Western Sun

I had to fly on a business trip shortly after the airports re-opened following 9/11. … And I was petrified.

I got to the airport early and was shocked to discover that the security wasn't nearly as rigorous as I had anticipated.

I scrutinized each of the 10 or so passengers on my plane, wondering whether any might be a terrorist.

I gripped the arms of my seat as the plane rolled down the runway and let out a sigh of relief when we didn't explode on takeoff. But then I remembered that takeoff wasn't the concern: the 9/11 terrorist attacks took place after the planes were already in the air.

It was only after we landed that I finally felt safe.

But as we taxied to the gate, I began to feel ashamed for having panicked. I knew that the odds of my plane being hijacked were extremely low, even if I had happened to be flying on the day the 9/11 hijackings took place. Only 4 planes were hijacked out of the approximately 4,500 US flights in the air that day. So even if a hijacking of the magnitude of 9/11 happened every 20 years—which it doesn't—my risk of being on a hijacked plane would be somewhere in the range of 1 millionth of 1%.

Yet I still panicked and was afraid that I was going to be killed at any moment. Why?

In his book *Thinking, Fast and Slow*, Nobel laureate Daniel Kahneman describes that there are two mental processing systems within all of us, which he calls "System 1" and "System 2". A simple way to think of this is that System 1 is your gut reaction and System 2 is your conscious thought.[1]

- System 1 operates automatically and quickly, with little or no effort
- It neglects ambiguity
- It focuses on existing evidence and ignores absent evidence
- It often substitutes an easier question for a difficult one
- It overweights low probabilities, and
- It responds more strongly to losses than to gains

[1] Thaler, Richard H. and Cass R. Sunstein, *Nudge: Improving Decisions about Health, Wealth, and Happiness*, Penguin Books, 2009, p. 21. Thaler and Sunstein further describe System 1 as the part of our brains that jumps to conclusions: it works rapidly, it is or feels instinctive, and it typically doesn't involve what we usually associate with the word *thinking*. *Id*., p. 19.

So System 1 provides quick, seemingly intuitive responses without requiring us to give the matter much thought, if any.

- When you duck if someone throws a baseball at you, or if you smile at a cute baby, you are using System 1.
- If I ask you what 1+1 equals, you know immediately that the answer is "2". That's also System 1.

In contrast, System 2 is deliberate and thoughtful, and it demands mental effort. If I ask what 87 + 39 equals, it would take most of us a moment, and a bit of a mental struggle, before we would come up with the answer (which is 126, by the way). That's System 2.

Most of the time, these two processing systems work well enough to allow us to make reasonably good decisions in our daily lives. However, the systems work differently, and that can sometimes create problems.

I started tonight's talk by sharing my story about traveling after 9/11, and how I panicked at the thought that I would be killed by a terrorist even though I knew the odds of that happening were extremely low. That internal disconnect was a result of these two mental systems reaching different conclusions. System 1 told me to panic; System 2 calculated the odds and concluded that panicking made no sense.

So why did System 1 tell me to panic? As I mentioned, System 1 focuses on existing evidence, ignoring absent evidence. It operates as if "what you see is all there is". So I didn't worry much about the possibility of a nuclear disaster or an earthquake or a world-wide pandemic. None of those possibilities was in the news. But graphic depictions of the 9/11 attacks were all over the news, so the System 1 part of my brain overestimated the probability that my flight, too, would be subject to a terrorist attack.

System 2—the thoughtful part of my brain—knew that the odds of me being killed were extremely low, but that System 2 reasoning couldn't control the panicking part of my brain that had been activated by System 1.

A number of psychologists and behavioral economists have been studying these and other quirks of our System 1 and System 2 brains. In their world, these quirks are called "heuristics." Although dozens of "heuristics" have been studied, I'm going to focus on just a few given our limited time tonight. I want to focus, in particular, on how these two systems cause us to react quite differently depending on the way factual information is presented. However, before I get to that main point of focus, I want to take two detours, both because I think you will find them

interesting and because they add some color to our understanding of how these two systems work.

Detour # 1:

Even though every person has both System 1 and System 2, the activities those systems deal with are not the same from person to person. In fact, they aren't even the same in any one person over time. I used the example earlier that if I were to ask what 1+1 equals, all of us would engage System 1 and automatically know that the answer is 2. But there was a time in our lives when we didn't automatically know that 1+1 = 2. When we were first learning math, we had to engage System 2 to answer that question. However, over time, as we became more and more expert in the question of what 1+1 equals, answering the question shifted from a System 2 to a System 1 function.

Developing expertise in any area follows this same path. In his book *Peak: Secrets from the New Science of Expertise*, Anders Ericsson describes how his research shows that experts in an area develop what he calls a "mental representation" regarding the subject matter at issue.

He uses as an example chess grandmasters, who can play dozens of games simultaneously. Ericsson says those chess experts haven't memorized the various boards. Instead, by playing thousands and thousands of hours of chess, they have developed a way to "read" a chess board where they can know, with just a glance, the positions of strength and weakness on the board and, therefore, what the next move should be. In other words, these grandmasters are able to look at a chess board and "read" it, without having to give it extended thought, in the same way that you and I know that 1+1 = 2 without having to give it much thought.[2]

The time and effort it takes to develop mental representations—to shift from System 2 to System 1 thinking—is why learning and developing expertise are difficult and why they occur in a nonlinear way.[3]

Developing expertise in any complex area—playing chess, dancing, appraising art, firefighting—doesn't involve learning just one skill. Rather, to become proficient, you have to develop

[2] Ericsson says that the chess expert has developed an effective "mental representation" regarding chess. Kahneman would say that the thousands and thousands of hours of practice have allowed the grandmaster's thinking about chess to shift from a System 2 to a System 1 function.

[3] Ericsson points out that it would seem that if we can learn a certain amount relative to any new subject matter by spending 10 hours studying, then we should be able to learn twice as much by studying for 20 hours. Yet we all know from experience that this isn't how things work. Rather, we can spend months or even years working on something, with only modest progress, only to wake up one day and things seem to "click"—there is a dramatic leap in what we are able to do or understand.

expertise in a large number of "mini skills," and you need to be at least reasonably proficient in a number of those mini skills before you can see significant progress.

Let's say a beginning golfer knows which club to use, how to hold the club, how to get into the proper stance, how to take a proper backswing, and how to swing the club forward, but she hasn't yet developed the hand/eye coordination needed to strike the ball properly. The result won't be very good.

But you have much the same result even if the skills are learned in a different order. Suppose, instead, that the budding golfer has developed good hand/eye coordination, but she doesn't know how to hold or swing the club. The result also won't be very good.

To truly become expert, you need to develop expertise in <u>all</u> of the critical "mini skills" needed. You may be developing real expertise each and every day of practice, but the results will remain pretty much the same until, one day, you finally are able to get a good mental representation—to shift from System 2 to System 1—that final skill needed to do the activity, and it will seem as if your ability to play golf increased dramatically overnight.

System 1 doesn't understand this.

Detour # 2:

System 1 is also not equipped to understand certain things that we can prove are true.

For example, in his recent book *The Psychology of Money*, Morgan Housel said that, as of the date he was writing (2019), Warren Buffet had a net worth of approximately $85 billion. How much of that $85 billion do you think Buffet made after he turned age 65? $10 billion? $20 billion? $30 billion?

Before I give you the answer, I'll ask a related question. Buffet began seriously investing when he was 10 years old. Suppose, instead, that Buffet had not started his investing career until he was 30. Further, suppose that he had decided to retire at age 60 to enjoy his well-earned fortune rather than continuing to invest until age 90.

We know intuitively that if Buffet had invested from age 30-60 rather than from age 10-90, his net worth would be less than his actual $85 billion, but how much less? What does your intuition, your System 1, tell you? 10% less? 30% less? 50% less?

So what are the answers? Due to the magic of compounding, Warren Buffet made approximately $82 billion of his $85 billion net worth after the age of 65. Yes, he made over 96% of his fortune after age 65.

And if he had started investing at age 30, rather than at age 10, and if he had retired from investing at age 60 rather than continuing into his 90s, his net worth would be 99.9% less than what it actually is. His net worth would be less than $12 million (yes, million), rather than its actual $85 billion (with a "b"), even if he had earned the exact same annual rate of return on investments.

System 1 can't make sense of things like this. Instead, System 1 creates a story that Warren Buffet is fabulously rich because he is a one-of-a kind investor, perhaps the best investor who ever lived. We hear System 1 talking and think that perhaps we should try to invest the way Buffet does. "If only we had his investment savvy," System 1 tells us, "we too would be extraordinarily rich!"

Warren Buffet is indeed a very good investor, and he has consistently earned higher than typical rates of return. But what System 1 can't understand and appreciate—even if System 2 tells us that this is the case—is that what has made Buffet breathtakingly wealthy isn't so much his investment savvy as it is his investment stamina: he started investing early and has been able to continue to invest for 8 decades. The story System 1 creates to explain Warren Buffet's success captures only a small part of what has actually made him the incredibly wealthy man he is.

Ok, I'm done with the detours.

So let me turn now to a few thoughts about the main point I want to make tonight: how these quirks in how System 1 and System 2 operate cause us to react quite differently depending on the way factual information is presented.

I want to be cautious with what I say next, because I know emotions can run high about this topic. But I actually think it is worth discussing in this System 1/System 2 context BECAUSE emotions run high. So I will take the risk of briefly discussing the presentation of information pertaining to the pandemic and Covid-19.

I want to start by sharing a few basic facts devoid of any commentary—a "just the facts, ma'am" presentation—based on data from the CDC's website. Because I had to pick a date of some sort, I decided to use data as of the one-year anniversary of the pandemic (March 2021). But the same general points would apply regardless of the date used.

- According to the CDC, during the 1st year of the pandemic, there were approximately 510,000 deaths in the US involving Covid.

- Of those, approximately 410,000 were people age 65 and over.

- The US population was approximately 328 million during that same period.

- The US population age 65 and over during that period was approximately 54 million.

- Approximately 6% of the deaths listed Covid as the only cause of death. The remaining 94% of deaths listed one or more co-morbidities, with each death certificate listing, on average, approximately 4 causes of death in addition to Covid.

Let me read two hypothetical statements that are based on that factual information:

- *Statement # 1*: In the first year of the pandemic, more than half a million Americans lost their lives to this horrific disease. People like Gary Young, age 66, a customer service representative from Gilroy, California, who died on March 17, 2020. The last time his daughter saw Gary awake was through glass at a hospital, where they waved at each other and did the "I love you" sign. And more are dying each and every day. Many of those who died, died alone, gasping for air while their loved ones could only watch in horror from afar, on a phone. We must do whatever we need to do, even if it means shutting down the economy, to stop this dreadful, awful disease from taking even more lives!

- *Statement # 2*: Despite what you might hear elsewhere, an American's odds of dying of this flu-like virus are less than 2/10s of 1%. For the 274 million Americans who are under age 65—in other words, for approximately 85% of the US population—the odds of dying of Covid if you don't have any co-morbidities are approximately 2/1,000ths of 1%. Given these odds, it makes absolutely no sense to shut down our economy. The shut downs have destroyed hundreds of thousands of businesses, businesses such as The Awesome Playground in Highland Park, California, a children's play destination and birthday venue that owner Kay Osorio sank her entire life's savings into. We must stop these draconian and unnecessary shutdowns that have left people like Kay economically ruined!

I invented these statements (although not the stories of Gary Young and Kay Osorio—those are real), but if I were to ask you to attribute one of the statements to Fox News and the other to CNN or MSNBC, my guess is we would all be in agreement as to which statement would be more likely to have been made by which media outlet.

The statements lead to very different responses because of how they trigger System 1. As noted above, System 1 focuses on existing evidence and ignores absent evidence. It neglects ambiguity. And it responds more strongly to losses than to gains. Both of my hypothetical statements take advantage of these properties of System 1.

For example, in Statement # 1, the evidence provided is that a large number of Americans have died and are dying—but that information is not put into context by providing any sense of what percentage of the population is impacted—whereas Statement # 2 does the opposite. As another example, Statement # 1 ignores the impact co-morbidities have on causing death whereas Statement # 2 ignores the economic impact the disease itself has, regardless of any shutdowns.

So are both statements "true"? Both are factually accurate. However, the same core facts are being used—I would argue, are being manipulated—to tell very different stories. What does "truth" mean in this context? Is someone telling the "truth" if his facts are correct but if the presentation of those facts is slanted for the purpose of triggering a particular response?

Regardless of how you answer those questions, I can almost imagine each side sanctimoniously preaching that it is the sole purveyor of truth and that it is appalled by the "lies" being uttered by those awful people on the other side.

I think we've always known, intuitively, that how information is presented matters. What is different now is that the scientific studies into our System 1/System 2 brains have increased our understanding of such tactics and have sharpened the ability of people to use them.

Obviously, there are a number of wonderful things about this: for example, we have a much better understanding of how our brains work than we did before, we have a better understanding of how to properly train to become an expert, etc. Work in this area is also behind such beneficial things as the decision of many companies to automatically include an employee in a retirement plan unless the employee affirmatively opts out, rather than to require the employee to affirmatively opt into the plan.[4]

But there is dark side to this too, or at least potentially a dark side, since this expertise can also be used not to provide balanced, accurate information, or to nudge people into making good public policy choices, but to mislead, and to corrupt and control decision making.

I am particularly concerned with the impact of such a use in a world where we increasingly find ourselves in echo chambers—where we watch only MSNBC or only Fox News, for example—

[4] *See* Thaler, Richard H. and Cass R. Sunstein, *Nudge: Improving Decisions about Health, Wealth, and Happiness*, Penguin Books, 2009.

without hearing rival thoughts and ideas. Media outlets have become particularly good at triggering System 1 reactions.

I am also quite concerned about the coming of so-called "deep fakes"—audio or video that is fake but that is made to look or sound real—that can activate System 1 in a way that System 2 can't completely shake off. Preliminary findings, for example, are that if we see a deep fake of a political figure snorting cocaine or using the N-word, the System 1 part of our brains will remember that image or sound and believe it to be true even if the System 2 part of our brains knows that it isn't, much like the System 1 part of my brain caused me to panic on that early flight even though the System 2 part of my brain knew that I had no reason to do so.

And what if we aren't sure whether the image or sound is true? If we think the realm of conspiracy theories is problematic now, just imagine how things could spin out of control when there are images or sounds that support the supposed theory and that System 1 tells us are true. For example, suppose QAnon supporters started circulating among themselves a realistic-looking, supposedly surreptitiously-obtained, video of Hillary Clinton dismembering a baby and drinking its blood.

The scientists and economists who have studied how System 1 and System 2 operate say that even THEY can't shut off the operation of System 1 in their own brains. If they can't do it, how do we stand a chance? In *Thinking, Fast and Slow*, Kahneman writes:

> "The way to block errors that originate in System 1 is simple in principle: recognize the signs that you are in a cognitive minefield, slow down, and ask for reinforcement from System 2. … Unfortunately, this sensible procedure is least likely to be applied when it is needed most. …. The voice of reason may be much fainter than the loud and clear voice of an erroneous intuition, and questioning your intuitions is unpleasant when you face the stress of a big decision. … The upshot is that it is much easier to identify a minefield when you observe others wandering into it than when you are about to do so."[5]

So what should we do? A few thoughts.

- The initial step is just to be aware of the fact that a part of our brain jumps to conclusions and that we have to expend time and mental effort to engage the thoughtful part of our brains to provide counterbalance.
- Second, we can try to train ourselves to seek information that isn't included in the presentation. For example, when numbers are given, what's the context, what's the percentage? When percentages are given, what are the raw numbers?
- We can also put processes or procedures in place that act as controls over System 1.

[5] Kahneman, p. 417.

    - For example, many in the investment world believe that it is best to look at your investment portfolio infrequently, perhaps even only once a year, to reduce the chance that you will panic, or become overly excited, by day-to-day fluctuations and make a hasty, poor decision.
    - In his book *Fooled by Randomness*, Nassim Taleb goes even further, arguing that we should never (or only rarely) watch the news. He said that the news focuses primarily on the inconsequential day-to-day and that, by watching the news, we can get caught up too easily in things that don't matter. Taleb says that anything significant will make its way to us even if we never watch the news or read a newspaper.
- Another important suggestion is to not make any major decision without discussing it with someone else first. As the quote I read points out, it's easier to identify a cognitive minefield when you observe others wandering into it than when you are about to do so yourself. Asking for help also requires us to slow down and to engage System 2 by forcing us to describe the decision facing us, what we are thinking of doing, and why.
- And, finally, it's important to remember that we are human, that the System 1/System 2 quirks are part of who we are. Therefore, we need to forgive ourselves when we forget to engage System 2 and make an intuitive, gut-based and ultimately boneheaded decision driven by System 1 thinking. After all, if it can happen to a Nobel laureate who's an expert in the field, it can certainly happen to us.

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"So," you might ask, "this is all well and good, but what does any of it have to do with the title of your paper, *Western Sun*?"

I'll close with an anecdote.

When I was a young pup, I was privileged to serve as the deputy insurance commissioner for Ohio, serving under George Fabe. George would periodically meet with the editorial boards of the largest Ohio newspapers. He believed doing so led to better news coverage for the Department since he could develop a rapport with the editors and show that he was willing to answer whatever questions they had, no matter how difficult.

Filling me in after one of those meetings, George laughed and told me a story. He said that, when they had been underway for a half hour or so, a secretary interrupted the meeting, saying there was a call for the editor. The editor took the call, listened intently for 30 seconds, said "Western sun" very firmly, and then hung up the phone. George asked what that was about.

The editor said that it was a call from one of the newspaper's photographers, who had been assigned the task of taking a series of photographs of someone who was running for State Senate. The photographer didn't know the editor's views toward the candidate and called to ask. He phrased his question as follows: "Do you want me to take pictures of him gazing into the Western sun, or pictures of him picking his nose?"

Of course, in either instance, it would be the same photographer and the same person being photographed. At some level, either set of photographs would be "true." But the two sets of photographs would certainly tell very different stories.

So as you watch the news, or listen to someone make a political pitch, or go about making an important decision, I hope tonight's talk will prompt you to take the time to reflect a little more than you otherwise might. Perhaps it will even prompt you to question whether what is coming your way is of the "gazing into the Western sun" variety or of the "picking his nose" variety.

If, in those important moments, we can even just be aware that the brain operates in this System 1/System 2 way and that we might be entering a cognitive minefield due to System 1 thinking, we will have taken a significant step toward making better decisions and enhancing our lives.

--Neil K. Rector, 2021