

May 23, 2007

Turtles in Omaha

Michael J. Mauboussin



mmauboussin@lcm.com

The Mindset of Great Investors

The difference in [investment] return had nothing to do with knowledge and everything to do with emotional and psychological factors. We had all been taught the same thing, but my return . . . was three times that of the others. Over the years, I kept finding evidence that *emotional and psychological strength are the most important ingredients in successful trading.*

Curtis M. Faith
*Way of the Turtle*¹



Source: iStockphoto.

- **What separates good from great investors is not knowledge or raw smarts, but patterns of behavior.**
- All investors should be alert to black swans—events that are outliers, have an extreme impact, and are explained only after the fact.
- Cognitive errors, including loss aversion, are often the source of suboptimal investment decisions.
- Investors tend to underestimate the role of randomness in results.

Buffett Shares the Secret Sauce

Most people like to be successful in their jobs. But few organizations are able to articulate the tangible and intangible attributes an employee needs to add value. This makes even more remarkable Warren Buffett's plan to hire one or more chief investment officers to replace him at Berkshire Hathaway. As part of a succession strategy, Buffett clearly articulates the behavioral traits he believes are vital to long-term investment success.²

Buffett starts with the obvious: he wants smart people with a good investment record. But he quickly adds that he's more focused on "how they swing at the ball" than their performance—that is, how they think and behave rather than solely how they've done.³

He then goes on to enumerate the three qualities he views as crucial. The first is an ability "to recognize and avoid serious risks." The second is temperament, including "independent thinking, emotional stability, and a keen understanding of both human and institutional behavior." Finally there's loyalty, a willingness to stay at Berkshire "even though he or she could leave and make much more money elsewhere."

We will explore the first two qualities in detail. But it's worth noting the traits Buffett dwells on are by and large absent in a business school curriculum. Naturally, what students learn in business school—accounting, finance, competitive strategy, management, ethics—are all important and worthwhile topics, and are prerequisites for investment success. This canon is the ante to participate. However, what separates the good from the great investors is not knowledge or raw smarts, but patterns of behavior.

Avoiding (or Managing) the Black Swan

At first blush, leading with risk management may appear specific to Berkshire Hathaway because of its large insurance and reinsurance operations. But the investment industry annals include many very smart people who have failed spectacularly as a result of poor risk management. Long-Term Capital Management generally tops the list, but plenty of other formerly high-flying firms provide it company.⁴ Investment strategies impervious to risk can and will show very good results for a time, but almost always receive their comeuppance.

Nassim Taleb's latest book, *The Black Swan*, is a treatise on the improbable events Buffett has in mind.⁵ The term black swan comes from philosopher Karl Popper's criticism of induction: We get closer to truth if we focus on falsification instead of verification. Seeing lots of white swans (verification) does not allow for the statement "all swans are white," but seeing one black swan (falsification) does disprove the statement. This is relevant in investing because investment strategies based on the reoccurrence of white swans can be toppled by one black swan event.

Taleb suggests all black swans have three attributes: they are outliers, they have an extreme impact, and people seek to explain them after the fact.⁶

An outlier is an event outside regular expectations. A ready example in investing is the difference between mean/variance predictions and empirical results. A mean/variance model uses mean and standard deviation to specify a bell-shaped, or normal, distribution of price changes. The economic and intuitive premise, which holds for the most part, is risk and reward are related—the more risk you assume, the higher the return you expect.

The problem is the distribution of price changes is not bell-shaped. Stock price change distributions, for example, have fat tails—they include many more large moves than the normal distribution accommodates. While most practitioners are aware of this result to some degree, two challenges remain.

The first challenge is measurement. Mean/variance is the *lingua franca* of the investment world. Alpha, beta, variance and numerous other terms derive from the mean/variance framework. Using the language of risk (knowable distributions) to capture the world of the uncertain (distributions with unknowable outliers) can breed complacency and is periodically grossly

misleading. The vast majority of the time this mismatch between description and reality is of no consequence. But when a black swan shows up, there is a price to pay.

The second challenge is cognitive. Buffett distinguishes between experience and exposure.⁷ Experience looks to the past and considers the probability of future outcomes based on the occurrence of historical events. Exposure, in contrast, considers the likelihood and impact of an event that history, especially recent history, may not reveal. Buffett, despite being highly attuned to risk, allowed that the insurance industry had dwelled too much on experience and not enough on exposure prior to the 2001 terrorist attacks. Human nature strongly encourages us to rely on experience.

Black swans also have an extreme impact. We can readily demonstrate this point by looking at long-term stock price returns. We gathered the daily price changes in the S&P 500 over the past 30 years or so, in excess of 7,300 observations. The compounded annual return over the period (excluding dividends) was 9.5 percent. We then asked a simple question: What would happen to the return if we knocked out the 50 worst, and 50 best, days?

The results are a testament to the impact of black swans. If you remove the 50 worst days (less than 0.7 of 1 percent of the sample), the return soars to 23.5 percent, 1,400 basis points above the actual results. Missing the 50 best days compresses the return to less than 1 percent, about a 900 basis point hit.

While impressive, these numbers don't offer a proper point of reference. To do that, we asked the spreadsheet to calculate the mean and standard deviation using the actual underlying data, allowing us to simulate a bell-shaped distribution. Knocking out the 50 worst days from the simulated distribution lifts the return to 15.2 percent—good, but substantially less than the 23.5 percent using the actual data. Likewise, removing the 50 best days shrinks the return to 3.5 percent, a more muted result than what we see with the real data. This exercise clearly shows the bell-shaped distribution fails to capture extreme and high impact events.⁸

The final attribute of a black swan is we humans seek to explain it after the fact. Humans have a near insatiable desire to link cause and effect.⁹ Unfortunately, causality is often very difficult to deconstruct, even in retrospect.¹⁰ But coming up with a cause and effect story helps settle our minds, and provides a greater (albeit false) sense of control as we face the future.

In his solicitation letter, Buffett didn't just say Berkshire wants someone who is good at dealing with risk. He writes, "We therefore need someone genetically programmed to recognize and avoid serious risks." The phrase "genetically programmed" sparks a debate about whether the qualities Buffett seeks are innate (nature), or teachable (nurture). This debate is a good launching point for the second quality he seeks: a proper temperament.

Trading Places: Fact or Fiction?

History clearly shows that being smart and having an appropriate temperament for investing are distinct. Of course, ideally you want an investor to have both smarts and a proper temperament. But if given a choice between the two, temperament seems the more rare and valuable.

Curtis Faith's new book, *Way of the Turtle*, is a story about trading. Yet the importance of temperament comes through loud and clear. He shows persuasively how **psychological pitfalls repeatedly stymie good investment results.**

The story of the turtle traders is fascinating, and warrants going back to the beginning. In the late 1970s and early 1980s, Richard Dennis was one of the best-known and most successful commodities traders in the United States. In the early 1980s, Dennis and his partner Bill Eckhardt debated whether great traders are made (Dennis's view) or born (Eckhardt's contention). The back-and-forth gathered steam one day when the partners were visiting a turtle farm in Singapore, prompting Dennis to claim, "We're going to raise traders like they raise turtles in Singapore."¹¹

So Dennis and Eckhardt ran an experiment. They put an ad in major financial newspapers soliciting applicants for a training program. The ad explained the partners would train the group and seed them with a substantial trading account. Over 1,000 people applied, and after rigorous screening and testing, Dennis and Eckhardt invited 40 candidates for interviews in Chicago. The interviewers sought to evaluate the intellect and reasoning of the candidates. They ended up selecting 13 people, less than 1-in-100, for the maiden class. They dubbed the group the “turtles.”

Faith was only 19 at the time, the youngest of the turtles, and had a background in the nascent computer programming field. Other turtles included a Ph.D. in linguistics, a handful of traders, and a professional gambler. The group was clearly very smart, in Faith’s words, “among the brightest I had ever met.”

In late 1982, Dennis and Eckhardt trained the group, covering concepts including probability, money management, and risk of ruin. In early 1983, the partners gave each turtle an account equivalent to \$50,000 – \$100,000 and let them loose. By agreement, the partners would assess the results after a month and adjust capital levels—more for the successful traders and less for the unsuccessful ones—accordingly.

After the initial period, Faith was up the most in the class. Dennis rewarded his results with \$2 million. More relevant is why Faith did the best: It turns out he was the only turtle who actually followed the system. All of the other traders decided to override the system at one point or another, owing mostly to psychological factors.

Many outsiders deemed Dennis the winner of the nature/nurture bet because the turtles in aggregate went on to enjoy long-term success. Faith, however, argues it was a draw because while the trading approach can be taught to most people, some are better suited to deal with the psychological aspects than others.

Three High Hurdles

Here are three psychologically-difficult barriers great traders and investors must overcome: loss aversion, frequency versus magnitude, and the role of randomness. How individuals cope with these barriers provides good insight into their investing temperament.

Loss aversion. In what is now a well-documented and well-known phenomenon, humans suffer roughly twice as much from losses as they receive pleasure from comparable gains. An important consequence is investors will turn down positive expected-value financial propositions, especially when their recent results have been poor.¹²

Faith provides a powerful example of this point. Following the expiration of the confidentiality agreement he signed, Faith explained the turtle system to a friend. Noting that cocoa presented a great trading opportunity in 1998 through early 1999, he inquired how his friend was doing in cocoa. The friend replied he stopped trading cocoa because he had lost money and thought the trade was “too risky.”

Then Faith explains the circumstances. Following the system would have generated 28 total trades (average size \$10,000 – \$15,000) from April 1998 through February 1999, producing a total profit of nearly \$56,000. But of the 28 trades, 24 were unprofitable (average loss of about \$930) while 4 were profitable (average gain of roughly \$20,000). Even more difficult, the first 17 trades in a row lost money.¹³

Given this profit pattern, it is not difficult to see why a trader would abandon the commodity and perceive it as overly risky. But Faith’s point is crucial: Recency bias and loss aversion often cause you to give up right before the trade becomes profitable. Sticking with positive expectation financial propositions is essential to maximizing profits over time.

Frequency versus magnitude. This concept is really an extension of loss aversion. Most of us frame the success or failure of a financial proposition in terms of the price. For instance, if you

buy a stock at \$30, any price above that level is mentally successful; any price below it is mentally unsuccessful.

What investors often fail to consider is that change in wealth is not a function of how often you're right, it's a function of how much money you make when you're right versus how much you lose when you're wrong. You need to consider both frequency and magnitude to understand investment results.

Faith illustrates this point by sharing 20 years of results for a trading system. Over that time span, the system generated about 5,600 trades, or around 250 a year. Of those trades, a shade over two-thirds lost money, making the success ratio less than one-third. But the winning trades earned 2.2 times the losing trades on average, netting a substantial overall profit.

As with loss aversion, operating according to the frequency-and-magnitude maxim is easier said than done. Faith notes, "Some of the Turtles had a hard time with this concept; they felt the need to be right and to predict markets."¹⁴

The expected-value mindset has served many well-known investors well. One example is George Soros. Former colleague Scott Bessent said in a recent interview, "George has a terrible batting average—it's below 50 percent and possibly even below 30 percent—but when he wins it's a grand slam. He's like Babe Ruth in that respect."¹⁵

Role of randomness. Most people agree stock prices move more dramatically than business values move. In the stock market, like most probabilistic systems, there is a great deal of noise in the system. However, most investors fail to recognize the degree to which randomness affects short-term results. And, as bad, many investors have emotional reactions to short-term randomness that undermine the quality of their decision making.

This is Faith's comment; the idea applies to nearly everyone involved with markets:¹⁶

Most traders do not understand the degree to which completely random chance can affect their trading results. The typical investor understands this even less than the typical trader does. Even very experienced investors such as those who operate and make decisions for pension funds and hedge funds generally do not understand the extent of this effect.

Here's the point: A trader, or investor, can put on a positive expectation bet (correct process) and still have poor results (outcome) for some period of time due solely to randomness. But many investors attribute bad outcomes to bad processes, which leads to substantial error. As insidious is attributing good outcomes to a good process. A thoughtful investor must carefully consider process and recognize long-term outcomes will follow.¹⁷

Here are some data to substantiate the point. The first is a study by The Brandes Institute called "Death, Taxes, and Short-Term Underperformance."¹⁸ The researchers screened for large-capitalization, actively-managed funds that had a 10-year track record through 2006. This yielded 591 funds. They then ranked the funds by decile based on annualized gains.

The top-decile group had returns in excess of 10.9 percent, and all of them delivered better returns than the S&P 500 index. The researchers posed two questions: Did these funds have periods of relative underperformance? If so, by how much?

The answer to the first question is a resounding yes. In fact, all 59 of the funds in the top decile underperformed for at least one year. In its worst one-year period, the average top-decile fund underperformed the index by 1,950 basis points, with a range of negative 650 to 4,410 basis points.

Over a three-year period, the average underperformance was still 810 basis points, with a range of positive 250 to negative 2,240 basis points. The one- and three-year numbers of these good

long-term funds clearly show the limitations of relying on short-term results to decipher the ultimate outcomes.

Unfortunately, the randomness in short-term results exerts a cost. Most institutional investors, including pension funds, endowments, and foundations, rely on short-term investment results to judge the managers they hire. Despite this, they would be better off with a robust way to assess process. The focus on outcomes, combined with the limited appreciation for randomness, leads to bad decisions.

In a recent academic paper, researchers tracked the decisions of 3,500 plan sponsors over a decade.¹⁹ What they found is not surprising. Plan sponsors hire managers after they have enjoyed three years of excess returns. After they are hired, the managers generate excess returns “indistinguishable from zero.”

Further, plan sponsors often fire managers after a period of underperformance, but the managers often go on to generate excess returns after they’ve been fired. Said differently, plan sponsors would have been better off on average keeping the manager they fired. And this analysis leaves aside costs.

While very understandable, this performance chasing shows many plan sponsors are fooled by randomness. Evidence is voluminous that individual investors, too, chase performance to the detriment of their long-term results.²⁰

Faith adamantly argues for a focus on process:²¹

Good investors invest in people, not historical performance. They know how to identify traits that will lead to excellent performance in the future, and they know the traits that are indicative of average trading ability. This is the best way to overcome random effects.

This mindset fits comfortably with Buffett’s point about assessing chief investment officer candidates based on “how they swing at the ball.”

Turtles in Omaha

There will be no turtles in Omaha. But the themes that surface in Buffett’s candidate description and Faith’s description of what worked and didn’t work with the turtles are shared. Like a diet, the challenge is not in the ability to grasp the concepts but rather in the willpower to execute the plan.

The attributes of successful traders or investors are not limited to those realms. In fact, we argue that there is an approach that distances the best performers in all probabilistic fields from the average participant.²² The approach has three central elements:

1. A focus on process versus outcome.
2. A constant search for favorable odds, including a recognition of risk.
3. An understanding of the role of time.

These concepts still appear robust. Yet the ability to stick with these elements in the face of the market’s vicissitudes and the crowd’s tugs is very difficult—and ultimately all about temperament.

Endnotes

¹ Curtis M. Faith, *Way of the Turtle: The Secret Methods that Turned Ordinary People into Legendary Traders* (New York: McGraw-Hill, 2007), 44.

² Warren E. Buffett, *Berkshire Hathaway 2006 Annual Letter to Shareholders*, March 1, 2007. See <http://berkshirehathaway.com/letters/2006ltr.pdf>.

³ See Charlie's Rose's interview with Buffett, May 10, 2007. See

<http://www.charlierose.com/shows/2007/05/10/1/an-exclusive-conversation-with-warren-buffett>.

⁴ Our favorite account of the LTCM meltdown is Donald MacKenzie, *An Engine, Not a Camera: How Financial Models Shape Markets* (Cambridge, MA: MIT Press, 2006).

⁵ Nassim Nicholas Taleb, *The Black Swan: The Impact of the Highly Improbable* (New York: Random House, 2007).

⁶ *Ibid.*, xvii-xix.

⁷ Warren E. Buffett, *Berkshire Hathaway 2001 Annual Letter to Shareholders*, February 28, 2002. See <http://berkshirehathaway.com/letters/2001pdf.pdf>.

⁸ Michael J. Mauboussin, *More Than You Know: Finding Financial Wisdom in Unconventional Places, Revised and Expanded* (New York: Columbia University Press, 2007).

⁹ Lewis Wolpert, *Six Impossible Things Before Breakfast: The Evolutionary Origins of Belief* (New York: W.W. Norton, 2007).

¹⁰ Michael J. Mauboussin, *More Than You Know: Finding Financial Wisdom in Unconventional Places* (New York: Columbia University Press, 2006), 185-192.

¹¹ Faith, xxi.

¹² Baba Shiv, George Loewenstein, Antoine Bechara, Hanna Damasio, and Antonio R. Damasio, "Investment Behavior and the Negative Side of Emotion," *Psychological Science*, Vol. 16, 6, 2005.

¹³ Faith, 51.

¹⁴ *Ibid.*, 61.

¹⁵ Steven Drobny, *Inside the House of Money: Top Hedge Fund Traders on Profiting in the Global Markets* (New York: John Wiley & Sons, 2006), 278.

¹⁶ Faith, 158.

¹⁷ In a prior piece, we described a sketch of what constitutes a good process:

We can say a process should be statistically and economically sound, and should be based on a repeatable set of activities. Statistically sound means the process is driven by the system's underlying probabilities and outcomes. In some systems the statistical properties are known (blackjack), in other systems the statistical properties change over time (markets), and in yet others both the probabilities and outcomes are opaque (certain forms of insurance). The process should accommodate the proper degree of uncertainty in the system.

Economically sound means the decisions maximize value over time. In blackjack, value maximization may mean minimizing the house edge. In investing, the process should identify investments with positive expected values. A positive expected value is to some degree independent of the frequency of correctness. In poker, for example, players strive to win the most money, not the most hands.

Finally, repeatable means you can apply the process over time, adjusting for changes in the system, and still make statistically- and economically-sound decisions. How much a process has to evolve depends on how much the system changes. For stable systems like blackjack, where the rules are comparable over time, the process doesn't change. In cases where the underlying system evolves, an adaptive process is crucial.

See Michael J. Mauboussin, "How Do You Compare? Thoughts on Comparing Well," *Mauboussin on Strategy*, August 9, 2006.

¹⁸ The Brandes Institute, "Death, Taxes, and Short-Term Underperformance," February 1, 2005. See http://www.brandes.com/NR/rdonlyres/F0E2CCDC-346B-4001-82CE-068AA9F7A237/0/BI_DeathTaxesandShortTermUnderperformance_US.pdf. See also Litman/Gregory Research Team, "Our Study of Outperforming Managers Reveals Extent to Which They Underperform Along the Way," *Monthly Investment Commentary*, September 2006. See http://www.npfa.com/news/pdf/2006-09_Investment_Commentary.doc.

¹⁹ Amit Goyal and Sunil Wahal, "The Selection and Termination of Investment Management Firms by Plan Sponsors," *Working Paper*, May 2006. See <http://www.econ.brown.edu/econ/events/HireFire5-14-06.pdf>.

²⁰ Michael Mauboussin, "Where Fools Rush In," *Time*, October 29, 2006.

²¹ Faith, 162.

²² Michael J. Mauboussin, "Decision-Making for Investors: Theory, Practice, and Pitfalls," *Mauboussin on Strategy*, May 24, 2004.

Resources

Books

Drobny, Steven, *Inside the House of Money: Top Hedge Fund Traders on Profiting in the Global Markets* (New York: John Wiley & Sons, 2006), 278.

Faith, Curtis M., *Way of the Turtle: The Secret Methods that Turned Ordinary People into Legendary Traders* (New York: McGraw-Hill, 2007).

MacKenzie, Donald, *An Engine, Not a Camera: How Financial Models Shape Markets* (Cambridge, MA: MIT Press, 2006).

Mauboussin, Michael J., *More Than You Know: Finding Financial Wisdom in Unconventional Places, Revised and Expanded* (New York: Columbia University Press, 2007).

Taleb, Nassim Nicholas, *The Black Swan: The Impact of the Highly Improbable* (New York: Random House, 2007).

Wolpert, Lewis, *Six Impossible Things Before Breakfast: The Evolutionary Origins of Belief* (New York: W.W. Norton, 2007).

Articles

Buffett, Warren E., *Berkshire Hathaway 2001 Annual Letter to Shareholders*, February 28, 2002.

_____. *Berkshire Hathaway 2006 Annual Letter to Shareholders*, March 1, 2007.

Goyal, Amit and Sunil Wahal, "The Selection and Termination of Investment Management Firms by Plan Sponsors," *Working Paper*, May 2006.

Litman/Gregory Research Team, "Our Study of Outperforming Managers Reveals Extent to Which They Underperform Along the Way," *Monthly Investment Commentary*, September 2006.

Mauboussin, Michael J., "Decision-Making for Investors: Theory, Practice, and Pitfalls," *Mauboussin on Strategy* May 24, 2004.

_____. "How Do You Compare? Thoughts on Comparing Well," *Mauboussin on Strategy*, August 9, 2006.

_____. "Where Fools Rush In," *Time*, October 29, 2006.

Shiv, Baba, George Loewenstein, Antoine Bechara, Hanna Damasio, and Antonio R. Damasio, "Investment Behavior and the Negative Side of Emotion," *Psychological Science*, Vol. 16, 6, 2005.

The Brandes Institute, "Death, Taxes, and Short-Term Underperformance," February 1, 2005.

Past performance is no guarantee of future results.

The views expressed in this commentary reflect those of Legg Mason Capital Management (LMCM) as of the date of this commentary. These views are subject to change at any time based on market or other conditions, and LMCM disclaims any responsibility to update such views. These views may not be relied upon as investment advice and, because investment decisions for clients of LMCM are based on numerous factors, may not be relied upon as an indication of trading intent on behalf of the firm. The information provided in this commentary should not be considered a recommendation by LMCM or any of its affiliates to purchase or sell any security. To the extent specific securities are mentioned in the commentary, they have been selected by the author on an objective basis to illustrate views expressed in the commentary. If specific securities are mentioned, they do not represent all of the securities purchased, sold or recommended for clients of LMCM and it should not be assumed that investments in such securities have been or will be profitable. There is no assurance that any security mentioned in the commentary has ever been, or will in the future be, recommended to clients of LMCM. Employees of LMCM and its affiliates may own securities referenced herein. Predictions are inherently limited and should not be relied upon as an indication of actual or future performance.

LMCM is the investment advisor and Legg Mason Investor Services, LLC, is the distributor of five of the Legg Mason funds. Both are subsidiaries of Legg Mason, Inc.

© 2007 Legg Mason Investor Services, LLC

07-0609