



Yair Neuman

BETTING AGAINST THE CROWD

A Complex Systems Approach



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This book is dedicated to my friend S. Gozlan, who played twice with Lady Fortuna and won.

Preface

Knowing is not understanding. There is a great difference between knowing and understanding: you can know a lot about something and not really understand it.
—Charles F. Kettering

There is an unexplained and shocking gap between our knowledge and our understanding. We all know this, but we are surprised each time we realize it, an experience that recursively supports the existence of this gap. I am no exception. When Netanyahu's government was established, I knew its components were not the bread and butter of a democratic government. However, it came to me as a total surprise that the coalition of these components is actually striving to destroy Israel's democracy at any cost.

In a deep sense, my surprise was similar to what people feel when they unexpectedly come under a violent attack. We know these things happen, but we don't get any deep understanding until we experience them at first hand. In his book, Miller (2008, p. 55) describes four basic truths of violent assault: "Assaults happen closer, faster, more suddenly, and with more power than most people believe." Most people are not trained to handle this kind of violence. They may be talented martial "artists," big athletic guys, or just the tough guys in their high school, but as Miller explains, they are not prepared for this kind of attack, and may therefore be surprised and shocked to the extent of being totally destroyed.

While I feel unable to fully determine my motivations for writing the present book, I am convinced that the situation in Israel was an important trigger. Moreover, in October 2023, the radical Islamists of Hamas launched the most devastating terror attack Israel has ever experienced. Before the attack, I completed a research paper analyzing the Palestinian–Israeli conflict and explaining how poorly prepared we were for a bombshell of these proportions.

Being hit so hard and so suddenly teaches us another important lesson. This book draws on my scientific work and presents an attempt to understand the dynamics of crowds. Through this scientific understanding, it aims to identify the individual's place within the collective and point out ways she can bet against the crowd. Asserting one's individuality within the crowd is possible, but as will be explained, it is a never-ending challenge. For such a challenge, it is better to be well prepared.

This is where it is useful to build up a toolkit of ideas and lessons gained by studying non-linear and complex systems. This book provides just such a toolkit and applies it in different contexts, from politics to sport and finance. The reader won't find recipes for betting against the crowd, but rather a toolkit of ideas illustrated through experiment, theory, common sense, and humor.

Beersheba, Israel

Yair Neuman

Reference

Miller, R. (2008). *Meditations on violence*. USA: YMAA Publication Center.

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Summary

Crowds are misleading in both their simplicity and their complexity. On the one hand, they behave according to expected trends, and on the other hand, they present sudden shifts and frantic, unexpected behavior. Therefore, “betting against the crowd,” whether in politics, sports, or finance, requires a deep understanding of crowd dynamics. In this book, Prof. Neuman addresses this challenge by delving into the complexity of crowds. The book exposes foundational issues and presents novel ideas, such as why our understanding of crowds decays exponentially, how to use short-term prediction to bet against the crowd in financial markets, and why the long tail of fatalities in armed conflicts leaves us surprised by the blitz attack of violent mobs. The book combines scientific knowledge, experiments, and friendly, humoristic exposition that will interest anyone who seeks to understand crowds and sometimes wishes to act within and against them.

Contents

Part I Foundations of Crowd's Dynamics

1	Navigating the Collective: Insights into Crowd Behavior and Strategies for the Individual	3
	From the Painted Bird to the Celebrating Crowd	3
	The Importance of Interactions	5
	The Individual and the Collective	6
	Constraints and Opportunities	8
	The Importance of Learned Ignorance	10
	The Dancing Crowd	12
	Scientific Thinking in the Absence of Truth	13
	The Rebel's Perspective	15
	The Structure of the Book	16
	References	16
2	Signs of Collective Dynamics: Insights from the Stock Market Collapse	19
	Introduction	19
	Ponzi and the Pyramids	29
	How to Recognize Bad Omens	32
	Always Look for the Rats	33
	In Sum ...	34
	References	35

3	Entropy, Constraints, and Action: Tools for Short-Term Prediction	37
	Introduction	37
	The Lady or the Tiger?	38
	How to Measure Uncertainty	39
	The Appropriate Dose of Chaos	45
	Understanding Constraints	47
	On the Cognitive Importance of $D = 3$	52
	How a Navy SEAL Uses the Fluctuation Theorem	54
	In the Midst of Chaos, There Is Opportunity	55
	Windows of Opportunity: Pockets of Order and Chaos	56
	References	57
4	Information Thresholds: Navigating Predictive Boundaries	59
	How Much Information Is Enough?	59
	Time to Clearance	61
	The Exponential Decay of Information	64
	So, How Much Information Do We Need?	69
	Out of Plato's Cave	74
	References	76
5	Short-Term Fluctuations Versus Long-Range Trends: Unearthing Investment Opportunities	77
	Introduction	77
	Buy-Low-Sell-High (BLSH)	78
	Betting Against the Crowd	80
	What Is Your Expected Value?	83
	The Kelly Criterion	84
	Playing with Kelly	86
	So, Have We Won?	88
	Simple Models in a Complex World	90
	Lessons to Be Learned About Betting Against the Crowd	91
	References	92
Part II Case Studies: Political Nationalism, Football, Financial Markets and Armed Conflicts		
6	Non-linearity in the Emergence of Political Nationalism: A Lesson from Hungary	95
	Introduction	95
	Measuring the Expected and the Observed Levels of Nationalism	97

	Entropy, Variability, and Non-linearity	103
	Additivity and Extensivity	104
	Measuring the Entropy of Political Parties	106
	What if the Whole Is Different from the Sum of Its Parts?	107
	References	109
7	Fixed Beliefs and Football Fandom: Unraveling the Dynamics of Collective Optimism	111
	Introduction	111
	Optimism and Pessimism in Football	113
	Cinderella Teams and Hermes' Invisible Hand	119
	Lady Fortuna's Invisible Hand	120
	Hermes' Invisible Hand	121
	"Knowledge Is Safety"	123
	References	125
8	Contrarian Strategies: Capitalizing on the Limits of Exponential Growth in Financial Markets	127
	Introduction	127
	Identifying a Significant Exponential Growth	130
	Leaving the Ship in Good Time	131
	Signs of Reversal	132
	The Experiment	133
	Betting Against the Herd	136
	References	137
9	Unraveling the Complexities of Chronic Armed Conflicts: Patterns, Predictability, and Uncertainties	139
	Can We Learn from the Past? And How Much?	139
	The Long Memory of a Conflict	140
	Order Is Never Enough	145
	Tsallis Entropy, Again	146
	Discretizing the Dataset	147
	Predicting the Class of Fatalities	148
	Predicting Surprise	151
	Crowds, Conflicts, and Lady Fortuna	153
	References	154

10	Mentsh Trakht un Got Lakht: Final Lessons in Individuality and Collective Dynamics	157
	A Final Word	162
	Reference	162
	Author Index	163
	Subject Index	165

Part I

Foundations of Crowd's Dynamics



1

Navigating the Collective: Insights into Crowd Behavior and Strategies for the Individual

From the Painted Bird to the Celebrating Crowd

... an agglomeration of men presents new characteristics very different from those of the individuals composing it. (Bon, 1895, p. 2)

Human beings group into various “agglomerations,” from the coalition of Iranian women struggling against the Ayatollahs’ oppression to the mob of football hooligans violating public order and the crowd celebrating the carnival in Rio. Understanding the behavior of these agglomerates is an old challenge, and the mind of the collective has been expressed and studied in numerous scientific and artistic works. For example, “The Painted Bird” (Kosiński, 1965) is a novel that provides a powerful artistic description of the exclusion and painful destiny of social outsiders, and Bakhtin (1984) gave us important insights into the mind of the collective celebrating the carnival. It would seem that nothing new could be added to this vast literature. However, as Le Bon (1895) observed in his classic, the agglomeration of people is a whole *different* from the sum of its parts. A group may be composed of good citizens. Each and every individual may be of good character, but when put together under the leadership of a charismatic person, they may turn into a murderous mob. One may then doubt the human quality of these good Samaritans, arguing that each and every individual comprising the murderous mob must actually be a hidden murderer and that our failure to understand the emerging behavior of the mob is a failure to understand the dark side of

its components. For the outside observer, like Le Bon, what is inside any individual's mind is less important when observing the crowd's behavior. Most of those making up the mob just mentioned may never have carried out a deadly deed. But within the mob, they may do so. To understand this point, watch *Dogville*¹ by Lars von Trier is a tantalizing film showing how ultimate evil emerges from a collective of good American citizens. Watch it if you have your own doubts about the complexity of social wholes and the evil that human beings can impose on their fellow men and women.

In this context of a whole different from the sum of its parts, we are in the realm of non-linear systems, where uncertainty and surprise may have the upper hand. For instance, imagine two different societies of equal size. One is a collective of hunter-gatherers where the distribution of "wealth" is almost equal. The other is one where the distribution of wealth is unequal, in fact, a Pareto-style distribution where 10% of the population holds 90% of the wealth. What happens if, through some malicious experiment, we mix the two populations? What would the new society look like in terms of its wealth distribution? A naïve hypothesis might be that the new distribution of wealth will simply be the sum of the two previous distributions. This hypothesis is grounded on the assumption of *additivity*. However, we would not scientifically bet on this result for a simple reason: *interactions*. As nicely explained by Rovelli (2019), we are biased to think about the "essence" of things, where sometimes the most important thing to look at is change and dynamics taking place through interactions.

An *event*, such as a kiss, explains Rovelli, is not a thing. It does not persist in time and space like my kitchen table. The vicious behavior of Dogville's citizens is grounded in group dynamics. In interactions. Some information exists *in-between* the interacting components (Neuman, 2021), and this information cannot be reduced to the psychology of each and every individual who is a part of this "wonderful" community of good Americans. However, sometimes, a reduction is possible. A group of notorious South American gang members is probably composed of violent individuals with violent group behavior. As we can see, the agglomerate discussed by Le Bon may come in different forms.

¹ <https://en.wikipedia.org/wiki/dogville>.

The Importance of Interactions

The interactions between “human particles” are not the same as those between gas particles. In fact, all living systems, from the cell to the snail, exhibit the miracle of emerging behaviors irreducible to the simple behavior or sum of their components. Something miraculous happens when things interact and produce, on a higher level of analysis, a behavior that cannot be trivially explained by reduction to the lowest level of the aggregate; this miracle also holds for human collectives. Simple explanations of crowd behavior sometimes ignore this fact realized by Le Bon long ago. For example, Rosner and Ritchie (2018) present the results of their optimism opinion survey covering 26,489 people across 28 countries.² Their results are presented in terms of simple percentages. For example, 41% of the Chinese respondents “think the world is getting better.” This result is significantly higher than the 3% of French respondents who think the same. These results might be taken to imply that Chinese optimism is 14 times greater (!) than French optimism. Chinese and French optimism seem to be on a different scale. For comparison, the ratio between Chinese and French optimism is almost the same as the ratio between the heights of the Eiffel Tower and a giraffe. We may imagine 41% of the current 1,425,572,821 people living today in China starting their day with a smile, reminding themselves that the future under the eternal leadership of Xi Jinping is more promising than ever, while 97% of the French begin their day by dipping a butter-saturated croissant in coffee and gazing depressively into the future.

Is it the case that the Chinese collective is more optimistic than the French one? And if so, in what sense, except for the trivial sense that a greater portion of the Chinese respondents answered the optimism question positively? There is a fact: 41% of the specific sample of respondents agreed with the specific optimism item. However, jumping to the conclusion that the Chinese collective, whatever it is, is optimistic requires a leap of inference. The Chinese collective may *behave* differently from the sum, or some of the sum, of individuals comprising it. This lesson has not been sufficiently built into our understanding, although it has been pointed out by people from Le Bon to Bateson (Bateson, 2000).

So far, I have emphasized two points. First, a collective of human beings is a whole different from the sum of its parts. Second, it is the outcome of interactions. The first point urges us to examine the behavior of collectives by avoiding the naïve assumption that they are the sum of their parts

² <https://www.ipsos.com/en/global-perceptions-development-progress-perils-perceptions-research>.

or that their behavior scales linearly with the size of the system. Crowds do not behave like a single individual multiplied by 10,000. The second point urges us to examine the collective as an event constituted through micro-level interactions, with possibly surprising and unexpected results. Again, this understanding is important to avoid poor explanations which merely attribute some kind of “essence” to the collective. Le Bon made this mistake by discussing race as an innate explanation of a crowd’s behavior. Today, with the exception of anti-scientific and zealous racists, this essentialist explanation had been rejected. Therefore, we are left with complex wholes and the challenge of understanding them while maintaining a delicate balance between authentically representing their complexity and our need to simplify in order to understand. This is also an important point. Human beings cannot represent the full complexity of events and form simple models. However, simplicity may have an enormous cost if we cross some delicate boundary of oversimplification. This is why I repeatedly advocate a critical and cautious approach, supported but not limited by simple models.

The Individual and the Collective

The failure to acknowledge the unique behavior of the aggregate entails fallacies of understanding and prediction. Although we may retrospectively explain the behavior of collectives, narratives can always be given post-factum. Our ability to tell stories weaving together the elements of reality and fantasy is no less than impressive. Bruner (2004) observed that human beings are gifted storytellers. However, in a complex world that West (2016) described as uncertain, unfair, and unequal, stories are no substitute for scientific representations. Commentators on China’s foreign policy can provide us with narratives to frame our understanding of China, but who can predict whether and *when* the Chinese superpower will hit a tipping point of growth or turn against Taiwan?

Telling stories is a part of human nature, whatever that may be. However, telling stories and interpreting the world are no substitute for *pragmatically motivated understanding*. The phrase “the proof of the pudding is in the eating” explains this approach. It means that true value or quality can only be judged when something is put to use or tested. Pragmatically motivated understanding means that reality is the ultimate judge of our models. And when we face this judge, we will not be assessed on the aesthetic value of our stories, but on the practical consequences of our models. Therefore,