

SECTION FOUR

WHY DO BRILLIANT PEOPLE BELIEVE NONSENSE? BECAUSE THEY JUMP TO CONCLUSIONS

CHAPTER 13

THEY DRAW CONCLUSIONS FROM INADEQUATE EVIDENCE

"To act without clear understanding, to form habits without investigation, to follow a path all one's life without knowing where it really leads—such is the behavior of the multitude."

— Mencius

"I fully believe that more than one-half of the failures in diagnosis are due to hasty or unmethodical examinations. Say to yourselves that you will not jump at a conclusion, but in each instance will make a thorough and painstaking physical examination, free from prejudice, and your success is assured."¹

— Dr. William Mayo, one of the founders of the Mayo Clinic

Kicked Out, Homeless, But Taken In

Last year I read a bittersweet story that resonated with many and prompted an outpouring of love that restores people's faith in humanity. According to the news, an 18-year-old boy admitted to his parents that he was bisexual. They responded by heartlessly kicking him out of the house, taking his car, and confiscating his life savings. They even called the police to make sure there was no trouble.

Where would he live? Without money, how would he continue college? Without a car, how would he get to work?

Fortunately, a concerned couple welcomed him into their home and set up an online account for people to donate money. Over the next few days, over four hundred people, the vast majority almost certainly strangers, donated over ten thousand dollars. Over the following months, donations grew to over twenty-five thousand dollars.

Yet, a few things struck me as odd about the story as reported in a popular online news source; so I marked it to return for potential updates. First, the only two sources were apparently the young man and the couple who took him in. Yet, it was reported as if it were established fact

(e.g., "A boy was thrown out" rather than "A boy claimed he was thrown out.") There was no indication that anyone had interviewed the policeman, read the police report, talked to neighbors, or talked to the young man's family. (Perhaps I was a bit skeptical because our family has on occasion taken in "homeless" teens with gut-wrenching stories, only to find that a phone call to the parents can yield a much different story.)

Yet, despite the paucity of evidence, the comments below the article (over 1,500 of them) virtually all accepted the report at face value. In addition to reassuring the young man of their support, readers viciously ripped apart the parents, horrified that anyone could treat their own flesh and blood in such a heartless manner. They referred to the parents as "low lifes", "pathetic haters," "monsters," and the "parents from hell." Some sought contact information so that they could directly give them a piece of their minds.

So why were readers judging the parents without hearing their side? And there was money involved—lots of money—giving incentive to possibly skew or hide facts to appeal to people's emotions.

The article was picked up by many other news sources, both nationally and internationally, but some reported it more tentatively, as "according to a teen" rather than reporting it as established fact.

Later, additional information surfaced. Under one of the secondary reports, a neighbor wrote in anonymously (explaining he wanted to guard the parents' location and privacy) to say he had seen the entire event and that the son's report was largely fabricated. According to the neighbor, the event wasn't about the child's sexual preference at all. The parents were laid-back people who had known for years that their son was bisexual and tried hard to love and make wise decisions regarding their son. The neighbor painted a picture of an angry, out-of-control teen who had been given every imaginable chance to act responsibly at work and at home, but refused to cooperate.

Months later, the original article was updated with a report claiming to be from the young man's father, who again gave a completely different take on the event than the son. According to him, he'd know that his son was bisexual for years. That wasn't the issue. The argument was over such issues as the son's drinking and driving, his issues at work, and his posting inappropriate content on the web that could jeopardize his future employment. Things had gotten so bad that they instituted some restrictions about driving and the Internet that he refused to follow. He pitched a fit. They didn't kick him out; he chose to leave. They didn't take away his transportation; he threw the keys at them. He assaulted his stepmom and the policeman suggested that she could press charges, but she didn't want to hurt his future job opportunities.²

So now we know the truth...or do we?

Imagine that you're on a jury, trying to decide what happened in this case. So far, here's our evidence:

- A young man claimed he was taken advantage of.

- A couple took him in, who said they believed his story.
- Someone claiming to be a neighbor said it didn't happen that way.
- Someone claiming to be the father said that the original story was largely lies.

My Conclusion?

It's a family squabble. I don't even remotely know the family members. I don't personally know anyone who saw the events. I know nothing about their history or character. I've never seen the police report. I have no decent evidence to help me decide who to believe, if any of them.

Yet, most readers of the original report apparently naively assumed that the first version of the story was true, on the basis of virtually no evidence, and many acted on that assumption, publically condemning the parents and enriching the son. In this case, a large segment of people drew conclusions from insufficient evidence.

How can we move from naïve to wise in our evaluation of people's claims? Here are some clues from this story.

From Naïve to Wise by Focusing on the Evidence

1. Read and listen with a healthy dose of skepticism.

Those who've taken the time to get to know at least a dozen people in their lifetimes are aware that people skew events for all kinds of reasons. Perhaps the young man has anger issues and skewed the events to get revenge or to get a place to stay or to get money. Perhaps the parents skewed the events to help them save face. Perhaps the neighbor was pushed by the parents to write an anonymous reply, or held a grudge against the teen. The fact is, we simply don't know. In this case, we have insufficient evidence to draw not only a firm conclusion, but even a tentative conclusion.

So why did 1500+ people confidently write responses that condemn the parents and support the child? Why are people giving money when there's so little evidence as to what happened? It seems that in many cases, even bright, literate people allow themselves to be swayed before the evidence is in. We're especially vulnerable if we identify with someone's plight and our emotions hijack our reasoning.

The wisdom of Solomon warn us: "The fool believes everything, but the sensible man considers his steps."

So when you initially read a report or hear a friend relate an event, don't be naïve and accept it unthinkingly.

- Even if it comes from a trusted friend, run it through your thinker. Could she have been mistaken? Could she have misunderstood her sources?
- Even if it's reported in the *New York Times*, run it through your thinker. Did the reporter use good sources? Did he get input from all relevant sides?

Think!

- a. Imagine that this case was brought to court and you were hired to investigate. Who would you interview? What other evidence might you gather?
- b. Imagine that you're the senior editor at the news source that first ran the article. The reporter hands you the article for editing. How would you respond? What would you tell the reporter about fact checking and integrity in journalism? What guidelines would you suggest to set a higher standard for factual reporting?

For some people, the cost of jumping to a conclusion results in the loss of a twenty dollar donation or a few wasted moments writing a comment. For others, it leads to investing their life savings with a con artist, joining a cult, or marrying a scoundrel. So don't naively take everything at face value. Consider the evidence.

2. Demand a sufficient number of cases or witnesses.

The news story above was based upon insufficient testimony. A young man told a heartwrenching story; a couple apparently believed it, and their testimonies provided the sole foundation for the article.

So how many testimonies do we need to provide sufficient evidence to believe a report? How many studies do we need to confirm a theory? Well, this very much depends upon the events or theories being verified. The question "How much evidence is sufficient evidence?" is often debated in various fields of study. This is yet another reason to bring along a healthy bit of skepticism to each lecture we hear, each video we watch, each article or study we read.

Sometimes, one confirmed experiment or observation provides sufficient evidence to overturn an established theory. In this regard, scientists and philosophers speak of Black Swans, a term which has an interesting history. In 16th century London, Europeans had seen only white swans. Since hundreds and thousands of white swans had been observed, they concluded that black swans didn't exist. So when speaking of something that could never happen, they'd say it was "like a black swan," meaning impossible.

"Have you ever met an honest politician?" a Londoner might ask an acquaintance. She might

sarcastically reply, "They're about as common as a black swan."

But when Dutch explorer Willem de Vlamingh visited Western Australia in 1697, he was amazed to find black swans. In this case, one confirmed observation was enough to overturn an established theory.³

In the case of the Black Swan, an absolute negative was being claimed—"There are no black swans." In such a case, all you need to verify is one black swan to topple the theory. But in other cases, we need more or different types of evidence.

Before we look at other principles of sifting evidence, let's look at another example.

How Many Hours of Practice Yields Peak Performance?

In the *SF Gate*, the Pulitzer Prize Winning site that accompanies the San Francisco Chronicle, an acclaimed photographer suggested to up-and-coming artists:

"Always remember what Malcolm Gladwell said: 'Anybody can be a master of anything if they put in 10,000 hours.'"⁴

This advice has been repeated over and over in recent years, by educators to their students, by coaches to their athletes, by parents to their children. It has astounding implications. If accurate, it has a huge appeal to teachers, parents and overachievers:

- It simplifies **teachers'** responsibilities, putting the onus of responsibility on the student. If it's true that any student can learn most anything, then a teacher can say to a failing student: "Your poor grade in math is your own fault. You simply need to put in the hours of study."
- It gives competitive **parents** a vision and a game plan for training an exceptional child. "If we chain her to the piano starting at age five and get her into an elite music school, she might play Carnegie Hall by age 20!"
- It gives **high achievers** a road map for success: "If I want to be a tennis star or golf pro or astrophysicist, I simply have to put in the hours of practice. I think I'll start today!"

On the negative side, if this claim is inaccurate, much harm could result.

- Parents may infuriate and alienate their children by imposing unrealistic expectations. If some children simply can't learn Algebra, e.g., because of some innate disability, yet parents force them to study it for hours a day, children will understandably become discouraged.
- Adults who catch a passion for a sport or hope to develop a skill might assume they've missed their chance to put in sufficient hours. Many people want to become writers in their adult years. But if they've got a full-time job and family responsibilities, can they really hope to put in 10,000 hours of practice?

- Students who have a poor aptitude for certain subjects may find themselves marginalized. If influential educators believe that "the future belongs to technology," they might require everyone to achieve an unrealistic mastery of math and science, assuming that anyone who puts in the hours can achieve such mastery. Those who flunk would be dismissed as lazy—unwilling to put in the hours.

In my life's work, it's been extremely important to know whether I can master any skill I choose, or whether I need to continually assess my strengths and weaknesses and put my time into developing the skills I have the most potential to both enjoy and master. These two life strategies can lead to very different paths, which can result in either frustration or fulfillment, depending on which is correct:

Life Path #1 - Decide what I want to do (choose anything) and put in the hours of preparation.

Life Path #2 - Evaluate my strengths and passions, using them to narrow down my life goals.

With its importance in mind, let's take a closer look at that statement that advice-givers have been handing out so freely of late:

"Anybody can be a master of anything if they put in 10,000 hours."

First, we should note that Gladwell probably never said those exact words. He certainly didn't say it in the book that popularized it—*Outliers*. He discusses "The 10,000 - Hour Rule" in chapter two. Since this issue is important to all of us, especially to the little girl who's been chained to her piano by her overachieving mom, let's try to understand exactly what Gladwell said and evaluate the evidence he presents.

Tip

As you read the following, think through it yourself. After all, this is an important topic. Do you agree or disagree with each point? Does it jive with your life experiences and the life experiences of your friends and family?

Gladwell's Evidence in Chapter Two of *Outliers*

Exhibit 1: Several people achieved extraordinary success through a lot of practice.

Bill Joy was one of the most important movers and shakers in the computer revolution. A math whiz (he aced the math portion of the S.A.T.), he entered the University of Michigan at age 16 and fell hopelessly in love with computer programming. Fortunately, the school had one of the

world's foremost computer science programs, complete with a unique setup to allow students to practice their programming. (People didn't have personal computers in those days, making it difficult to practice programming, since students had to share time connecting remotely with huge, million dollar mainframe computers.) He entered the computer industry at just the right time, put in an estimated 10,000 hours of programming, became a fabulous programmer, and the rest is history.

Gladwell reinforces this story with the stories of super-successful people such as Bill Gates, The Beatles and Mozart.

Gladwell's Conclusion: Bill Joy succeeded by taking 1) his raw ability and 2) unique opportunity and 3) practicing for an insane number of hours.⁵ The stories of Bill Gates, Mozart, and others reinforce this pattern.

Reflections on Exhibit 1: This is an extremely small sampling to draw a general conclusion from (think: the fallacy of "overgeneralization" from our previous section). Yet he sees the examples as more than mere illustrations of a truth. He proposes that his stories of the Beatles and Bill Gates are "tests" of the idea that "the ten-thousand-hour rule" is "a general rule of success."⁶

Note that the cases cited were all people who seemed to have an extraordinary interest in and innate ability to master their fields. Granted, they may well illustrate that, even if you're gifted, you'd be wise to practice for tons of hours to become truly great in certain fields.

But what does this tell us about people who, after a few years of pursuing music, seem to be rather ordinary in their potential? And what of those who have disabilities associated with music? Is it wise for a tone deaf, rhythm-challenged, clumsy-fingered five-year-old to aspire to Carnegie Hall by age 20, committing herself to putting in her 10,000 hours to make it happen? Or should the parents, after a year of frustration and dismal progress, unchain her from the piano and allow her to explore some of the thousands of other potential strengths and interests?

Perhaps in this case the parents should consider W.C. Fields' advice (mentioned earlier in the book):

"If at first you don't succeed, try, try again. Then quit. There's no point in being a damn fool about it."

But many of us cringe at Fields' advice. It seems so un-American. We want to believe that anybody can do anything she aspires to. But what if the evidence simply doesn't bear this out?

So how does Gladwell address this critical issue: the importance of innate talent?

Exhibit 2: The more psychologists study the careers of the gifted, "the smaller the role innate talent seems to play and the bigger the role of preparation seems to play."

Here Gladwell cites a study. Psychologist K. Anders Ericsson and a couple of his colleagues

studied violinists at Berlin's elite Academy of Music. They divided students into three groups: 1) The stars (elites who might become world-class soloists) 2) Those who were "good," but not great 3) The not-so-good, who should probably shoot for teaching music in public schools rather than performing.

They then asked each group how much they practiced. All started playing at about the age of five. In their earliest years, they all practiced about the same amount: two to three hours per week. But around age eight, the eventual stars separated themselves from the pack by increasing their hours per week:

- Age Nine: six hours
- Age Twelve: eight hours
- Age Fourteen: sixteen hours
- Age Twenty: over thirty hours per week

Thus, by age twenty, the stars had practiced ten thousand hours, the good students eight thousand hours, the not-quite-so-good just over four thousand hours.

The researchers then studied professional pianists and found the same pattern, accumulating ten thousand hours by the age of twenty.

Significantly, there were no "naturals" who made it to the top without massive practice. Nor did they find students who put in the hours but failed to achieve mastery.⁷

Gladwell's Conclusion:

"...performing a complex task requires a critical minimum level of practice.... In fact, researchers have settled on what they believe is the magic number for true expertise: ten thousand hours."⁸

While innate talent has its place, according to Gladwell, its role is less than we once thought, with research arguing against "the primacy of talent."⁹

Exhibit 3: Gladwell quotes Daniel Levitin, a neurologist, to reinforce this view:

"The emerging picture from such studies is that ten thousand hours of practice is required to achieve the level of mastery associated with being a world-class expert—in anything." "In study after study, of composers, basketball players, fiction writers, ice skaters, concert pianists, chess players, master criminals, and what have you, this number comes up again and again."

"...no one has yet found a case in which true world-class expertise was accomplished in less time. It seems that it takes the brain this long to assimilate all that it needs to know to achieve true mastery."¹⁰

My Positive Reflections

First of all, for the positive. I love Malcolm Gladwell's writing style! If academics would study his style of writing and learn from his ability to put obtuse studies into prose that non-academics delight to read, more academics would be directly impacting the public.

Second, we need generalists like Gladwell, who can take studies from various fields and show how they impact us. The studies he cites and the points he makes, even those I disagree with, never fail to stimulate my thinking. Too many academics, in my opinion, are captives of their specialty, unable to relate their specialized knowledge to the typical problems we face, which often requires drawing from several areas of specialization.

Third, I think his main point is well-taken. (Let's not fall for the fallacy of throwing out the baby with the bathwater.) Here's my take away from Gladwell's chapter, as I might express it to my students:

"If you want to become great at something, put in the hours. Nobody plays electric guitar like Yngwie Malmsteen or acoustic guitar like Tommy Emmanuel without practicing obsessively. Don't think for a minute that coasting through English classes, relying on your innate talent, will make you a great writer. If you want to be a truly great writer, scientist, nurse, musician, or business leader, put in the hours!"

Two Questionable Conclusions

Yet, I question two of Gladwell's conclusions. He states the first quite clearly. The second he presents more guardedly; but some of his readers have shouted it from the housetops.

Conclusion #1 - "Ten thousand hours is the magic number of greatness."¹¹

Conclusion #2 - Raw talent isn't so important. It's the number of hours you put into it. (He doesn't put it exactly this way, but implies it. He writes "...the closer psychologists look at the careers of the gifted, the smaller the role innate talent seems to play...."¹² He also refers approvingly to those researchers who "argue against the primacy of talent."¹³)

Recall that in this chapter I'm showing how smart people draw conclusions based upon inadequate evidence. In my opinion, those bright coaches and educators and parents who routinely repeat these claims have built their recommendations on a shaky foundation. Here are several of my problems with Gladwell's conclusions, each of which serve to elucidate how to spot insufficient evidence. Compare them to your own evaluation.

Think!

Some people turn off their brains when someone critiques another view, assuming a thorough debunking is in progress. Instead, critique my critique! You might agree with some of my contentions and disagree with others. Perhaps I'm guilty of the "fallacy fallacy," whereby I accuse someone else of fallacious reasoning, but argue fallaciously myself.

Questions for Evaluating the Amount and Quality of Evidence

1. Does the line of evidence warrant the conclusions?

Here's how his argument seems to line up:

1. Two studies found that talented musicians who practiced more outperformed talented musicians who practiced less.
2. According to the two studies, 10,000 hours was the magic number of hours that the top musicians devoted to practice.
3. A neurologist stated that this magic number has turned up in many fields (basketball, chess, etc.).
4. The neurologist claims there are no exceptions to the 10,000 hour rule.
5. Gladwell states that research is leading us to see innate talent as less and less of a differentiator.
6. Stories of several highly successful people show that they achieved mastery in their fields by massive amounts of experience.

Conclusion: If you want to master a complex skill, put in the 10,000 hours. Raw potential is overrated.

Laying this out as a line of evidence reveals significant weaknesses. Most dramatically, two studies aren't typically enough to draw a conclusion in this subject area. It isn't as simple as disproving that all swans are white. To draw any general conclusions about the 10,000 hours, I'd expect Gladwell to cite a host of studies and show me some significant literature reviews (studies that summarize the results of the relevant studies).

After all, surely hundreds—perhaps thousands—of studies have examined what differentiates the best students from mediocre students, top quarterbacks from average ones, top fighter pilots from lesser ones, how disabilities impact students, how practice impacts various types of

students, etc. Do those studies unanimously conclude that it's only (or even primarily) the amount of hours that makes the difference? Are there truly no exceptions to the rule?

The paucity of studies cited makes his research appear to be cherry-picking (picking the studies that agree with your thesis and ignoring the rest.) When he speaks of a developing consensus, and the neurologist speaks of the 10,000 hours being proven out in many fields, we have to simply trust them. He points us to no research that supports such a consensus. As for the dramatic quote from the neurologist, as we saw in chapter two, we can find quotes from "experts" to support almost anything. Show us the research behind the quote if you want to convince us.

2. Do the conclusions jive with my experience?

One way to engage our higher level thinking is to reflect upon what we read and compare it with our own experiences. Our life experiences, although they may at first appear rather lame compared to professional, peer-reviewed research, often offer significant data that can help us evaluate scientific theories. When I read Gladwell's chapter, I first compared it to some of my own experiences.

First, reflections on my personal academic strengths and weaknesses don't jive with either of Gladwell's conclusions. I'm strong in my analytic and communication skills. Thus, skills such as exegesis, hermeneutics, deductive logic, math, and research come easily to me. Show me the principle once and I tend to quickly understand it and retain it. For other students, it may take twice as long to comprehend such subjects, and they may still find difficulty understanding, retaining and using them. Thus, it's conceivable that if it took me 5,000 hours to master a field related to my strengths, it might take another student 10,000 hours.

Reflecting on my academic *weaknesses*, I have a deplorable rote memory in certain disciplines. For example, foreign languages have been a particular struggle. In college, I studied well over three hours outside of class for each hour in class to memorize Greek paradigms and word lists. My accursed roommate, who apparently had a near photographic memory, could make A's by paying attention in class and reviewing for a few minutes after class. Imagine the difference in time it would take for each of us to master a language. If it took my roommate 5,000 hours to achieve fluency in Greek, it would in all likelihood take me 20,000 hours. In this case, the hours required to master a complex field differ wildly between me and my roommate. The 10,000 hour rule doesn't seem to apply at all.

At this point, defenders of the rule that "we can do anything that we practice for 10,000 hours" may admit that there are, of course, extremes which make exceptions to the rule. For example, we must take into account mental disabilities and profound academic strengths and weaknesses. And in sports, don't expect a three foot tall Oompa Loompa, even if he put in 10,000 hours, to become a professional basketball player.

But in admitting these extremes, aren't we saying that, at least in some cases, raw potential does indeed matter a lot? A legally blind person won't become an NFL referee, even if he puts in the 10,000 hours of practice.

So let's move beyond the extremes. Don't all of us fall somewhere on a spectrum between the extremes of photographic memory vs. hopelessly forgetful, social butterfly vs. social moron, tall vs. short, fast vs. slow, coordinated vs. clumsy? If the 10,000 hour rule doesn't work for a three foot tall Oompa Loompa training to play pro basketball, what about a four footer, or five footer or even six footer? (Those playing the forward position are almost always 6' 6" or taller.) And if we keep making exceptions, then doesn't the "rule" become meaningless, dying the death of a thousand qualifications?

3. Was the study well-designed to rule out alternative explanations?

Let's imagine that I wanted to design a study to test the hypothesis that innate talent isn't that important for piano players; rather, it's the hours of practice that matter. I might pick a totally random group of 100 five-year-olds who've never seen a piano and offer them piano lessons by the same teacher. Then I'd ask them to practice the same number of hours per week—no more, no less. If, after one, five and ten year evaluations, they all showed the same level of skill, this would support the theory that innate potential doesn't matter that much.

Comparing this imagined study to one of the studies cited by Gladwell, we realize that Gladwell's study was ill-designed to prove that innate talent isn't a strong differentiator.

One problem with the study is that it had to assume that the students all started with the same innate potential, so that the amount of practice would be the sole differentiator between the elite and non-elite players. Certainly all had potential, or they wouldn't have progressed as far as they did before their acceptance into the elite music school. But how could researchers know up front that all these started the school with the *same* potential, and that the differences in potential were not impacting their progress?

The researchers claimed that the *only* difference between the elites and the non-elites was the amount of time they put into practice. *But what if innate talent was impacting the number of hours they put into practice?*

Imagine that you practiced piano and did very well at the beginning stages—well enough to get you into a recognized music school. But as you were handed increasingly difficult pieces and were expected to not only get the notes right and memorize them, but to express emotion through your playing, it just didn't happen like it did for many others. No matter how much you practiced, others seemed to blossom while you fell behind. Your parents and teachers were also aware of your lack of progress, leading to less encouragement by them to pursue a solo career. In such a case, wouldn't you be tempted to do the minimum amount of practice and shoot for a teaching career rather than a solo career?

And if the opposite happened—the more difficult the pieces, the more you excelled beyond the others—don't you think that you might fall ever more in love with the piano, responding to the positive strokes by your teachers and parents and the applause at recitals, so that you begin to practice more and more?

In other words, the question of *why* they practiced more was never addressed by the study.

Without controlling for this critical question, we have no reason to conclude that, had the worst students simply upped their practice to equal that of the elite students, they would have been elite as well. Without answering this crucial question, the study would seem to tell us nothing about the impact of raw talent on superior performance.¹⁴

4. Did they consider other explanatory hypotheses?

Gladwell seems to assume that the cited studies keep repeating the "magic number" because it's the precise number of hours that the brain/muscles need.

Yet, perhaps there's another, equally reasonable explanation for the "magic number"—*there's only so much time you can put into a sport or hobby or skill before you reach the age of 20*. Even if you love something and obsess on it, you've only got so much time to obsess once you eat, sleep, sit in school for six hours a day, do enough homework to pass, take family vacations, visit Aunt Eleanor on Sunday afternoon, and do chores.

So you're 14 years old and practice football for a couple of hours after school each day. On weekends, you throw the ball with your friends for about four hours. That's about 14 hours per week. During the summer you take in a football camp and get more hours to play on your average day, which brings up the average to about 16 hours per week. How much will you have practiced by the age of 20? Multiply it out and you've practiced 10,000 hours, precisely the amount of time that the excellent violinists practiced.

There are also physical limitations. Even if I'm obsessed with the piano, my fingers need time to rest and my muscles need time to repair. The same goes for weightlifting, tennis, football, or hockey.

Thus, there are only so many hours available to obsess on something before age 20, even if we absolutely love it. If that number is around 10,000 hours, then perhaps "the magic number" is merely telling us how many hours people who are in love with something obsess on it, rather than how many hours are required to master a field.

5. Did the subjects of the study well-represent the populations to which the conclusions are being applied?

No. Gladwell concluded that 10,000 hours is the magic number, implying that it works its magic for everyone. But the subjects of the studies all showed exceptional innate talent from the start. His personal examples included Bill Gates, The Beatles, and Bill Joy, all of whom, Gladwell admits, began with exceptional raw talent in their fields. The study he cites dealt with piano players who were good enough to be accepted into an elite music school,¹⁵ again indicating potential that others might not have.

In other words, the studies may tell us nothing about how a person with normal potential in the field, or a person with learning disabilities, or an Oompa Loompa trying to make the basketball team, would progress with 10,000 hours of practice. Nobody tested them.

6. Does further research yield different conclusions?

- **Research into counterexamples**

Gladwell gives the example of the Beatles gaining massive experience during their time performing in Hamburg. By putting in their hours playing as a group, they gelled and were able to perform at the level that made them one of the most successful bands in history.

Yet, their drummer during those Hamburg days was Pete Best. Even after all that practice, George Martin at their record label decided that they needed a new drummer. The other members of the Beatles agreed. According to them, Pete wasn't good enough. They replaced him with Ringo Starr.¹⁶

So if it's the hours that matter, and not so much the talent, why wasn't Pete Best good enough after putting in all the hours at Hamburg?

Joshua Foer considered himself to have an average memory, but spent a year improving his memory under competitive memorizers and a memory researchers. One expert said that if he devoted an hour a day, six days a week to studying memory techniques, he could place in the top three of the U.S. memory championship in a year. He took the challenge and won the event a year later. That's 365 hours of practice, far less than 10,000 hours.¹⁷

- **Research on strengths**

Studies of over two million people in the workplace by the Gallup Organization found that people vary greatly in their potential. These studies indicate that a major key to success is to discover our strengths, develop them, and find meaningful work that utilizes our strengths. Since our greatest potential for improvement is in our area of strength (according to strength advocates), they don't recommend knocking yourself out trying to master a field that's in an area of weakness. It's not just about practice, according to Gallup's research; it's about practicing in those areas where you have the greatest potential.¹⁸

- **Research on weaknesses**

Research indicates that while some have inherent weaknesses serious enough to be labeled "disabilities," many if not most of us find ourselves far enough on a spectrum to be considered weak.¹⁹ My problems with rote memory jive with this research. Although I've never been diagnosed with a disability, I'm far enough over in the spectrum for poor rote memory to realize I don't need spend my life trying to achieve fluency in multiple foreign languages. Putting 10,000 hours per language into trying to achieve fluency would likely be frustrating and fruitless for me.

Conclusion

We have a tendency to jump to quick, obvious conclusions. We read about a boy being kicked out by his parents. We conclude: "His parents are heartless morons." Five of our students are flunking algebra. We conclude, "They're obviously not studying enough. If they put in the hours, they'd be mastering the subject."

But truth isn't always so obvious, and it often can't be wrapped up in the tidy packages that appeal to us. So don't be naïve. Think. Reflect on the evidence. If it's an important topic, think long and hard; discuss it with friends, and dig into the research. It just might make the difference between success and failure, fulfillment and frustration.

Think Different Tips on Achieving High Performance

Studies of high performing people²⁰ find that while the amount of time practicing is indeed a factor, other recommendations include:

- 1) **Get immediate feedback on your performance.** Study great golfers. Typically, they're still getting regular input from top golf coaches. Don't trust your own judgment; get input from great teachers. Professional quarterbacks get regular input from their quarterback coaches to help them reach the next level.
- 2) **After discovering specific areas of weakness in an area you wish to master, concentrate on them.** Top figure skaters don't just practice figure skating in general; they discover their weak points and concentrate on improving them. Once typists reach a certain speed, they tend to stagnate and stop improving, no matter how much they type. Those who make it to the next level of typing work on their sticking points (often discovered by trying to type faster and noting where they mess up).
- 3) **Study the best.** Chess masters don't just play more than others, they study the games of the great players.
- 4) **Approach it like a scientist.** Reflect on what helps and hinders your progress. Keep records to follow your progress. Do little experiments along the way to personalize and tweak your training.

In what area would you like to achieve expertise? How might you pursue it?

Flex Your Neurons! Pursuing the Point of Know Return

1. When you read a moving story, such as the one on the boy who was kicked out by his parents, do you tend to believe it implicitly, or question its veracity? How can we strike a balance between being naïve on one hand, and cynical on the other?
2. When did you believe someone, but later were disappointed to discover he was either mistaken or lying? What could you learn from that experience to keep from being deceived in the future? (Example: "Fool me once, shame on you. Fool me twice, shame on me.")
3. You hear an authority in a field give a riveting TED talk. Which responses are typically most appropriate for motivated learners who value the truth:
 - a. "Now I know the truth!"
 - b. "Now I know what one scholar thinks about this issue."
 - c. "That was interesting. I wonder if other scholars in the field might disagree?"
 - d. "That was some darn good evidence she presented. I think I'll tentatively adopt her position unless I see strong evidence to the contrary."
 - e. "Anyone who disagrees with her isn't thinking!"
4. Do you agree that 10,000 hours of practice yields peak performance? Why or why not? Are there exceptions? If so, how can you know if you are an exception?
5. How can we determine how much evidence is enough to warrant adopting a position? Can we ever say we're "certain," or can we do no better than conclude, "the weight of the evidence at this point favors believing this"?

Making It More Personal Practical Takeaways

What are one or more ideas provoked by this chapter that you can apply to help you think more critically?

What are one or more ideas that you can apply to help you think more creatively?

What else do you want to make sure you don't forget?

Recommended Trails For the Incurably Curious and Adventurous

1. To understand Gladwell's case for 10,000 hours leading to peak performance, read *Outliers: The Story of Success*, by Malcolm Gladwell (New York: Little, Brown and Company).
2. Study the "Woozle Effect," a term taken from a chapter of A. A. Milne's classic tales, in which Winnie the Pooh and Piglet followed footprints in the snow, which they deemed to have been left by a Woozle. As the tracks multiplied, they discovered that they were actually going in a circle, following their own tracks. Researchers use this term to describe a supposedly growing body of evidence, which turns out to be a bunch of scholars quoting each other, with no solid evidence to back up their claims.
3. For more study on innate and/or developed strengths, and how they impact our potential, see *Now, Discover Your Strengths*, by Marcus Buckingham and Donald Clifton (Pocket Books, 2001). The authors believe that, based on their research, our greatest potential for growth lies in our areas of strength, rather than our areas of weakness.
4. To understand more of how our minds differ, thus giving us more potential to develop in some areas than others, read *Frames of Mind: The Theory of Multiple Intelligences*, by Howard Gardner (BasicBooks, 1983).
5. Search YouTube for presentations by Malcolm Gladwell on "outliers" and by Marcus Buckingham on "strengths." Compare and contrast their approaches to developing full potential.
6. For those interested in health care, particularly those going into medical professions, introduce yourself to the concept of "Evidence-Based Medicine." At first, it seems like a no brainer—hold doctors accountable to make medical decisions based on the best evidence. But like most good ideas, there are drawbacks as well. Here's a good article to get you started:

http://en.wikipedia.org/wiki/Evidence-based_medicine#Limitations_and_criticism.



CHAPTER 14

THEY'RE SNOWED BY SUCCESS BIAS

"If you spend your life only learning from survivors, buying books about successful people and poring over the history of companies that shook the planet, your knowledge of the world will be strongly biased and enormously incomplete."

—journalist and author David McRaney

The Cure for Wimps

In middle school I was the stereotypical "98 pound weakling." Make that 120 pounds—I was also short and pudgy—everything a guy didn't want to be. I tried football for a day, but my fall allergies made running any distance impossible. I wheezed so loudly that coaches surely envisioned lawsuits if I were to drop dead on the second lap. If we'd had inhalers in 1969, I'd have carried one.

It all came to a head in gym class when each student, in full view of the class, was instructed to jump up to a bar and see how many pull-ups he could do. I managed to jump to the bar (no small feat), but could do no better than hang on. "Stevie Miller - Zero," the coach probably noted on his clipboard.

That was it. Something had to give.

Fortunately, ads in comics offered a solution: Charles Atlas products. His ads were legendary—typically a short comic strip showing a 98-pound-weakling getting sand kicked in his face by a bully at the beach. The wimp's girlfriend makes an insulting remark about his being a "little boy." Thoroughly humiliated, he sends off for the Charles Atlas course, so that next time at the beach he decks the bully, impresses the girl, and is proclaimed "Hero of the Beach." Beside the ad stands Charles Atlas himself, wearing Tarzanesque shorts to accentuate his wasp-thin waist and muscular physique. Under him were etched the words: "Awarded the Title of 'The World's Most Perfectly Developed Man.'"

It was corny for sure, but appealing to a pudgy middle schooler. Next time I looked in the mirror, I desperately wanted to see Charles Atlas.

I don't remember which products I started with, but soon I'd begun hitting the weights and saw immediate improvement. My brother and I asked for new equipment every Christmas until our basement became a gym. For inspiration and instruction in our mutual quest for manliness, we subscribed to magazines such as *Strength and Health* and *Muscular Development*. We consumed the protein shakes and supplements they recommended.

The magazines provided the insider information we needed: the work-out routines and special diets that produced top body builders such as Arnold Schwarzenegger and Sergio Oliva. Duplicate their diets and workouts—put in those Gladwell hours—and we should look like them.

And of course there were the women—fabulous-looking women—sitting on their shoulders and feeling their biceps, with facial expressions indicating a state of perpetual worship for these demigods. This was obviously the way to impress girls.

But the original promise of Charles Atlas never fully materialized. I never looked like him and certainly was never voted "Dalton High's Most Perfectly Developed Man." That award, had it been offered, would have probably gone to one of my best friends—Dee Hodge. While I hit the weights, ate health food and took vitamins, Dee sat at home playing his guitar and drinking two liter Cokes. Yet he was a natural—broad shoulders, thin waist, large frame, naturally muscular. Had he put in my hours of weightlifting, he might have become a world-class bodybuilder. But the magazines didn't talk about inherent limitations such as body types. Neither did they mention that while I was swallowing vitamins, the most muscular bodybuilders were consuming steroids. They just kept feeding me success stories, and I kept buying their products.

The Nature of Success Bias

My work-out buddies and I had fallen for success bias—the fallacy of looking only to successful people to learn how to be successful. It's a form of cherry-picking—studying only the most successful rather than considering a random or representative sample. The magazines we read told exclusively success stories, e.g., how top body builders built their bodies. I never once read of a person who emulated their workouts and drank their protein shakes but failed to gain magnificent muscle mass.

In retrospect, reading *Strength and Health* and working out was a valuable pursuit for my teen years—much healthier than my contemporaries who read Timothy Leary and experimented with psychedelic drugs. I lost the baby fat, gained confidence, grew stronger, felt better, and looked better. The habit of weekly strength and cardio-vascular training has lasted into my 50s.

I was also pleased to discover that the magazines' visual suggestion that girls go for the guys with the largest biceps and most impressive dead lift was largely fiction. My high school girlfriends never once showed the least interest in how much weight I could lift.

(A word to the wise: Don't be fooled by the models who pose for today's hunting and muscle car magazines. Shocking as it may be to some, they're *paid* to wear bikinis while drooling over powerful engines and ecstatically showing off dead fish. But I digress....)

Thus, in my case, falling for success bias did me little harm. I was fortunate. But that's not always the case.

Success Bias beyond Bodybuilding

We love to read about successful people. We want to know how Warren Buffett made his billions, how Bill Gates and Steve Jobs built successful technology companies, how May Kay built her cosmetics company, how the Beatles produced Beatlemania, how Tom Brady became an outstanding quarterback, how Ernest Hemingway learned to write, and how Martin Luther King Jr. successfully fought for human rights. I've read about all these people and many more, with great profit.

The problems come when we draw conclusions too quickly—such as reading a few success stories and mindlessly concluding that we've discovered a pattern that anybody can follow to similar success. The appeal of success bias is powerful, charming even the brightest among us. How can we sift through the hype to find the gold nuggets often lie beneath the surface?

Think! Seeing through Success Bias

The next time an article or documentary or book or professor urges you to follow the path of a successful person, consider some of the following points.

1. What could we learn from those who followed the same path, but failed?

The Biased Nature of Magazines, Conferences, etc.

Magazines are typically "for profit" businesses. Without a profit, they fold. How do body building magazines make money? Largely from those who place ads in their magazines—typically selling exercise equipment and food supplements. So imagine you're a writer submitting an article to a body building magazine on how many people in your gym *failed* to develop great physiques, even though they faithfully took the supplements and followed the most respected exercise routines. Would the magazine publish it? Probably not.

Their advertisers pay for the ads that sell the supplements and equipment. Why risk offending the advertisers? And why risk discouraging the readers, who may not subscribe next year? For this reason, magazines and popular websites are treasure troves of success bias. The same goes for many conferences and seminars. Attend a financial seminar or an Amway or Shacklee or Mary Kay conference. You'll hear from a veritable parade of winners who became rich following their principles of selling the products.

So ask yourself, "What about all those losers who followed the principles and didn't succeed? How large a group are they and why didn't they succeed?"

Learning from Losers

Imagine that the year is 1855. You're a Kentucky farmer and have become, like everyone else, enamored with stories of people striking it rich in California's Gold Rush. In fact, you subscribed to the *Goldrush Times*, which tells the stories of those who struck it rich.

You're asking the question, "Should I sell the farm, uproot my family, and make the arduous journey across the country?" The data you'd need to make the decision was probably not available to you. Whether you read stories of 10 people or 1,000 who struck it rich, you're lacking critical data. What you really need to know is:

"Of the hundreds of thousands of people who are looking for gold, what percentage are actually getting rich? If eight out of 10 are getting rich, I'll consider going; if one out of 100, I'll keep the farm."

History tells us that only a tiny percentage of people made it rich. Some of the early arrivals in 1848 made it big quickly, picking up nuggets that lay on top of the ground. Within the next seven years it became increasingly difficult for individuals to succeed. Yet the success stories continued to circulate and an astounding 300,000 people risked great hardships to travel to California in hopes of cashing in.¹

Isn't this precisely our situation when evaluating a job opportunity, an exercise routine, a new diet, or whether to pursue a master of arts degree? Don't just feed me success story after success story. Instead, compare the successes and failures and give me some odds that this gamble will pay off.

Should You Borrow Large Sums of Money to Start a Business?

Imagine that you've just watched a documentary on how Sam Walton started Walmart. You wrote down everything he did, including the fact that he secured huge loans from banks to build new stores. You read up on several other successful businesses and see that they too borrowed large sums of money. So you go to your local bank to ask for a loan to start your dream business.

Yet, you made the decision based upon examining only a few successes. What about those businesses that borrow money and fail? Some studies find 71 percent of business startups failing within the first decade.²

Wouldn't it be wise to do some research into why they fail, including the pitfalls of borrowing large sums of money?³

And What about the Other Bands Playing Hamburg?

Let's look at a success-biased argument expressed as a syllogism, which shows it pretty clearly to be a form of cherry-picking and overgeneralization.

Premise One: If the Beatles succeeded by playing together for an extraordinary number

of hours, then other bands who put in the hours will become very successful as well.

Premise Two: My Polka band plays for an extraordinary number of hours.

Therefore: We will become very successful.

If the first premise stands, it seems like a valid argument (the conclusion logically follows from the premises). But is it sound? Just how strong is that first premise? What if your band has no talent? What if there's only a tiny market for your style? What if you write songs that nobody likes?

Without studying the bands that put in the hours and never saw great success, we've failed to account for significant data. What about all those other bands who played Hamburg at the time of the Beatles? How many went on to significant success? How many didn't? What made the difference? These are the questions that take us beyond success bias.

2. Are there instructive counter-examples who succeeded without following the success principles?

According to Gladwell, the Beatles performed twelve hundred times before they became successful. From this, we might draw a tentative principle:

A band must put in significant time playing together before they're good enough to succeed.

But keep the principle tentative and read other successes. *Led Zeppelin* was another extremely popular band out of England. Did they have to put in their twelve hundred performances as a group before they were good enough?

Hardly.

Lead guitarist Jimmy Page and Bass player John Paul Jones had both done extensive studio work. Singer Robert Plant and drummer John Bonham came with much experience as well. Each of the members had put in their personal practice through the years and played with other bands. When they came together for their first jam, everything simply clicked. According to Page, "It was magical. Everything just came together."

After a few days (not years) of rehearsal time, they hit the road for a mini tour of Scandinavia. That was mid-September. When they returned, Page insisted they were ready to cut an album. So in October, they rented Olympic Studios in South London and produced their first album, *Led Zeppelin*, in a mere thirty hours of studio time.⁴

It was a raging success. As recently as 2003, *Rolling Stone Magazine* ranked the album 29th in their lineup of the 500 greatest albums of all time.

So with this counter-example, we can revise the principle we drew from the Beatles:

Put in your time—*individually, with other bands, or with your current band*—in order to pursue success.

Comparing the stories of many other successful bands might lead us to tweak the principle further, or abandon it altogether.

3. Consider extreme examples, then work your way back to "normal."

Temple Grandin is autistic. Examine her brain scans and you'll find that her neurons (brain cells) are connected in ways that enhance her ability to understand and remember things visually. But if neurons connect in a way that gives an unfair advantage in one area, they can't optimize other areas. For example, she can't remember faces or understand Algebra. She's plenty smart. She teaches at Colorado State University. But because of the way she's wired, she'll always excel in some areas and struggle in others.

Grandin suggests that looking at her brain as an extreme case, we can better understand our own wiring, which is likely somewhere else on the spectrum. So if Grandin studied the paths that 20 people took to acing Algebra, it might not help her at all, since she's wired differently.⁵

Tip: Ask yourself when evaluating success stories: "Is there anyone I know who could have followed the same path but would have probably not succeeded? If so, what others might this path not work for?"

4. Do the winners have unfair advantages?

- Gladwell mentions timing as a major factor in great financial successes.⁶ That's a great point. Bill Gates and Steve Jobs were born at the perfect time to take advantage of the personal computer revolution. Had they been born five years earlier or later, they may have achieved little success. Led Zeppelin toured America when many were looking for the next big band from Europe.⁶ Study Walmart and Quick Trip and many other companies to find similar advantages to their timing.⁷
- For personal sales and pyramid strategies such as Amway, Mary Kay, Tupperware or Shacklee products, surely the size and quality of a person's existing web of trusting relationships would give a huge advantage. Also, surely those with delightful personalities, strong social skills, and natural leadership would have a significant advantage over those who lacked such strengths.

So when the testimonies of the successful begin, look for unfair advantages that might accompany the super successful.

5. Did you consider related factors such as opportunity cost?

During the early years of the Web, businesses simply put their brochures up on a website to establish a web presence—a way for their customers to find and contact them. But then along came Web 2.0—unleashing "the power of us" by allowing people to interact on the Web. With

such tools as blogs, forums, Facebook, Twitter, and LinkedIn, people began connecting with one another, opening opportunities for marketing our products and businesses.

For almost a decade, I've followed developments with social media networking. As a writer, I'm well aware that publishers don't just look for writers who can write good books; they want writers who can *market* their books. To many in the publishing industry, web-based social networking solved many problems for authors. It offered the opportunity to connect with existing readers and draw new readers. Through social networking, authors could establish themselves as thought leaders and build followings. It seemed to be the answer to the talented writer who lacked a platform to sell her books.

Quickly, social media established itself as "the thing" that all authors needed to pursue. Thus, when an author sent a book proposal to a literary agent or publisher, she might be asked, "But who is likely to buy your books? Do you have a blog? If so, how many followers do you have? How many comments do you get on your posts? How many people follow you on Twitter? How many Facebook 'friends' do you interact with?"

If the author's response was vague, or if she merely reemphasized, "But it's really a good book!" the agent or publisher might respond, "Come back to me when you've got a successful blog and a thousand Facebook followers."

Yet, it seemed to me that this advice was based on success bias—stories of select authors and select business people who had done well with social media. The critical question they failed to address was: What's the evidence that this approach should work for everyone?

One of the problems was the vast amount of time it took to build a successful blog (one with a significant active following) and to retain hordes of active Facebook followers. Social media gurus recommended spending vast amounts of time to build a significant social media following.

- Chris Brogan: minimum of 2 hours daily.⁸
- Web Worker Daily: minimum of 2 hours, 13 minutes daily.⁹
- Miller Finch Media: four and a half hours daily.¹⁰
- Nonprofits and Social Media: 60 hours per week.¹¹

Yet, very few authors write full time. Some teach. J.R.R. Tolkien taught at Oxford during the day, hung out with his family when he got home, and wrote in the evening after the children were in bed. Had social media existed in his time and he'd spent two hours each evening blogging and hanging out on Facebook, we'd have likely never read *Lord of the Rings* or *The Hobbit*.

It seemed to me that the advice-givers weren't taking into account opportunity costs (see the Broken Window Fallacy), whereby they assumed that authors, in addition to working, raising families, writing, and exercising, had two free hours floating around each day to develop social media.

Besides, there are hundreds of ways to market books. See marketing guru John Kremer's book, *1001 Ways to Market Your Books*. With 1000+ ways to market books, who has ever proven that social networking on the web is the most effective method for every author and every book? Nobody that I can find. Yet, if we spend all our marketing time doing social media, we can't spend that time with other marketing initiatives.

Social media experts never seemed to address the issue of limited time. Instead, they just told us success stories of authors who'd built significant social media followings and urged us to follow their examples. They were trying to convince us, and were probably convinced themselves, with success bias.

6. Consider conducting a study that might back up or refute the claims.

As an author, it was critical to decide how to best use social media, such as blogs. Three informal studies helped. First, I visited the websites and blogs of the presenters at a well-attended social media conference. Overwhelmingly, I found very little interaction (comments, etc.) on their blogs. If they were the gurus, why weren't significant hordes interacting with them? Something seemed amiss. The few who had a good number of active followers had unfair advantages. For example, one ran a blog that supported his software. Obviously, users would return to the blog to report problems with the software. This success told me nothing about the potential of a low-profile author for gathering a significant following.

Second, I studied low-profile authors who'd sold a lot of books. I found that they used a variety of marketing approaches that worked well for them. While I knew a few authors whose sales seemed to come primarily from social media, my broader study of successful authors showed me that social networking was far from the only marketing game in town.

Third, I asked on a publishing forum (think: crowdsourcing) what was working for authors in marketing books. If they said that they used blogging and Twitter, I'd ask, "But how many book sales can you definitely attribute to this method?" Typically it was very few.

With this informal research, I concluded that successful book marketing looked different for different authors. Some did well with social media while others used different methods to achieve success. Their choice of marketing methods often depended on the nature of their books and their personal strengths and interests.

Tip: Ask yourself, what kind of research would it take to support or refute the claims being made based upon people's successes?

7. Question, question, question.

From the film, *The Matrix*:

Trinity: It's the *question* that drives us, Neo. It's the question that brought you here. You know the question, just as I did.

Neo: What is the Matrix?

Trinity: The answer is out there, Neo, and it's looking for you, and it will find you if you want it to.

For those in search of *The Matrix*, *the question* drove them. Unfortunately, most people these days don't seem to be driven by questions. Perhaps they're used to uncritically reading textbooks and memorizing the main points for tests. Perhaps they're naturally naïve, taking most everything at face value. Or perhaps reading this text while listening to music, texting on your phone, and keeping abreast of Facebook friends doesn't allow enough random access memory in your brain for critical thinking.

Whatever the case, if we want to stop jumping to conclusions and resist success bias, we'd better start by asking more and better questions.

In the case of social networking for authors, this was an important issue for me. Respected publishers, literary agents and social media gurus confidently instructed me that authors needed to build significant social media followings to build their author platforms. But if I were to follow their time consuming advice, when would I find the time to write my books?

Think!

Imagine that you plan to start a coffee shop or motorcycle repair shop or _____(name a business or social agency that interests you). If a marketing professional gave you the same advice concerning social media as they were giving me as an author, what questions would you like to clarify?

Rather than blindly follow their advice, I began asking questions—lots of questions:

1. How many low-profile authors succeed at building significant followings with this strategy?
2. How many fail, and for what reasons?
3. Why would people follow blogs written by authors who don't already have a high profile? Wouldn't people more likely follow the blogs of authors who were already successful?
4. How much time does this take?
5. Do I have that much time?
6. Do we have evidence that our limited marketing time is better spent with this strategy than the hundreds of other strategies?
7. Does building interactive followings work better in some industries than others? Is there solid evidence that it works in my industry?

8. What if some people don't enjoy spending hours a day on Facebook and blogging? Won't that lack of enthusiasm impact the quality of their work?

9. How much time in research would it take to become a legitimate thought leader in my field?

10. Do I really want to become a thought leader? If I were to become one, wouldn't I have gobs of emails to go through every day from people asking me questions and wanting a bit of my platform?

11. In order to build my blog following, will I end up spending more time marketing my blog than marketing my book?

12. Won't I lose friends when I start trying to sell them my products on Facebook, even if a sales pitch is only one out of 100 entries?

13. If my blog is about writing and publishing, won't I be attracting fellow *authors* rather than potential *readers*?

14. Do people in my target group actually subscribe to blogs of my type and follow them passionately? How many?

15. Is there enough relevant, interesting, practical information on my topic to blog about it for years on end?

Researching these questions led me to indeed use blogs and forums and other social media, but in ways much different from trying to build a following around myself. In this way, I utilize the power of social media without having to spend vast amounts of time blogging and interacting on Facebook. (Rather than digress, I'll just mention that I lay out these thoughts in my books on book publishing and marketing.)¹²

Like Neo and Trinity, it's *the question* that drives seeking minds. It's *the question* that drives us far deeper than the off-the-cuff responses on Ask.com or a line-up of success stories at a conference.

I can't tell you the specific questions you need to be asking to get the answers you seek, since formulating good questions is as much an art as a science, and the questions differ from issue to issue. And don't be discouraged if each answer you find spawns ten new questions. That's progress, since without critical questions driving us, what will motivate us to keep passionately learning?

Think Different!

Some might argue that once we see the problems with success bias, we should stop listening to success stories. Like Rosenberg, they may argue that since our brains often trick us and history can be interpreted so many ways, we should give up trying to learn from history, including the history of people's successes.

But I strongly disagree.

For me, the best way to keep from falling for success bias is to read *more* people stories, not less. For in reading many stories, I gather data to compare and am less likely to believe that the testimony at the conference represents the only true path to success. By reading about both the *Beatles* and *Led Zeppelin*, I learn more about the music industry and have real life examples (data) by which to evaluate other people's claims.

Thus, although I sometimes disagree with Malcolm Gladwell, I love to read him and wrestle with his ideas. He never fails to provide provocative food for thought. Although my muscle magazines contained success bias, they also had a lot of great ideas. I had to learn to separate the wheat from the chaff; but in doing so, I learned much about health and fitness which benefited me throughout life. While I disagree with much of today's advice about social networking for authors, I've learned enough to adapt social media to my specific needs.

Reaping More from Biography and Success Stories

As you read people stories and business stories, be aware that it's not always obvious what actions contributed to their success and what hindered their success. It's easy to fall for the fallacy of *post hoc ergo propter hoc*—assuming that the success that followed was a result of each decision made previously. For example, Steve Jobs could obsess endlessly on the details of his products, sometimes exasperating his associates. Was this quality a part of what made him successful, or did it hold him back, or was it sometimes positive and sometimes negative?

It's a subjective judgment, but I lean toward the latter.

I read that Harvard Business School encourages teaching business by telling business stories. Some of the benefits are clear:

- We remember stories better than lists of facts.
- We engage our critical thinking by comparing one company to another and drawing out the principles ourselves, as opposed to memorizing keys to successful business.
- Stories inspire as they teach.
- We can use the stories to teach and inspire others.

That's why I never tire of reading biographies and stories of businesses. That's why I often quote from great biographies in this book. The history of Bell Labs teaches me about innovation and the contributions that unique (and often strange) people can make. Benjamin Franklin challenges me to seek wisdom and keep practical. Albert Einstein and quantum theorists teach me the importance of imagination and to not assume what seems obvious. Paul Orphalea's success at Kinko's shows me how a dyslexic, A.D.D., nonreader can start and run a fabulous business. *Led Zeppelin* and the *Beatles* have much to teach us about collaboration, hard work, and passion.

Biographies do more than teach me about success. They disrupt my all-too-human tendency toward inside-the-box thinking and provincialism. Reading of Ghandi or Jesus transports me from my little cul-de-sac in metro Atlanta to foreign lands, challenging my culture's pull toward materialism and consumerism. Reading Paul Johnson's provocative description of influential intellectuals warns me of the pitfalls of the life of thought and research and publishing.

And especially in the older biographies, I've noticed a significant pattern—they all die. It's the darndest thing. Whether they invented the airplane or atomic bomb, developed the first transistor, ruled the Roman Empire or hit a baseball like nobody before or since, they always die. And typically, they exit life with more of a whimper than a bang.

Generally, I grieve a bit after that final chapter; I feel like I knew them. Then I reflect on the total impact of their lives, positive and negative, and compare it to my own. So Sam Walton obsessed his entire adult life building the largest retailing outfit on the planet. Why didn't he stop with one successful store, or two, then go do something else with his life? Did he spend enough time with his family? Did he feel in some sense destined or called to complete this task?

What keeps Warren Buffett going to work each day into his 80's, even though for decades he's already established himself as one of the most successful businessmen/investors alive? In part, he looks at his portfolio of investments as a work of art:

“I am painting this painting that is Berkshire Hathaway; the canvas is an unlimited size.”

This is the life Buffett has carved out for himself, but is it the one I want? Is that the painting that I want to gaze upon at the end of my life and feel satisfied that I used my allotted years to complete it? What do I want to be known for?

Some seem to blitz through life "full of sound and fury," yet wonder at the end if it "signified nothing."

So biographies tell me more than how to be successful—they force me to reflect more deeply on what "success" really means to me. In my view, it's more about helping others and leaving the world a better place; but study interesting people for yourself and see what you conclude.

For these reasons, I carry books with me wherever I go, reading them while waiting for a child at school or getting my car fixed. Interestingly, I've found that getting small bits each day may be more profitable than reading huge chunks at a sitting, since my mind needs time to reflect on new thoughts. So I read a few pages about the Beatles at Hamburg and have to stop when my children get in the car. While driving home from school, I reflect on the passage or discuss it with my children. That's where I engage my critical thinking and transform knowledge into wisdom.

As I encounter interesting thoughts, I index them in the back of each book. Some people may be able to do this just as well in an e-reader such as a Kindle—highlighting and adding notes. But for me, marking up paper books still works better. I've gathered a couple of hundred books into my office that I keep referring to as I write this book. Thousands of others are available to

me on shelves in other rooms. The ones I've read, I've marked up with extensive notes on the final blank pages, referring to pages with insights and quotes that may one day prove valuable:

- "pp. 62, 221, 320 on motivation"
- "p. 3 on wisdom"
- "chpt. 2 on the power of caring"

I look especially for the fascinating, the interesting, the practical, and the counterintuitive, like Bubba Watson establishing himself as one of today's top golfers, without ever taking a golf lesson. Now *that's* interesting, and may apply to any number of topics of interest to me.

And don't neglect books on great failures. Reading *The Smartest Guys in the Room* about the rise and fall of Enron taught me more about running a business than many books of business successes.

As a result of voracious reading and marking up books, when I write or speak on a topic, I have plenty of material to draw from, and can easily document it. When my writing or latest business project requires new research, I order new books and mark them up. If they're too expensive, I check them out from the library or order them through interlibrary loan and take notes on legal pads, which I place beside my books. You may find a better way to read and reap from biography, but this way works for me.

And besides all the *profit* in wisdom, it's so incredibly *fun!* So go find a great biography about somebody you admire and see what all the excitement's about!

Flex Your Neurons!

Pursuing the Point of Know Return

1. Before your next class, look for examples of success bias. Listen to commercials; reflect on ads in magazines. Think back to times when you've been persuaded, for good or for ill, by success bias. Bring your ideas back to class for discussion.
2. How can we learn from successes while being aware of the pitfalls of success bias?
3. How do lotteries use success bias to their advantage?
4. Would you have likely moved across the country to pursue fortune during the gold rush? Why or why not?
5. What part may social media play in your area of business interest, or your passion for social activism? How can it be used? How might it be abused?
6. What people inspire you? How can you learn from them, without falling for success bias?

Making It More Personal Practical Takeaways

What are one or more ideas provoked by this chapter that you can apply to help you think more critically?

What are one or more ideas that you can apply to help you think more creatively?

What else do you want to make sure you don't forget?

Recommended Trails For the Incurably Curious and Adventurous

1. In learning to be successful in business, I profited from a book by a young man who created a successful business, sold it in his 20s, then interviewed 100 highly accomplished leaders in diverse fields—actors, CEOs, senators, scientists, heads of nonprofits—to find the secrets to their success. He concentrated on their early years, which makes it especially valuable to those in their teens and 20s. While we must certainly beware of success bias, the author did a great job of simply letting people speak for themselves, rather than trying to force everyone into a tidy package of "20 keys to success." Thus, many of their approaches contradicted one another, showing the variety of ways people find success, or how success finds them. Here's the book: *Nobodies to Somebodies: How 100 great careers got their start*, by Peter Han (New York: The Penguin Group, 2005).
2. Success books often try to gather principles that can make anyone a success, while ignoring people for whom the principles may not apply. That's why I like to look long and hard at people who don't seem to fit the norm. Consider these: Temple Grandin is autistic but puts her mind to great use as a researcher and professor. She argues that it's too simplistic to think that some people have autism and others don't. Instead, people find themselves somewhere on a spectrum between the extremes. If this is true, then it says a lot about our need to find niches in which we can be successful, given where our brains fit on various spectrums. *The Autistic Brain: Thinking Across the Spectrum*, by Temple Grandin, with Richard Panek (New York: Houghton Mifflin Harcourt, 2013).
3. Paul Orphalea started the extremely successful printing company, Kinko's (later sold to FedEx). The way he started and ran his company was very unique because of his disabilities. For example, he couldn't read. *Copy This! Lessons from a Hyperactive Dyslexic Who Turned a Bright Idea into One of America's Best Companies*, by Paul Orphalea, with Ann Marsh (Workman Publishing Company: 2007).
4. For a quick read of what's happening in today's top businesses, from entertainment to technology to the restaurant business, subscribe to the award-winning magazine Fast Company. You'll get the scoop on the latest in innovative thinking and making it in an ever-changing business climate. The more articles you read, the more you can compare business stories. What advice contradicts? How does success in one industry differ from another industry? How do people with different strengths and personalities lead in different ways? Why do some great companies eventually fail? It's not all cut and dried, and a regular dose of business stories can keep us from swallowing trite and shallow success advice.



5. Do further research by searching terms such as "success bias," "survival bias," "survivorship bias."

CHAPTER 15

THEY DISCOVER MEANINGLESS PATTERNS

"It is necessary to know the power and the infirmity of our nature, before we can determine what reason can do in restraining the emotions, and what is beyond her power."

— Benedict de Spinoza

Would You Trade Your House for a Tulip Bulb?

Had you lived in seventeenth century Holland, you might have. The Dutch named the phenomenon *tulpenwoede*, translated "tulip fury." English speakers call it tulip mania. Some just call it crazy.

Here's the background.

The Dutch began growing tulips in 1590. The flowers and their bulbs eventually became extremely popular and prized across borders. Of course, many people bought them simply because they were beautiful, but one characteristic made them especially appealing to speculators. The cultivated bulbs they acquired from Constantinople, when planted, might change or "break" into a different variety. Yet part of the original might be retained as "streaks, feathers, or 'flames.'" Plant the baby bulbs and they hardly ever return to the original coloring. In this manner, people could develop never-before-seen versions of the tulip.

As a result, a few bulbs from a tulip deemed especially unique and beautiful might be considered the only ones of their kind and bring a great price. After all, the parent bulbs would produce new bulbs and the owner could continue to sell this rare and beautiful breed. Different types of tulips were given important names like "Admiral," "General," or "Augustus."

Much like a unique painting by a famous artist, it's difficult to assign monetary worth to a rare bulb. Neither bulbs nor paintings serve an especially valuable practical function or have great intrinsic value. After all, the Mona Lisa is just dried paint on a sheet of paper. What gives it worth is that we consider it beautiful and rare (the only one) and it is a da Vinci. Thus, its worth could be considered "whatever people are willing to pay for it." In this sense, it's much like a bulb from a tulip that's rare, beautiful, and comes from a type named "da Vinci."

With this background, here's how tulip mania broke out in the second decade of the 1600s.

Tulips became extremely popular in France, but the demand outpaced the supply, and you can't double or quadruple the supply of tulips overnight. Thus, the prices increased dramatically. At the wedding of Louis XIII tulips were said to be as valuable as diamonds. Then it got even weirder. Bulbs kept commanding ever higher prices over time until "A mill was exchanged for one tulip bulb; a brewery for another."¹

Back in Holland, feverish speculation hijacked the minds of bright people as they saw their friends getting filthy rich trading bulbs.

"By June 1636 many varieties had tripled in price and more. A comparison of prices at that time with certain bulbs sold in December 1634 shows increases from 15 guilders to 175 guilders; 40 to 350, and 800 to 2,200."²

Let's try to calculate a very rough exchange of seventeenth century guilders into today's dollars in order to comprehend the magnitude of this increase. The average skilled laborer in Holland made approximately 1563 guilders per year. In 2012 America, the average carpenter made \$39,940 per year.³ From this, let's estimate that one guilder in seventeenth century Holland was worth roughly twenty five dollars in contemporary America. This translates to one bulb selling for \$55,000 at the height of the tulip craze!

Imagine You Were There

So imagine that you lived in Holland during this time period. In June of 1636, your buddies at the pub hand you a chart from the *Amsterdam Business Weekly* indicating that tulip bulbs have tripled in value over a brief span of time.

You wisely caution: "That's way too much to pay for a flower bulb!"

They reply: "But many of these tulips are extremely rare. Far-sighted people want to cultivate them to make money in the future. After all, tulips have become the rage in France and soon it will hit other countries as well. We want to get in on the ground floor of this growth industry. You should join us!"

You reply: "I don't have enough money to invest."

They reply: "But you don't even have to invest in a whole bulb. Even the poor can invest in small portions, by weight. It's like buying a small amount of stock in a company. Besides, banks will loan you the money. Obviously they consider it a safe bet."

You thought that this was surely an economic "bubble," which would eventually burst, but you read financial experts who argued that tulips weren't overvalued at all. In fact, according to them, the increase might continue almost indefinitely, since many other countries would almost certainly catch tulip fever and want a piece of the action.

You resist for months, painfully watching your friends' bulbs increase in value month by month, so that your buddy who borrowed and invested \$1,000 (40 guilders) in June sold it for \$8,750 (350 guilders) in December. Finally, you cave in and borrow \$5,000 to invest.

Unfortunately (or in your case, *tragically*), like all economic bubbles, it burst.

In a little over a month after you bought it, your bulb would be almost worthless, and you'd be stuck making payments on the \$5,000 you borrowed. It's unclear exactly how it all unraveled historically, but it must have happened quite suddenly. On the first day of February traders were still urging people to buy and still offering eight-day guarantees against losses. Three days later it was reported that nobody wanted to purchase tulips. Your spouse now thinks you're an idiot for not investing earlier and selling out by December, reminding you of your folly every month you make a payment on that wretched \$5,000 loan.⁴

Think!

Had you lived through tulip mania, do you think you'd have invested? If so, what would have pulled you in?

- Smart economists writing that the increase in price was only just beginning?
- Seeing your friends get rich?
- Your spouse reminding you that you're the only one in your social circle who was dumb enough to miss out on the opportunity of a lifetime?
- The temptation to "get rich quick?"

Our Attraction to Economic Bubbles

Our first reaction to tulip mania might be to assume that people back then must have been really stupid. I mean, thousands of dollars for a tulip bulb? Really?

Actually, among the Europeans, the Dutch had a strong reputation for their serious character and business savvy. They were smart enough to lead Europe in commerce during that era. To protect their trade, they built a navy twice the size of the British and French fleets combined.⁵ So they can't be easily dismissed as morons. It seems to be yet another case of smart people believing nonsense. It's like some strange power takes over and deceives otherwise reasonable people.

More Flower Bubbles, and Beyond

To make matters worse, history keeps repeating itself. "Surely not!" you might object. "With that dramatic period of lunacy behind us, surely people learned to beware of economic bubbles and to nip them in the bud. Surely nobody since the original Tulip Mania would invest in a business or industry just because the charts show its going up in value—especially if it involved plants!"

But alas, it's difficult for bright minds to resist the power of perceived patterns. Less than a century later tulip mania hit Turkey, to the point that a single bulb from Persia was sold for a thousand gold pieces.⁶ A century after Holland's tulip mania, as if to commemorate that period of economic folly, the Dutch experienced a similar mania with hyacinth plants, with certain specimens selling for 4,900 guilders.⁷ The eighteenth century French experienced their own déjà vu of tulip mania with their dahlia craze. One dahlia was traded for a rare diamond. A well cultivated dahlia bed was sold for today's equivalent of \$280,000.⁸

But surely practical, down-to-earth Americans wouldn't involve themselves in such nonsense.

Unfortunately, recent history tells a much different story. To name a few bubbles:⁹

- During the 1920's **Florida land boom**, the rapid growth of Florida land values convinced wealthy investors that Florida was a paradise just waiting to be developed. A huge billboard in New York's Times Square proclaimed to frozen New York investors that "It's June in Miami." Developers feverishly built neighborhoods and even entire cities; trains couldn't carry enough supplies; and at its fever pitch the same properties were bought and sold at auction as many as ten times in a single day. Of course, the bubble eventually burst and much of the development became ghost towns.
- During the **Roaring Twenties** (1920s), the stock market seemed to grow endlessly. As we mentioned in chapter two, up until the crash, great economic thinkers were predicting a rosy economic future: "Stocks have reached what looks like a permanently high plateau." (Irving Fisher, Professor of Economics at Yale University, seven days before the crash.) "1930 will be a splendid employment year." (U.S. Department of Labor, Dec. 1929). Thus, people kept feverishly buying and selling stocks until the great stock market crash at the end of 1929, ushering in the Great Depression.
- The **technology (dot-com) bubble** of the late 1990s found investors speculating on the rise of technology companies, many of which had yet to even turn a profit. Yet, "smart" investors reasoned that the future lay in computers, harnessing the power of the Web, and virtually anything that had a ".com" attached to it. So speculators poured money into tech companies and tech mutual funds, driving the prices ever higher until it burst in 2000-2001.
- In the 2000s, we experienced the **housing boom and bust**. Although many complicated factors contributed to this crisis, a part of the bubble involved investors and individual homeowners seeing the rapid increase in real estate values, giving them the confidence to borrow beyond their means to purchase properties they felt certain would keep rapidly increasing in value. Banks lent money for builders to build way ahead of the market and to speculate on new developments in areas such as Panama City, Florida. (Déjà vu the Florida Land Boom?) When it busted, homeowners and investors found themselves owing way more than their homes were worth. Many lost their homes. Even banks faltered.

This happens so often that it's tragically amusing. One researcher found American real estate since the year 1800 becoming overpriced and speculators getting over-exuberant about every eighteen years, before it all goes bust.¹⁰

So why do we keep making the same mistakes? How can we keep from losing our shirts in the next economic bust?

Why This is Important

I hope you can see that we're not just talking about lessons for big-time investors. It involves all of us. In order to know whether to rent an apartment or buy a condo, we need to know something about where our often irrational economy currently stands. All who are saving for retirement need to know something about investments. All who are looking for jobs need to assess the job market, which is often related to booms and busts.

Also, the problem with patterns extends well beyond economics. Remember one of the reasons we mentioned that record labels rejected the Beatles? They perceived a pattern that they mistakenly thought would extend. They saw people buying records by solo performers and saw guitars as becoming less important. By extending this "pattern" into the future, they determined that the Beatles wouldn't fly. If we fail to resist our tendency to find false patterns, we'll make poor decisions as well.

How to Resist Latching onto Patterns

1. Understand how our brains can fool us.

Much study has been done on the psychology of investing. The more aware we are about how our brains work with patterns, the better we should be able to think through our decisions. Here are some tendencies we should all be aware of:

- **When our brains are stimulated twice concerning something, like a stock going up twice or more, our brains unconsciously tell us to expect it to go up again.** It's almost irresistible. We think we've discovered a pattern, even if it's a random event.¹¹
- According to investment journalist Jason Zweig, "**the neural activity of someone whose investments are making money is indistinguishable from that of someone who is high on cocaine or morphine.**"¹² Doesn't that explain a lot about tulip mania and human behavior during economic bubbles?
- **We tend to remember our wins and forget our losses.**¹³ A study of 80 investors found that 88 percent of them overestimated their returns.¹⁴

Thus, it's easy to imagine we're excellent stock pickers, when we're actually losing money. We remember the times we won money with the lottery, but fail to add up the amount we lost over time to win that money.

If we're conscious of the ways our brains fool us, we're more likely to question our brains when they're "discovering" false patterns.

2. Don't buy stuff just because it's going up in value.

Often stocks and houses and lands and guns and gold increase in value for ludicrous reasons.

"The dumbest reason in the world to buy a stock is because it's going up." – Warren Buffett¹⁵

"Your chances of selecting the top-performing [mutual] funds of the future on the basis of their returns in the past are about as high as the odds that Bigfoot and the Abominable Snowman will both show up in pink ballet slippers at your next cocktail party." – Jason Zweig¹⁶

3. Discover the longer history of the relevant subject.

During the most recent real estate bubble, a top real estate investor was asked if he thought we were in a bubble. He responded that he'd never seen a real estate bubble. What ignorance! I wonder how much he lost when the bubble burst.

When investment advisors tout certain stocks or mutual funds, showing their past five year or ten year performance, look up the longer term performance. Often you'll see a far different picture.

4. Be prepared for the rational explanations that justify investing during a bubble.

As writer Joseph Bulgatz described the tulip craze:

"A feeling had come over the country that the tulip trade would never end, that all of Europe would participate, and that all the money from it would come to the Netherlands. And indeed it is possible to see how the phenomenon seemed to have an irresistible growth, crossing class lines and national boundaries, reaching out to include ever cheaper kinds of bulbs, and always pushing prices ever upward."¹⁷

Reflect upon that. The continued growth of the tulip market seemed "irresistible." Just substitute "Florida land" or "tech stocks" for "tulip trade" in the above quote and you'll see how people justify joining in the irrational exuberance. During the tech stock bubble, experts argued that far from being a bubble, we had entered a "new economy" based upon exploiting the web, cell phones, computers and other new technology. When real estate prices begin to rise wildly, people will argue, "They're not making any more land, you know. It's got to keep going up!"

5. Understand how the power of chance inevitably produces "brilliant" winners.

One statistics professor likes to ask a student to flip a coin for a period of time and record the series of heads and tails. Then, she asks the rest of the class to *imagine* they are flipping coins and record the results. She then leaves the room, returns after a designated time, and asks the

students to turn in their records.

Amazingly, the professor can tell, looking at the papers, which paper recorded the actual coin-flipping. How? The person actually flipping the coin records longer series of heads and tails than the others would have imagined. Who would guess, for example, that there might be a series of ten heads in a row?

This is a significant insight for evaluating stock pickers and economic forecasters. Today, investors can choose from over 7,000 different mutual funds, which are combinations of stocks, bonds and cash equivalents. From our little coin flipping experiment, we can predict that, even if all the fund managers were morons, 10 percent of the funds would end up in the top 10 percent, simply because of dumb luck.

This is why wise investment strategists recommend NOT investing in a fund simply because it has the best return for the last year, or even the last ten or twenty years. It's next to impossible to know if the fund came out on top because the managers were brilliant, or because the economy cooperated with their strategy for a brief time, or because of pure luck.¹⁸

The same goes for the investment strategist who claims that he beat the market for the past decade, or predicted the last five economic downturns. Perhaps he did; but can we know that it wasn't just dumb luck? How can we know for certain that the strategy he used to predict the last market upturn or downturn will predict the next big change?

After all, *correlation doesn't always imply causation*. This can be shown by all kinds of ridiculous examples.

- Money manager David Leinweber studied various economic statistics to discover what might correlate most closely to predicting the U.S. stock market performance for the years 1981-1993. He discovered that if a person had bought a total stock market index fund based each year on the amount of butter produced each year in Bangladesh, they could have predicted the market with a 75 percent accuracy. Had he further refined his forecasting model by taking into account the total number of sheep in America and other irrelevant stats, he could have predicted returns with a 99 percent accuracy.¹⁹
- *Money* magazine editors found that companies whose stock exchange symbols had no repeating letters beat the market significantly.²⁰

My point? While butter production in Bangladesh and a company's stock market symbols may *correlate* with past stock market successes, don't assume that those ridiculous factors *caused* stocks to rise, and especially don't assume they can be used to predict the future of the market. Similarly, if a bright economist notes a historical correlation of top-performing stocks with such factors as "dividing the dividend yield by the square root of the stock price," it's typically found to have no relation whatsoever to *future* yields.²¹

6. Resist the wisdom of crowds, even crowds of experts.

Remember one of our lessons from chapter two: don't allow expert opinion to shut down your own thinking. Just because you see smart people making lots of money building houses, selling carpet, selling computers, or selling coffee, don't assume you've discovered a pattern that's the cusp of the future. It may grind to a halt tomorrow, perhaps due to some out-of-the-blue trigger, such as a war nobody saw coming, a recession in Europe, or a terrorist attack.

An acquaintance was building decks for houses during the housing boom, raking in tons of money. Had he followed the crowd, he'd have used that money to move to a nicer neighborhood, since interest rates were low and banks were eager to lend. Instead, since he never assumed the boom would last, he went against the crowd and used his extra money to pay off his modest house.

After the boom went bust, nobody wanted a new deck, so he became a mechanic. Because of his low overhead (no house payments), he was nimble enough to quickly find a niche in another industry. Those builders who overextended by borrowing themselves into nicer neighborhoods likely lost their ritzy homes during the bust.²²

7. Look more to the intrinsic value of a company than to the behavior of stocks.

When stocks in general are going up, most investors (and their friends) think they're geniuses for picking the right stocks. But as Warren Buffett says, "...you only find out who's been swimming naked when the tide goes out."²³

Rather than following the investing crowd, Buffet goes against the flow. He's bold (buying) when others are scared (selling) and scared when others are buying. Basically, he studies companies to find out which ones have the greatest intrinsic worth and potential for long-term growth. Then, he buys them when they're underpriced—when everybody else is selling.

8. Understand what you're getting into.

We've talked about overconfidence in chapter one; but applied to money management, it's especially a killer. According to Zweig, "One of the most fundamental characteristics of human nature is to think we're better than we really are."²⁴

Someone asked almost 3,000 entrepreneurs to estimate their odds of succeeding. 81 percent estimated at least a seven out of ten chance. An incredible 33 percent said there was zero percent chance of failure! Yet, when they were asked what they thought of the *typical* person starting a business in their field, they estimated that only 39 percent would succeed. This degree of overconfidence is quite astounding, which can easily lead to a lax attitude about seeing the need to master your field. Rather than humbly asking people for advice, we "have a terrible time admitting that we don't know something." Even worse, we probably have no clue how much we don't know.²⁵

So don't become intoxicated with perceived patterns and mindlessly following the crowd, like

lemmings, off the next economic cliff. Benjamin Graham's statement on investing deserves repeating:

"You're neither right nor wrong because other people agree with you. You're right because your facts are right and your reasoning is right—and that's the only thing that makes you right. And if your facts and reasoning are right, you don't have to worry about anybody else."²⁶

Think Different Sometimes Patterns are Real!

So now that you're prepared to resist all patterns, let's make things a bit more complicated. Sometimes, patterns are worth noting. You'll need wisdom to discern between real (patterns that will continue) and imagined patterns.

Moore's Law and the Computer Revolution

When Steve Wozniak built the first Apple computer, he first offered it to Hewlett-Packard, since he was working for HP and felt it was the ethical thing to do. Happily for Wozniak and his partner Steve Jobs, HP turned it down, seeing personal computers more as a toy for hobbyists.²⁷

But visionaries such as Steve Jobs and Bill Gates saw the potential of computers. At Microsoft, Gates envisioned "A computer on every desk and in every home." They saw the day when homemakers would routinely look up recipes for dinner on their computers. But why could Jobs and Gates conjure up the future when others couldn't?

I think a part of it was a pattern, discovered by Gordon Moore in 1965. Moore's Law stated that, because of the increasing number of transistors that could be placed on a computer chip, the power of computers to process information should double approximately every two years, making it less and less expensive to accomplish more and more on a computer. Although Moore's Law will inevitably slow down, it has proven true to this day.²⁸

A part of the problem in comprehending the power of Moore's Law comes from the fact that it *doubles* rather than *adds*. We have a difficult time envisioning exponential growth, since it starts so small but ends up unimaginably large.

Imagine a checkerboard with 64 squares. In the first square you drop a grain of wheat. In the second you drop two, in the third four, in the fourth eight. Do you know how many grains of wheat you'd have by the 64th square? Enough to cover the entire country of India 50 feet in grain!²⁹ That's the incredible power of repeated doublings.

Thus, rather than focusing on the limitations of the early computers, which were so pitifully slow as to be of hardly any practical use, Jobs and Gates envisioned a future where the doubling of storage capacity and speed, and corresponding lowering of prices, would quickly lead to personal computers and devices with almost unimaginable potential. Because of understanding

the power of multiplication as a part of Moore's law, they could foresee average people using computers to create graphics, watch videos, collaborate globally, do their homework, do research, and do their taxes.

The Pattern of Multiplication through Investing

Warren Buffett fully comprehended the power of multiplication in investing. He understood a pattern that was well-established and proven by math, but that few people seem to have to the capacity to grasp regarding their investments.

Money invested at ten percent interest doubles approximately every seven years. Money invested at seven percent interest doubles approximately every ten years. It's called "The Law of Tens and Sevens." Buffett could multiply money even faster by achieving rates of return far beyond ten percent.

But even doubling every seven years multiplies money in shocking ways. Invest just \$20 a week (about three dollars a day), starting at age 20, at an annual average return of ten percent interest per year (the average return of stocks for the past 80 or so years), and you'll be a millionaire in your 60s. Run the numbers on an online interest calculator. It's like magic!

So some patterns hold while others don't. The former can make us successful while the latter can fool us and break us. To tell the difference between the two, run decisions through the principles we listed above.

Flex Your Neurons! Pursuing the Point of Know Return

1. When Cherie worked at a Chicago bank, the teller next to her was robbed. Although the teller repeatedly pushed the hidden emergency button, the security officer didn't arrive at the scene until after the robber had left. The officer walked in complaining, "Will somebody please stop pushing their emergency button?" Why do you think he ignored the alert and how does it relate to this chapter?
2. It's difficult for the human mind to grasp the power of multiplication with investments. To understand the powerful pattern, Google "interest calculator" and find one that provides fields for monthly investments. To check out the "\$3 per day" or "\$20 per week" investment plan, put in an initial investment of "0", a monthly investment of \$80, an interest rate of 10 percent (the average return on stocks) and the time of investment as 48 years (the 20-year-old would have become 68). How much money would you have for retirement if you simply understood and took advantage of this pattern? (Note: We're *assuming* that the long-term pattern of stock returns will continue to hold, and that a crash won't happen late in your investment!)
3. An economist predicted the last two economic crises in America. Does this mean I should believe him in his prediction of the next economic crisis? Why or why not?
4. Do you think you would have bought extremely expensive tulip bulbs during Holland's "tulip mania"? Why or why not?
5. Are housing prices going up in your area? If so, does this make it a no brainer to invest in real estate? Why or why not?
6. Investor extraordinaire Warren Buffett says that, regarding buying stocks, he's scared when others are greedy, and greedy when others are scared. What do you think he means by this, and why has it been a good strategy for him? How does this relate to making decisions from perceived patterns?
7. How do you plan on guarding yourself from making poor decisions based upon meaningless patterns?

Making It More Personal Practical Takeaways

What are one or more ideas provoked by this chapter that you can apply to help you think more critically?

What are one or more ideas that you can apply to help you think more creatively?

What else do you want to make sure you don't forget?

Recommended Trails For the Incurably Curious and Adventurous

1. Study "Extrapolation" and see how it dovetails with this chapter.
2. For more on tulip mania, real estate bubbles, and other examples of the insanity of crowds, see Charles Mackay's 1841 classic, *Extraordinary Popular Delusions and the Madness of Crowds*, which is still often recommended by those teaching investing. More recently, Joseph Bulgatz wrote a similar, updated volume on the same topic titled *Ponzi Schemes, Invaders from Mars & More Extraordinary Popular Delusions and the Madness of Crowds* (New York: Harmony Books, 1992).
3. For psychological factors that impact our investing, including our proclivity for finding patterns, see *Your Money and Your Brain: How the New Science of Neuroeconomics Can Help Make You Rich*, by Jason Zweig (Simon & Schuster, reprint edition, 2008).
4. Google "economic bubbles in America" to see how economic ups and downs regularly occur, fooling investors and causing people to make foolish decisions in the light of perceived patterns that fail to pan out.

