ADVANCE UNCORRECTED PROOF

FOOLED BY RANDOMNESS

The Hidden Role of Chance in the Markets and in Life

NASSIM NICHOLAS TALEB

THIS IS AN UNCORRECTED SAMPLE.
Please note that any quotes for review
must be checked against the finished book.

FOOLED BY RANDOMNESS

The Hidden Role of Chance in the Markets and in Life

NASSIM NICHOLAS TALEB

TEXERE

Copyright © 2001 by Nassim Nicholas Taleb. All rights reserved.

Published by

TEXERE LLC
55 East 52nd Street
New York, NY 10055

Tel: +1 (212) 317 5106
Fax: +1 (212) 317 5178
www.etexere.com

UK subsidiary office

TEXERE Publishing Limited
71–77 Leadenhall Street
London EC3A 3DE
www.etexere.co.uk

Tel: +44 (0)20 7204 3644
Fax: +44 (0)20 7208 6701

Reproduction or translation of any part of this work beyond that permitted by Section 107 or 108 of the 1976 United States Copyright Act without the permission of the copyright owner is unlawful. Requests for permission or further information should be addressed to the Permissions Department, TEXERE LLC, 55 East 52nd Street, New York, NY 10055.

This publication is designed to provide accurate and authoritative information in regard to the subject matter covered. It is sold with the understanding that the publisher is not engaged in rendering legal, accounting, or other professional services. If legal advice or other expert assistance is required, the services or a competent professional person should be sought.

Designed by The Book Design Group

Library of Congress Cataloging-in-Publication Data has been applied for.

ISBN 1-58799-071-7

Printed in the United States of America

This book is printed on acid-free paper.

PREFACE AND ACKNOWLEDGMENTS

This book is the synthesis of on one hand the no-nonsense mathematical trader (self-styled "practitioner of uncertainty") who spent his life trying to resist being fooled by randomness and trick the emotions associated with uncertainty and, on the other, the aesthetically obsessed, literature-loving human being willing to be fooled by any form of nonsense that is polished, refined, original, and tasteful. I am not capable of avoiding being the fool of randomness; what I can do is confine it to where it brings some aesthetic gratification.

Much has been written about our biases (acquired or genetic) in dealing with randomness over the past decade. My rule while writing this book has been to avoid discussing 1) anything that I did not either personally witness on the topic or develop independently 2) anything that I have not distilled well enough to be able to write on the subject with the slightest effort. Everything that remotely felt like work was out. I had to purge the text from passages that seemed to come from a visit to the library, including the scientific name-dropping. I tried to use no quote that does not naturally spring from my memory and does not come from a writer I have intimately frequented over the years (I detest the practice of random use of borrowed wisdom-much on that, later). Aut tace aut loquere meliora silencio (only when the words outperform silence).

I tried to make the minimum out of my direct profession of mathemati-

cal trader. Markets are a mere special case of randomness traps. I discuss them in an illustrative way as I would in a dinner conversation with, say, an educated cardiologist (I used as a model my second-generation friend Jacques Merab).

Some acknowledgments. 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. Don also made me realize that probabilists are born, not made-most mathematicians of probability 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 a 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 Salomon Brothers traders that 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, including the late Jimmy Powers, who helped nurture my trading early on and kept repeating, "Anyone can buy and sell"; and 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 in our life as traders.

Second, I have been lucky to meet Myles Thompson and David Wilson, when they both were at John Wiley & Sons. Myles has vision-he is the reverse "me too" publisher. He understands 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 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 was obsessed with literature but happened to be a trader, rather than a generic "expert." Finally, Mina Samuels proved to be the greatest conceivable editor: immensely intuitive, cultured, aesthetically concerned, yet nonintrusive.

此为试读,需要完整PDF请访问: www.ertongbook.com

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, 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"): Odeon outstanding 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.

People who read the manuscript, diligently helped with the errors, or contributed to the elaboration of the book with useful comments: Inge Ivchenko, Danny Tosto, Manos Vourkoutiotis, Stan Metelits, Silverio Foresi, Achilles Venetoulias, and Nicholas Stephanou. 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 that 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. I designed it fit my taste and feel like a hobby: a combination of an applied probability research laboratory, athletic summer camp, and, not least, a crisis-hunting hedge fund 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, Yuzhang Zhou, Cyrille de Lambilly as well as the members of Paloma Partners such as Tom Witz who challenged our wisdom on a daily basis or Donald Sussman who supplied me with his penetrating judgment.

Table of Summaries

Chapter 1: The Millionaire Across the Street

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

Chapter 2: A Bizarre Accounting Method

On alternative histories, a probabilistic view of the world, intellectual fraud, and the randomness wisdom of a Frenchman with steady bathing habits. How journalists are bred to not understand random series of events. Beware borrowed wisdom: How almost all great ideas concerning random outcomes are against conventional sapience. On the difference between correctness and intelligibility.

Chapter 3: A Mathematical Meditation on History

On Monte Carlo simulation as a metaphor to understanding a sequence of random historical events. On randomness and artificial history. Age is

beauty, almost always, and the new and the young are generally toxic. Send your history professor to an introductory class on sampling theory.

Chapter 4: Randomness, Nonsense, and the Scientific Intellectual

On extending the Monte Carlo generator to produce artificial thinking and compare it with rigorous nonrandom constructs. The science wars enter business world. Why the aesthete in me loves to be fooled by randomness.

Chapter 5: Survival of the Least Fit-Can Evolution Be Fooled by Randomness?

A case study on two rare events. On rare events and evolution. How "Darwinism" and evolution are concepts that are misunderstood in the nonbiological world. Life is not continuous. How evolution will be fooled by randomness. A preparation to the problem of induction.

Chapter 6: Skewness and Asymmetry

We introduce the concept of skewness: why the terms "bull" and "bear" have limited meaning outside of zoology. A vicious child wrecks the structure of randomness. An introduction to the problem of epistemological opacity. The penultimate step before the problem of induction.

Chapter 7: The Problem of Induction

On the chromodynamics of Swans. Taking Solon's warning into some philosophical territory. How Victor Niederhoffer taught me empiricism; I added deduction. Why it is not scientific to take science seriously. Soros promotes Popper. That bookstore on 18th Street and Fifth Avenue. Pascal's wager.

CHAPTER 8: TOO MANY MILLIONAIRES NEXT DOOR

Three illustrations of the survivorship bias. Why very few people should live on Park Avenue. The millionaire next door has very flimsy clothes. An overcrowding of experts.

CHAPTER 9: IT IS EASIER TO BUY AND SELL THAN FRY AN EGG

Some technical extensions of the survivorship bias. On the distribution of "coincidences" in life. It is preferable to be lucky than competent (but you can be caught). The birthday paradox. More charlatans (and more journalists). How the researcher with work ethics can find about anything in data. On dogs not barking.

CHAPTER 10: LOSER TAKES ALL-ON THE NONLINEARITIES OF LIFE

The nonlinear viciousness of life. Moving to Bel Air and acquiring the vices of the rich and famous. Why Microsoft's Bill Gates may not be the best in his business (but please do not inform him of such fact). Depriving donkeys of food.

CHAPTER 11: RANDOMNESS AND OUR BRAIN: WE ARE PROBABILITY BLIND

On the difficulty of thinking of your vacation as a linear combination of Paris and the Bahamas. Nero Tulip may never ski in the Alps again. Some discussion of behavioral discoveries. Some manifestations of probability blindness taken out of a textbook. A little more on journalistic pollution. Why you may be dead by now.

CHAPTER 12: GAMBLERS' TICKS AND PIGEONS IN A BOX

On gamblers' crowding up my life. Why bad taxicab English can help you make money. How I am the fool of all fools, except that I am aware of it. Dealing with my genetic unfitness. No boxes of chocolate under my trading desk.

CHAPTER 13: CARNEADES COMES TO ROME: ON PROBABILITY AND SKEPTICISM

Cato the censor sends Carneades back packing. Monsieur de Norpois does not remember his old opinions. Beware the scientist. Marrying ideas. The same Robert Merton helping the author start his firm. Science evolves funeral to funeral.

CHAPTER 14: BACCHUS ABANDONS ANTONY

Montherlant's death. Stoicism is not the stiff upper lip, but the illusion of victory of man against randomness. It is so easy to be heroic. Randomness and personal elegance.

PROLOGUE

MOSQUES IN THE CLOUDS

This book is about luck disguised and perceived as non-luck (that is, skills) and, more generally, randomness disguised and perceived as non-randomness (that is, determinism). It manifests itself in the shape of the lucky fool, defined as a person who benefited from a disproportionate share of luck but attributes his success to some other, generally very precise, reason. Such confusion crops up in the most unexpected areas, even science, though not in such an accentuated and obvious manner as it does in the world of business. It is endemic in politics, as it can be encountered in the shape of a country's president discoursing on the jobs that "he" created, "his" recovery, and "his predecessor's" inflation.

For we are genetically still very close to our ancestor who roamed the Savannah. The formation of our beliefs is fraught with superstitions-even today (I might say, especially today). Just as one day some primitive tribesman scratched his nose, saw rain falling, and developed an elaborate method of scratching his nose to bring on the much needed rain, we link economic prosperity to some rate cut by the Federal Reserve Board, or the success of a company with the appointment of the new president "at the helm." Bookstores are full of biographies of successful men and women presenting their specific explanation on how they made it big in life (we have an expression, "the right time and the right place" to weaken what conclusion can be inferred from them). This confusion strikes people of different persuasions: the literature professor invests a deep meaning into a mere coincidental occurrence of word patterns, while the financial statistician proudly detects "regularities" and "anomalies" in data that is plain random.

此为试读,需要完整PDF请访问: www.ertongbook.com

At the cost of appearing biased, I have to say that the literary mind can be intentionally prone to the confusion between noise and meaning, that is, between a randomly constructed arrangement and a precisely intended message. However, this causes little harm; few claim that art is a tool of investigation of the Truth-rather than an attempt to escape it or make it more palatable. Symbolism is the child of our inability and unwillingness to accept randomness; we give meaning to all manner of shapes; we detect human figures in inkblots. I saw mosques in the clouds announced Arthur Rimbaud the 19th century French symbolic poet. This interpretation took him to "poetic" Abyssinia (in East Africa), where he was brutalized by a Christian Lebanese slave dealer, contracted syphilis, and lost a leg to gangrene. He gave up poetry in disgust at the age of 19, and died anonymously in a Marseilles hospital ward while still in his thirties. But it was too late: European intellectual life developed what seems to be an irreversible taste for symbolism-we are still paying its price, with psychoanalysis and other fads.

Regrettably, some people play the game too seriously; they are paid to read too much into things. All my life I have suffered the conflict between my love of literature and poetry and my profound allergy for most teachers of literature and "critics." The French poet Paul Valery was surprised to listen to a commentary of his poems that found meanings that had until then escaped him (of course, it was pointed out to him that these were intended by his subconscious).

More generally, we underestimate the share of randomness in about anything, a point that may not merit a book-except when it is the specialist who is the fool of all fools. Disturbingly, science has only recently been able to handle randomness (the growth in available information has been exceeded by the expansion of noise). Probability theory is a young arrival in mathematics; applied probability is almost nonexistent a discipline.

Consider the left and the right columns of Table P-1. The best way to summarize the major thesis of this book is that it addresses situations (many of them tragi-comical) where the left column is mistaken for the right one. The sub-sections also illustrate the key areas of discussion on which this book will be based.

table tk

The reader may wonder whether the opposite case might not deserve some attention: that is, the situations where non-randomness is mistaken for randomness. Shouldn't we be concerned with situations where patterns and messages may have been ignored? I have two answers. First, I am not

overly worried about the existence of undetected patterns. We have been reading lengthy and complex messages in just about any manifestation of nature that presents jaggedness (such as the palm of a hand, the residues at the bottom of Turkish coffee cups, etc.). Armed with home supercomputers and chained processors, and helped by complexity and "chaos" theories, the scientists, semi-scientists, and pseudo-scientists will be able to find portents. Second, we need to take into account the costs of mistakes; in my opinion, mistaking the right column for the left one is not as costly as an error in the opposite direction. Even popular opinion warns that bad information is worse than no information at all.

However interesting these areas could be, their discussion would be a tall order. In addition, they are not my current professional specialty. There is one world in which I believe the habit for mistaking luck for skill is most prevalent-and most conspicuous-and that is the world of trading. By luck or misfortune, that is the world in which I operate. It is my profession, and as such it will form the backbone of this book. It is what I know best. In addition, business presents the best (and most entertaining) laboratory for the understanding of these differences. For it is the area of human undertaking where the confusion is greatest and its effects the most pernicious. For instance, we often have the mistaken impression that a strategy is an excellent strategy, or an entrepreneur a person endowed with "vision," or a trader an excellent trader, only to realize that 99.9 percent of their past performance is attributable to chance, and chance alone. Ask a profitable investor to explain the reasons for his success: he will offer some deep and convincing interpretation of the results. Frequently, these delusions are intentional and deserve to bear the name charlatanism.

If there is one cause for this confusion between the left and the right side of our table, it is our inability to think critically-we may enjoy presenting conjectures as truth. We are wired to be like that. We will see that our mind is not equipped with the adequate hardware to handle probabilities; such infirmity even strikes the expert, sometimes just the expert. A critical mind, on the other hand, is someone who has the guts, when confronting a given set of information, to attribute a large share of its possible cause to the left column.

The nineteenth-century cartoon character, potbellied bourgeois Monsieur Prudhomme, carried around a large sword with a double intent: to defend the Republic against its enemies, and secondarily to attack it should it stray from its course. In the same manner, this book has two purposes: to defend science (as a light beam across the noise of randomness); and to attack the scientist when he strays from his course (most disasters come from the fact that individual scientists do not have an innate under-

standing of standard error or a clue about critical thinking). As a practitioner of uncertainty I have seen more of my share of snake oil salesmen dressed in the garb of scientists. The greatest fools of randomness will be found among these.

This author hates books that can be easily guessed from the table of contents-but a hint of what comes next seems in order. The book is composed of three sections. The first is an introspection into Solon's warning, as his outburst on rare events became my lifelong motto. In it we meditate on visible and invisible histories. The second presents a collection of probability biases I encountered (and suffered from) in my career in randomness-ones that continue to fool me. The third concludes the book with the revelation that perhaps ridding ourselves of our humanity is not in the works: we need tricks, not some grandiose moralizing help. Again the elders can help us with some of their ruses.

CONTENTS

Preface and Acknowledgments *vii*

Table of Summaries *xi*

Prologue: Mosques in the Clouds *xv*

PART I: SOLON'S WARNING-SKEWNESS, ASYMMETRY, INDUCTION *1*

Chapter 1: The Millionaire Across the Street *3*

Chapter 2: A Bizarre Accounting Method *17*

Chapter 3: A Mathematical Meditation on History *29*

Chapter 4: Randomness, Nonsense, and the Scientific Intellectual *47*

Chapter 5: Survival of the Least Fit-Can Evolution be Fooled By Randomness? *53*

Chapter 6: Skewness and Asymmetry *67*

Chapter 7: The Problem of Induction *81*

PART II : MONKEYS ON A TYPEWRITER-SURVIVORSHIP AND OTHER BIASES *93*

Chapter 8: Too Many Millionaires Next Door *99*

Chapter 9: It is Easier to Buy and Sell than Fry an Egg *107*

Chapter 10: Loser Takes All-On the Nonlinearities of Life *123*

Chapter 11: Randomness and Our Brain: We Are Probability Blind *129*

PART III: WAX IN MY EARS-LIVING WITH RANDOMITIS *147*

Chapter 12: Gamblers' Ticks and Pigeons in a Box *153*

Chapter 13: Carneades Comes to Rome: On Probability and Skepticism *159*

Chapter 14: Bacchus Abandons Antony *167*

Epilogue: Solon Told You So *171*

Index

Croesus, King of Lydia, was considered the richest man of his time. To this day Romance languages use the expression, "rich as Croesus" to describe a person of excessive wealth. He was said to have been visited by Solon, the Greek legislator known for his dignity, reserve, upright morals, humility, frugality, wisdom, intelligence, and courage. Solon did not display the smallest surprise at the wealth and splendor surrounding his host, nor the tiniest admiration for their owner. Croesus was so irked by the manifest lack of impression on the part of this illustrious visitor that he attempted to extract from him some acknowledgement. He asked him if he had known a happier man than him. Solon cited the life of a man who led a noble life and died while in battle. Prodded for more, he gave similar examples of heroic but terminated lives, until Croesus, irate, asked him point-blank if he was not to be considered the happiest man at all. Solon answered:

The observation of the numerous misfortunes that attend all conditions forbids us to grow insolent upon our present enjoyments, or to admire a man's happiness that may yet, in course of time, suffer change. For the uncertain future has yet to come, with all variety of future; and him only to whom the divinity has [guaranteed] continued happiness until the end we may call happy.

The modern equivalent has been no less eloquently voiced by baseball legend Yogi Berra, who seems to have translated Solon's outburst from the pure Attic Greek into no less pure Brooklyn English with, "It ain't over 'til

此为试读,需要完整PDF请访问: www.ertongbook.com