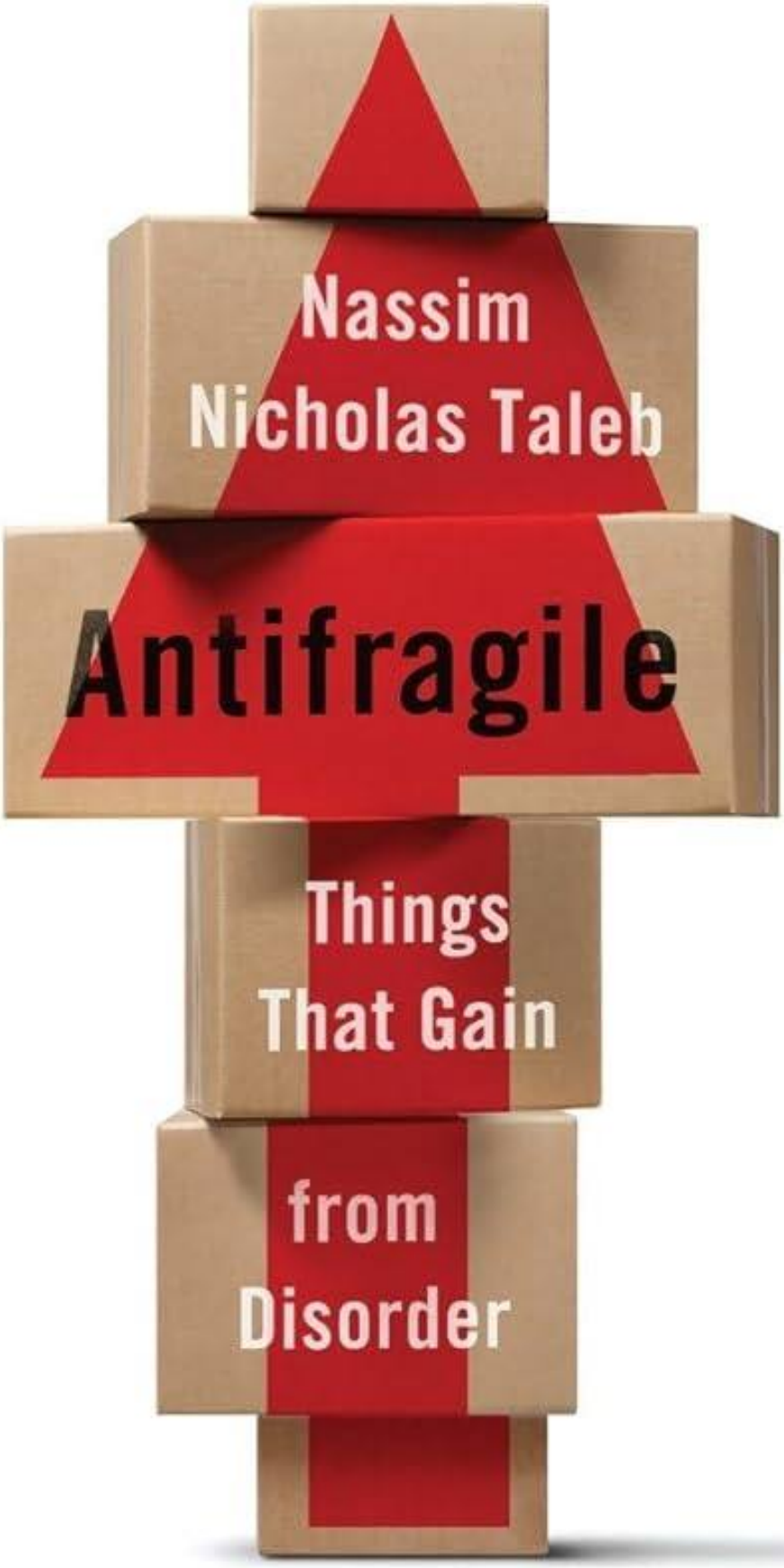
NEW YORK TIMES BESTSELLING AUTHOR OF

THE BLACK SWAN



ANTIFRAGILE

THINGS THAT GAIN FROM DISORDER

NASSIM
NICHOLAS TALEB

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To Sarah Josephine Taleb

Contents

Chapter Summaries and Map

Boldface terms are in the Glossary.

BOOK I: THE ANTIFRAGILE: AN INTRODUCTION

CHAPTER 1. Explains how we missed the word "antifragility" in classrooms. Fragile-Robust-Antifragile as Damocles-Phoenix-Hydra. Domain dependence.

CHAPTER 2. Where we find overcompensation. Obsessive love is the most antifragile thing outside of economics.

CHAPTER 3. The difference between the organic and the engineered. **Touristification** and attempts to suck volatility out of life.

CHAPTER 4. The antifragility of the whole often depends on the fragility of the parts. Why death is a necessity for life. The benefits of errors for the collective. Why we need risk takers. A few remarks about modernity missing the point. A salute to the entrepreneur and risk taker.

BOOK II: MODERNITY AND THE DENIAL OF ANTIFRAGILITY

THE PROCRUSTEAN BED

CHAPTER 5. Two different randomness categories, seen through the profiles of two brothers. How Switzerland is not controlled from above. The difference between **Mediocristan** and **Extremistan.** The virtues of city-states, bottom-up political systems, and the stabilizing effect of municipal noise.

CHAPTER 6. Systems that like randomness. Annealing inside and outside physics. Explains the effect of overstabilizing organisms and complex systems (political, economic, etc.). The defects of

Prologue

I. HOW TO LOVE THE WIND

Wind extinguishes a candle and energizes fire.

Likewise with randomness, uncertainty, chaos: you want to use them, not hide from them. You want to be the fire and wish for the wind. This summarizes this author’s nonmeek attitude to randomness and uncertainty.

We just don’t want to just survive uncertainty, to just about make it. We want to survive uncertainty and, in addition—like a certain class of aggressive Roman Stoics—have the last word. The mission is how to domesticate, even dominate, even conquer, the unseen, the opaque, and the inexplicable.

How?

II. THE ANTIFRAGILE

Some things benefit from shocks; they thrive and grow when exposed to volatility, randomness, disorder, and stressors and love adventure, risk, and uncertainty. Yet, in spite of the ubiquity of the phenomenon, there is no word for the exact opposite of fragile. Let us call it antifragile.

Antifragility is beyond resilience or robustness. The resilient resists shocks and stays the same; the antifragile gets better. This property is behind everything that has changed with time: evolution, culture, ideas, revolutions, political systems, technological innovation, cultural and economic success, corporate survival, good recipes (say, chicken soup or steak tartare with a drop of cognac), the rise of cities, cultures, legal systems, equatorial forests, bacterial resistance … even our own existence as a species on this planet. And antifragility determines the boundary between what is living and organic (or complex), say, the human body, and what is inert, say, a physical object like the stapler on your desk.

The antifragile loves randomness and uncertainty, which also means—crucially—a love of errors, a certain class of errors. Antifragility has a singular property of allowing us to deal with the unknown, to do things without understanding them—and do them well. Let me be more aggressive: we are largely better at doing than we are at thinking, thanks to antifragility. I'd rather be dumb and antifragile than extremely smart and fragile, any time.

It is easy to see things around us that like a measure of stressors and volatility: economic systems, your body, your nutrition (diabetes and many similar modern ailments seem to be associated with a lack of randomness in feeding and the absence of the stressor of occasional starvation), your psyche. There are even financial contracts that are antifragile: they are explicitly designed to benefit from market volatility.

Antifragility makes us understand fragility better. Just as we cannot improve health without reducing disease, or increase wealth without first decreasing losses, antifragility and fragility are degrees on a spectrum.

Nonprediction

By grasping the mechanisms of antifragility we can build a systematic and broad guide to *nonpredictive* decision making under uncertainty in business, politics, medicine, and life in general—anywhere the unknown preponderates, any situation in which there is randomness, unpredictability, opacity, or incomplete understanding of things.

It is far easier to figure out if something is fragile than to predict the occurrence of an event that may harm it. Fragility can be measured; risk is not measurable (outside of casinos or the minds of people who call themselves "risk experts"). This provides a solution to what I've called the Black Swan problem—the impossibility of calculating the risks of consequential rare events and predicting their occurrence. Sensitivity to harm from volatility is tractable, more so than forecasting the event that would cause the harm. So we propose to stand our current approaches to prediction, prognostication, and risk management on their heads.

In every domain or area of application, we propose rules for moving from the fragile toward the antifragile, through reduction of fragility or harnessing antifragility. And we can almost always detect antifragility (and fragility) using a simple test of asymmetry: anything that has more upside than downside from random events (or certain shocks) is antifragile; the reverse is fragile.

Deprivation of Antifragility

Crucially, if antifragility is the property of all those natural (and complex) systems that have survived, depriving these systems of volatility, randomness, and stressors will harm them. They will weaken, die, or blow up. We have been fragilizing the economy, our health, political life, education, almost everything … by suppressing randomness and volatility. Just as spending a month in bed (preferably with an unabridged version of *War and Peace* and access to *The Sopranos*' entire eighty-six episodes) leads to muscle atrophy, complex systems are weakened, even killed, when deprived of stressors. Much of our modern, structured, world has been harming us with top-down policies and contraptions (dubbed "Soviet-Harvard delusions" in the book) which do precisely this: an insult to the antifragility of systems.

This is the tragedy of modernity: as with neurotically overprotective

parents, those trying to help are often hurting us the most.

If about everything top-down fragilizes and blocks antifragility and growth, everything bottom-up thrives under the right amount of stress and disorder. The process of discovery (or innovation, or technological progress) itself depends on antifragile tinkering, aggressive risk bearing rather than formal education.

Upside at the Expense of Others

Which brings us to the largest fragilizer of society, and greatest generator of crises, absence of "skin in the game." Some become antifragile at the expense of others by getting the upside (or gains) from volatility, variations, and disorder and exposing others to the downside risks of losses or harm. And such *antifragility-at-the-cost-of-fragility-of-others* is hidden —given the blindness to antifragility by the Soviet-Harvard intellectual circles, this asymmetry is rarely identified and (so far) never taught. Further, as we discovered during the financial crisis that started in 2008, these blowup risks-to-others are easily concealed owing to the growing complexity of modern institutions and political affairs. While in the past people of rank or status were those and only those who took risks, who had the downside for their actions, and heroes were those who did so for the sake of others, today the exact reverse is taking place. We are witnessing the rise of a new class of inverse heroes, that is, bureaucrats, bankers, Davos-attending members of the I.A.N.D. (International Association of Name Droppers), and academics with too much power and no real downside and/or accountability. They game the system while citizens pay the price.

At no point in history have so many non-risk-takers, that is, those with no personal exposure, exerted so much control.

The chief ethical rule is the following: Thou shalt not have antifragility at the expense of the fragility of others.

III. THE ANTIDOTE TO THE BLACK SWAN

I want to live happily in a world I don't understand.

Black Swans (capitalized) are large-scale unpredictable and irregular events of massive consequence—unpredicted by a certain observer, and such unpredictor is generally called the "turkey" when he is both surprised and harmed by these events. I have made the claim that most of history comes from Black Swan events, while we worry about fine-tuning our understanding of the ordinary, and hence develop models, theories, or representations that cannot possibly track them or measure the possibility of these shocks.

Black Swans hijack our brains, making us feel we "sort of" or "almost" predicted them, because they are retrospectively explainable. We don't realize the role of these Swans in life because of this illusion of predictability. Life is more, a lot more, labyrinthine than shown in our memory—our minds are in the business of turning history into something smooth and linear, which makes us underestimate randomness. But when we see it, we fear it and overreact. Because of this fear and thirst for order, some human systems, by disrupting the invisible or not so visible logic of things, tend to be exposed to harm from Black Swans and almost never get any benefit. You get pseudo-order when you seek order; you only get a measure of order and control when you embrace randomness.

Complex systems are full of interdependencies—hard to detect—and nonlinear responses. "Nonlinear" means that when you double the dose of, say, a medication, or when you double the number of employees in a factory, you don't get twice the initial effect, but rather a lot more or a lot less. Two weekends in Philadelphia are not twice as pleasant as a single one—I've tried. When the response is plotted on a graph, it does not show as a straight line ("linear"), rather as a curve. In such environment, simple causal associations are misplaced; it is hard to see how things work by looking at single parts.

Man-made complex systems tend to develop cascades and runaway chains of reactions that decrease, even eliminate, predictability and cause outsized events. So the modern world may be increasing in technological knowledge, but, paradoxically, it is making things a lot more unpredictable. Now for reasons that have to do with the increase of the