium* education, and the least harmful one to society and pupils, would be mathematics, logic, and Latin; a double dose of Latin authors to compensate for the severe loss of wisdom that comes from mathematics; just enough mathematics and logic to control verbiage and rhetoric.



The four most influential moderns: Darwin, Marx, Freud, and (the productive) Einstein were scholars but not academics. It has always been hard to do genuine—and nonperishable—work within institutions.

* The best way to spot a charlatan: someone (like a consultant or a stockbroker) who tells you what to do instead of what *not* to do.

THE SCANDAL OF PREDICTION

A prophet is not someone with special visions, just someone blind to most of what others see.

For the ancients, forecasting historical events was an insult to the God(s); for me, it is an insult to man—that is, for some, to science.

The ancients knew very well that the only way to understand events was to cause them.

Anyone voicing a forecast or expressing an opinion without something at risk has some element of phoniness. Unless he risks going down with the ship this would be like watching an adventure movie.

They would take forecasting more seriously if it were pointed out to them that in Semitic languages the words for “forecast” and “prophecy” are the same.

For Seneca, the Stoic sage should withdraw from public efforts when unheeded and the state is corrupt beyond repair. It is wiser to wait for self-destruction.

BEING A PHILOSOPHER AND MANAGING TO REMAIN ONE

To become a philosopher, start by walking very slowly.

Real mathematicians understand completeness, real philosophers understand incompleteness, the rest don't formally understand anything.

In twenty-five centuries, no human came along with the brilliance, depth, elegance, wit, and imagination to match Plato—to protect us from his legacy.

A philosopher uses logic without statistics, an economist uses statistics without logic, a physicist uses both.

Why do I have an obsessive Plato problem? Most people need to surpass their predecessors; Plato managed to surpass all his successors.

It is perplexing but amusing to observe people getting extremely excited about things you don't care about; it is sinister to watch them ignore things you believe are fundamental.

To be a philosopher is to know through long walks, by reasoning, and reasoning only, *a priori*, what others can only potentially learn from their mistakes, crises,

accidents, and bankruptcies—that is, *a posteriori*.

Engineers can compute but not define, mathematicians can define but not compute, economists can neither define nor compute.

Something finite but with unknown upper bounds is epistemically equivalent to something infinite. This is epistemic infinity.

Mathematics demands an uncontrolled hunger for abstraction, philosophy a very controlled one.

Conscious ignorance, if you can practice it, expands your world; it can make things infinite.

For the classics, philosophical insight was the product of a life of leisure; for us, a life of leisure can be the product of philosophical insight.

For many people, it takes a lot of preparation to learn to become ordinary.

It takes a lot of intellect and confidence to accept that what makes sense doesn't really make sense.

A theological Procrustean bed: for the Orthodox since Gregory Palamas and for the Arabs since Algazel, attempts to define God using the language of philosophical universals were a rationalistic mistake. I am still waiting for a modern to take notice.

Let us find what risks we can measure and these are the risks we should be taking.

Saying “the mathematics of uncertainty” is like saying “the chastity of sex”—
what is mathematized is no longer uncertain, and vice versa.

If your approach to mathematics is mechanical not mystical, you’re not going to
go anywhere.

Sadly, we learn the most from fools, economists, and other reverse role models,
yet we pay them back with the worst ingratitude.

Salaried people are just stepparents. They can be good stepparents but never
match the biological.

In Plato’s *Protagoras*, Socrates contrasts philosophy as the collaborative search
for truth with the sophist’s use of rhetoric to gain the upper hand in argument for
fame and money. Twenty-five centuries later, this is exactly the salaried
researcher and the modern tenure-loving academic. Progress.

ECONOMIC LIFE AND OTHER VERY VULGAR SUBJECTS

There are designations, like “economist,” “prostitute,” or “consultant,” for which additional characterization doesn’t add information.

A mathematician starts with a problem and creates a solution; a consultant starts by offering a “solution” and creates a problem.

Financial inequalities are ephemeral, one crash away from reallocation; inequalities of status are there to stay.

What they call “risk” I call opportunity; but what they call “low risk” opportunity I call sucker problem.

If you detect a repressed smile on the salesperson’s face, you paid too much for it.

Organizations are like caffeinated dupes unknowingly jogging backward; you only hear of the few who reach their destination.

There are three types of large corporations: those about to go bankrupt, those that are bankrupt and hide it, those that are bankrupt and don’t know it.

The best test of whether someone is extremely stupid (or extremely wise) is whether financial and political news makes sense to him.

The left holds that because markets are stupid models should be smart; the right believes that because models are stupid markets should be smart. Alas, it never hit both sides that both markets and models are very stupid.

When positive, show net; when negative, show gross.

Economics is like a dead star that still seems to produce light; but you know it is dead.

A trader listened to the firm's "chief" economist's predictions about gold, then lost a bundle. The trader was asked to leave the firm. He then angrily asked the boss who was firing him, "Why do you fire me alone, not the economist? He too is responsible for the loss." The boss: "You idiot, we are not firing you for losing money—we are firing you for listening to the economist."

Suckers think that you cure greed with money, addiction with substances, expert problems with experts, banking with bankers, economics with economists, and debt crises with debt spending.

You can be certain that the head of a corporation has a lot to worry about when he announces publicly that "there is nothing to worry about."

Economics is about making simple things more complicated, mathematics about making complicated things simpler.

The stock market, in brief: participants are calmly waiting in line to be slaughtered while thinking it is for a Broadway show.

slaughtered while thinking it is for a Broadway show.

If something (say, a stock price) looks slightly out of line, it is out of line. If it looks way out of line, you are wrong in your method of evaluation.

The main difference between government bailouts and smoking is that in some rare cases the statement “this is my last cigarette” holds true.

It is easier to macrobullshit than to microbullshit.

What makes us fragile is that institutions cannot have the same virtues (honor, truthfulness, courage, loyalty, tenacity) as individuals.

The worst damage has been caused by competent people trying to do good; the best improvements have been brought by incompetent ones *not* trying to do good.

Saying someone is good at making profits but not good at managing risk is like saying someone is a great surgeon except for cases when the patients die.

The difference between banks and the Mafia: banks have better legal-regulatory expertise, but the Mafia understands public opinion.

“It is much easier to scam people for billions than for just millions.”*¹

Being an entrepreneur is an existential not just a financial thing.

At a panel in Moscow, I watched an economist who got the “Nobel” for writings no one reads, theories no one uses, and lectures no one understands.

Anyone who likes meetings should be banned from attending meetings.

One of the failures of “scientific approximation” in the nonlinear domain comes from the inconvenient fact that the average of expectations is different from the expectation of averages.*²

An economist is a mixture of 1) a businessman without common sense, 2) a physicist without brains, and 3) a speculator without balls.

Journalists as reverse aphorists: my statement “you need skills to get a BMW, skills plus luck to become a Warren Buffett” was summarized as “Taleb says Buffett has *no* skills.”

The curious mind embraces science; the gifted and sensitive, the arts; the practical, business; the leftover becomes an economist.


Stiglitz understands everything about economics except for tail risks, which is like knowing everything about flight safety except for crashes.

Public companies, like human cells, are programmed for apoptosis, suicide through debt and hidden risks. Bailouts invest the process with a historical dimension.


Those with brains and no balls become mathematicians, those with balls and no brains join the Mafia, those with no balls and no brains become economists.

In poor countries, officials receive explicit bribes; in D.C. they get the sophisticated implicit, unspoken promise to work for large corporations.


Fate is at its cruelest when a banker ends up in poverty.



Never take investment advice from someone who has to work for a living.



We should make students recompute their GPAs by counting their grades in finance and economics backward.




The agency problem drives every company, thanks to the buildup of hidden risks, to maximal fragility.




Money corrupts those who talk (and write) about it more than those who earn it.



In politics we face the choice between warmongering, nation-state-loving, big-business agents on one hand; and risk-blind, top-down, epistemic arrogant big servants of large employers on the other. But we have a choice.



To have a great day: 1) Smile at a stranger, 2) surprise someone by saying something unexpectedly nice, 3) give some genuine attention to an elderly person, 4) invite someone who doesn't have many friends for coffee, 5) humiliate an economist, publicly, or create deep anxiety inside a Harvard professor.



Bring the good news in trickles, the bad news in lumps.



Never ask your client for advice.

*¹ Inspired by the Madoff episode.

*² Don't cross a river, because it is on average four feet deep. This is also known as Jensen's inequality.

THE SAGE, THE WEAK, AND THE MAGNIFICENT*¹

Mediocre men tend to be outraged by small insults but passive, subdued, and silent in front of very large ones.*²

It is a sign of weakness to avoid showing signs of weakness.

The only definition of an alpha male: if you try to be an alpha male, you will never be one.

Risk takers never complain. They do.

Those who have nothing to prove never say that they have nothing to prove.

To be a person of virtue you need to be boringly virtuous in every single small action. To be a person of honor all you need is to be honorable in a few important things (risk your life or career or reputation for a just cause, say, or live up to your word when nobody else has the guts to do so).

The weak shows his strength and hides his weaknesses; the magnificent exhibits his weaknesses like ornaments.

Magnificence is defined by the intersection of reluctant praise by your enemies and criticism by your friends, greatness by their union.

How superb to become wise without being boring; how sad to be boring without being wise.*³

If you are only bad-mouthed by people who prefer your company over those of many others, only critiqued by those who scrutinize your work, and only insulted by persons who open your email as soon as they see it, then you are doing the right thing.

The traits I respect are erudition and the courage to stand up when half-men are afraid for their reputation. Any idiot can be intelligent.

The mediocre regret their words more than their silence; finer men regret their silence more than their words; the magnificent has nothing to regret.

It takes some humanity to feel sympathy for those less fortunate than us; but it takes honor to avoid envying those who are much luckier.

Regular men are a certain varying number of meals away from lying, stealing, killing, or even working as forecasters for the Federal Reserve in Washington; never the magnificent.*⁴

Social science means inventing a certain brand of human we can understand.

We viciously accept narcissism in nation-states, while repressing it in individuals: complexity exposes the system's shaky moral foundations.

With an increasing “Good Book” to read, the reader takes the opportunity to choose

When expressing “good luck” to a peer, the weak wishes the opposite; the strong is mildly indifferent; but only the magnificent means it.

Contra the prevailing belief, “success” isn’t being on top of a hierarchy, it is standing outside all hierarchies.

In the past, only some of the males, but all of the females, were able to procreate. Equality is more natural for females.

Someone said, “We need more women in academic philosophy.” But we also need more men in academic philosophy.

The magnificent believes half of what he hears and twice what he says.

It is very easy to be stoic, in failure.

A verbal threat is the most authentic certificate of impotence.

The first, and hardest, step to wisdom: avert the standard assumption that people know what they want.

The two most celebrated acts of courage in history aren’t Homeric fighters but two Eastern Mediterranean fellows who died, even sought death, for their ideas.

The weak cannot be good; or, perhaps, he can only be good within an exhaustive and overreaching legal system.

Virtue is a sequence of small acts of omission. Honor and grandeur can be a single gutsy, momentous, and self-sacrificial act of commission.

—

By all means, avoid words—threats, complaints, justification, narratives, reframing, attempts to win arguments, supplications; avoid words!

—

Be polite, courteous, and gentle, but ignore comments, praise, and criticism from people you wouldn't hire.

—

According to Lucian of Samosata, the philosopher Demonax stopped a Spartan from beating his servant. "You are making him your equal," he said.

—

You are free in inverse proportion to the number of people to whom you can't say "fuck you." But you are honorable in proportion to the number of people to whom you can say "fuck you" with impunity but don't.

—

The classical man's worst fear was inglorious death; the modern man's worst fear is just death.

—

I never trust a man who doesn't have enemies.

—

When you cite some old wisdom-style quote and add "important truth," "to remember," or "something to live by," you are not doing so because it is good, only because it is inapplicable. Had it been both good and applicable you would not have had to cite it. Wisdom that is hard to execute isn't really wisdom.

*¹ In Aristotle's *Nicomachean Ethics*, the *megalopsychos*, which I translate as the magnificent, is the "great-souled" who thinks of himself as worthy of great things and, aware of his own position in life, abides by a certain system of ethics that excludes pettiness. This notion of great soul, though displaced by Christian ethics advocating humility, remains present in Levantine culture, with the literal *Kabir al-nafs*. Among other attributes, the magnificent walks slowly.

*² Consider the reaction to the banking and economics establishments.

*³ Looking at Federal Reserve Chairman Ben Bernanke.

*⁴ I had to read Aristotle's *Nicomachean Ethics* Book IV ten times before realizing what he didn't say explicitly (but knew): the magnificent (megalopsychos) is all about unconditionals.

THE IMPLICIT AND THE EXPLICIT

You know you have influence when people start noticing your absence more than the presence of others.

The only people who think that real world experience doesn't matter are those who never had real world experience.

You are guaranteed a repetition when you hear the declaration "never again!"

Some reticent people use silence to conceal their intelligence; but most do so to hide the lack of it.

Complaints don't deliver complaints, they mostly reveal your weakness.

Swearing on occasion, amid a rich vocabulary, is costly signaling that you are self-owned.

When someone says "I am not that stupid," it often means that he is more stupid than he thinks.

Bad-mouthing is the only genuine, never faked expression of admiration.

You can only insult a barbarian in his own language.

When a woman says about a man that he is intelligent, she often means handsome; when a man says about a woman that she is dumb, he always means attractive.

What organized dating sites fail to understand is that people are far more interesting in what they don't say about themselves.

If your beard is gray, produce heuristics but explain the "why." If your beard is white, skip the why, just say what should be done.

For company, you often prefer those who find *you* interesting over those you find interesting.

The Internet broke the private-public wall; impulsive and inelegant utterances that used to be kept private are now available for literal interpretation.

A happier world is one in which everyone realizes that 1) it is not what you tell people, it is how you say it that makes them feel bad; 2) it is not what you do to them but how you make them look that gets them angry; 3) they should be the ones putting themselves in a specific category.

One of the problems with social networks is that it is getting harder and harder for others to complain about you behind your back.

People laugh out loud and broadcast their laughter when they're worried about the statement that they purportedly find funny. They would smile—perhaps surreptitiously—otherwise.

You can be certain that a person has the means but not the will to help you when he says “there is nothing else I can do.” And you can be certain that a person has neither means nor will to help you when he says “I am here to help.”

The general principle of antifragility: it is much better to do things you cannot explain than explain things you cannot do.

We expect places and products to be less attractive than in marketing brochures, but we never forgive humans for being worse than their first impressions.

If something looks irrational—and has been so for a long time—odds are you have a wrong definition of rationality.

When someone starts a sentence with “simply,” you should expect to hear something very complicated.

Half the people lie with their lips; the other half with their tears.

The rules you explain are less convincing than the ones you don’t explain—or have to explain.

Knowing stuff others don’t know is most effective when others don’t know you know stuff they don’t know.

ON THE VARIETIES OF LOVE AND NONLOVE

At any stage, humans can thirst for money, knowledge, or love; sometimes for two, never for three.

Love without sacrifice is like theft.

You may eventually forgive and befriend someone who harmed you, never someone who bored you.

Marriage is the institutional process of feminizing men—and feminizing women.

What counts is not what people say about you, it is how much energy they spend in saying it.

There are men who surround themselves with women (and seek wealth) for ostentation; others who do so mostly for consumption; they are rarely the same.

The ones who refer to you repeatedly as “my friend” are most likely to betray you.

Outside of friendship and love, it is very hard to find situations with bilateral, two-way suckers.

An enemy who becomes a friend will stay a friend; a friend turned enemy will never become one.

I attended a symposium, an event named after a fifth-century (B.C.) Athenian drinking party in which nonnerds talked about love; alas, there was no drinking and, mercifully, nobody talked about love.

Journalists feel contempt for those who fear them and a deep resentment for those who don't.

You will get the most attention from those who hate you. No friend, no admirer, and no partner will flatter you with as much curiosity.

Used skillfully, a compliment will be much more offensive than any disparagement.

Humans need to complain just as they need to breathe. Never stop them; just manipulate them by controlling what they complain about and supply them with reasons to complain. They will complain but be thankful.

When a young woman partners with an otherwise uninteresting rich man, she can sincerely believe that she is attracted to some very specific body part (say, his nose, neck, or knee).

Injuries done to us by others tend to be acute; the self-inflicted ones tend to be chronic.

When people call you intelligent it is almost always because they agree with you. Otherwise they just call you arrogant.

A good foe is far more loyal, far more predictable, and, to the clever, far more useful than the most valuable admirer.

We often benefit from harm done to us by others, almost never from self-inflicted injuries.

If my detractors knew me better they would hate me even more.

THE END

Wisdom isn't about understanding things (and people); it is knowing what they can do to you.



Platonic minds expect life to be like film, with defined terminal endings; a-Platonic ones expect film to be like life and, except for a few irreversible conditions such as death, distrust the terminal nature of all human-declared endings.



The only problem with the last laugh is that the winner has to laugh alone.

POSTFACE

The general theme of my work is the limitations of human knowledge, and the charming and less charming errors and biases when working with matters that lie outside our field of observation, the unobserved and the unobservables—the unknown; what lies on the other side of the veil of opacity.

Because our minds need to reduce information, we are more likely to try to squeeze a phenomenon into the Procrustean bed of a crisp and known category (amputating the unknown), rather than suspend categorization, and make it tangible. Thanks to our detections of false patterns, along with real ones, what is random will appear less random and more certain—our overactive brains are more likely to impose the wrong, simplistic narrative than no narrative at all.*¹

The mind can be a wonderful tool for self-delusion—it was not designed to deal with complexity and nonlinear uncertainties.*² Counter to the common discourse, *more information means more delusions*: our detection of false patterns is growing faster and faster as a side effect of modernity and the information age: there is this mismatch between the messy randomness of the information-rich current world, with its complex interactions, and our intuitions of events, derived in a simpler ancestral habitat. Our mental architecture is at an increased mismatch with the world in which we live.

This leads to sucker problems: when the map does not correspond to the territory, there is a certain category of fool—the overeducated, the academic, the journalist, the newspaper reader, the mechanistic “scientist,” the pseudo-empiricist, those endowed with what I call “epistemic arrogance,” this wonderful ability to discount what they did not see, the unobserved—who enter a state of denial, imagining the territory as fitting his map. More generally, the fool here is someone who does the wrong reduction for the sake of reduction, or removes something essential, cutting off the legs, or, better, part of the head of a visitor

while insisting that he preserved his persona with 95 percent accuracy. Look around at the Procrustean beds we've created, some beneficial, some more questionable: regulations, top-down governments, academia, gyms, commutes, high-rise office buildings, involuntary human relationships, employment, *etc.*

Since the Enlightenment, in the great tension between *rationalism* (how we would like things to be so they make sense to us) and *empiricism* (how things are), we have been blaming the world for not fitting the beds of “rational” models, have tried to change humans to fit technology, fudged our ethics to fit our needs for employment, asked economic life to fit the theories of economists, and asked human life to squeeze into some narrative.

We are robust when errors in the representation of the unknown and understanding of random effects do not lead to adverse outcomes—fragile otherwise. The robust benefits from Black Swan events,^{*3} the fragile is severely hit by them. We are more and more fragile to a certain brand of scientific autism making confident claims about the unknown—leading to expert problems, risk, massive dependence on human error. As the reader can see from my aphorisms, I have respect for mother nature's methods of robustness (billions of years allow most of what is fragile to break); classical thought is more robust (in its respect for the unknown, the epistemic humility) than the modern post-Enlightenment naïve pseudoscientific autism. Thus my classical values make me advocate the triplet of erudition, elegance, and courage; against modernity's phoniness, nerdiness, and philistinism.^{*4}

Art is robust; science, not always (to put it mildly). Some Procrustean beds make life worth living: art and, the most potent of all, the poetic aphorism.

—

Aphorisms, maxims, proverbs, short sayings, even, to some extent, epigrams are the earliest literary form—often integrated into what we now call poetry. They carry the cognitive compactness of the sound bite (though both more potent and more elegant than today's down-market version),^{*5} with some show of bravado in the ability of the author to compress powerful ideas in a handful of words—particularly in an oral format. Indeed, it had to be bravado, because the Arabic word for an improvised one-liner is “act of manliness,” though such a notion of “manliness” is less gender-driven than it sounds and can be equally translated as “the skills of being human” (*virtue* has the same roots in Latin, *vir*, “man”). As if

those who could produce powerful thoughts in such a way were invested with talismanic powers.

This mode is at the center of the Levantine soul (and the broader Eastern Mediterranean). When God spoke to the Semites, he spoke in very short poetic sentences, usually through the mouths of prophets. Consider the Scriptures, more particularly the books of Proverbs and Ecclesiastes; Islam's holy book, the Koran, is a collection of concentrated aphorisms. And the format has been adopted for synthetic literary prophecies: Nietzsche's *Zarathustra*, or, more recently, my compatriot from a neighboring (and warring) village in northern Lebanon, Kahlil Gibran, author of *The Prophet*.

Outside of what we now call religion, take the aphorisms of Heraclitus and Hippocrates; the works of Publilius Syrus (a Syrian slave who owed his freedom to his eloquence, expressed in his *Sententiae*, potent one-line poems that echo in the maxims of La Rochefoucauld), and the poetry of the poet who is broadly considered the greatest of all Arab poets, Almutanabbi.

Aphorisms as stand-alone sentences have been used for exposition, for religious text, for advice to a grandchild by a Levantine grandmother, for boasting (as I said earlier, in an aphorism, Almutanabbi used them to tell us, convincingly, that he was the greatest Arab poet), for satires^{*6} (Martial, Aesop, Almaarri), by the *moralistes* (Vaugenargues, La Rochefoucauld, La Bruyère, Chamfort), to expose opaque philosophy (Wittgenstein), relatively clearer ones (Schopenhauer, Nietzsche, Cioran), or crystal-clear ideas (Pascal).^{*7} You never have to explain an aphorism—like poetry, this is something that the reader needs to deal with by himself.^{*8}

There are bland aphorisms, the platitudinous ones harboring important truths that you had thought about before (the kind that make intelligent people recoil at Gibran's *The Prophet*); pleasant ones, those you never thought about but trigger in you the *Aha!* of an important discovery (such as those in La Rochefoucauld); but the best are those you did not think about before, and for which it takes you more than one reading to realize that they are important truths, particularly when the silent character of the truth in them is so powerful that they are forgotten as soon as read.

Aphorisms require us to change our reading habits and approach them in small doses; each one of them is a complete unit, a complete narrative dissociated from others.

My best definition of a nerd: someone who asks you to explain an aphorism.

I have been aware that my style was aphoristic. As a teenager, I was mentored by the poet Georges Schéhadé (his poetry reads like proverbs), who predicted that I would see the light and grow up to make a career in poetry, once I got this ideas business out of my system. More recently, readers have triggered numerous copyright alerts by posting quotes from my books on the Web, but I had never thought of re-expressing my ideas (or, rather, my central idea about the limits of knowledge) in such a way until I realized that these sentences come naturally to me, almost involuntarily, in an eerie way, particularly when walking (slowly) or when freeing up my mind to do nothing, or nothing effortful—I could convince myself that I was hearing voices from the other side of the veil of opacity.

By setting oneself totally free of constraints, free of thoughts, free of this debilitating activity called work, free of efforts, elements hidden in the texture of reality start staring at you; then mysteries that you never thought existed emerge in front of your eyes.

*¹ This discounting of the unseen comes from the human “scorn of the abstract” (our minds are not good at handling the non-anecdotal and tend to be swayed by vivid imagery, making the media distort our view of the world).

*² Nor is science capable of dealing effectively with nonlinear and complex matters, those fraught with interdependence (climate, economic life, the human body), in spite of its hyped-up successes in the linear domain (physics and engineering), which give it a prestige that has endangered us.

*³ A Black Swan (capitalized) is an event (historical, economic, technological, personal) that is both unpredicted by some observer and carries massive consequences. In spite of growth in our knowledge, the role of these Black Swans has been growing.

*⁴ Many philistines reduce my ideas to an opposition to technology when in fact I am opposing the naïve blindness to its side effects—the fragility criterion. I’d rather be unconditional about ethics and conditional about technology than the reverse.

*⁵ Note the distinction from TV one-liners: the sound bite loses information; the aphorism gains. Somehow, aphorisms obey the Gigerenzer and Goldstein “less is more” effect.

*⁶ The best way to measure the loss of intellectual sophistication in the Internet age—this “nerdification,” to put it bluntly—is in the growing disappearance of sarcasm, as mechanistic minds take insults a bit too literally.

*⁷ It is not uncommon to find the same maxim repeated by several authors separated by a millennium or a continent.

*⁸ The aphorism has been somewhat debased (outside the German language) by its association with witticism, such as the ones by Oscar Wilde, Mark Twain, Ambrose Bierce, or Sacha Guitry—deep thought can be poetic and witty, as with Schopenhauer, Nietzsche, or (sometimes) Wittgenstein; but, abiding by the distinction between Sacred and Profane, philosophy and poetry are not stand-up comedy.

TO ALEXANDER N. TALEB

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BY NASSIM NICHOLAS TALEB

Antifragile

The Bed of Procrustes

The Black Swan

Fooled by Randomness

ABOUT THE AUTHOR

NASSIM NICHOLAS TALEB has devoted his life to problems of uncertainty, probability, and knowledge and has led three careers around this focus, as a businessman-trader, a philosophical essayist, and an academic researcher. Although he now spends most of his time either working in intense seclusion in his study, or as a flâneur meditating in cafés across the planet, he is currently Distinguished Professor of Risk Engineering at New York University's Polytechnic Institute. His main subject matter is “decision making under opacity,” that is, a map and a protocol on how we should live in a world we don't understand.

His books *Fooled by Randomness* and *The Black Swan* have been published in thirty-three languages.

Taleb believes that prizes, honorary degrees, awards, and ceremonialism debase knowledge by turning it into a spectator sport.



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