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Thinking, Fast and Slow

Review by Tyson Mohr

As a reader of this newsletter, you've almost certainly heard of Daniel Kahneman's *Thinking, Fast and Slow*. You might have even picked up a copy for yourself, only to realize that this 500-page tome is not as much a book as a lifestyle choice. The depth and breadth of the content make a comparative summary challenging. Instead, I will share the experiments and conclusions that I found particularly compelling. (I will also include technical terms in parenthesis to facilitate further research if the topic interests you.) These examples will give you a sense of the content of the book, and hopefully encourage you to investigate further. The summary is divided into five parts, which align with the parts of the book.

Two housekeeping items:

I wrote this summary in second person in response to research (explained in the book) showing that information about people's behavior in general does not typically change your perception of how individual people will act. (See the "Helping Experiment" for an example.) The information is therefore framed as surprising facts about the reader, not surprising facts about all of us as humans. I certainly consider myself just as susceptible to these results as anyone else.

Also, I will often ask you to consider your intuitions about certain topics. Actuaries are trained to identify and apply techniques to avoid some of the pitfalls described. You will have more fun if you take off your actuary hat and consider how you engage in everyday life.

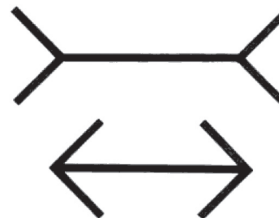
Part 1: Two Systems

The title of the book refers to the theory that mental activities can be roughly separated into two "Systems." System 1 thinks fast, with little or no effort, and sometimes without awareness. System 2 thinks slow, allocating attention to effortful mental activities. System 2 is also lazy—it only wants to think as little as possible to solve a problem. System 1 is constantly forming beliefs and conclusions, and

System 2 does not usually challenge System 1 without deliberate effort. Here are some examples of the activities of each system.

System 1	System 2
Make a disgusted face when shown a horrible picture	Describe how to make a disgusted face
Recognize that someone has an angry expression	Monitor the appropriateness of your behavior in social situations
Answer $2 \times 2 = ?$	Answer $17 \times 24 = ?$

In the Muller-Lyer Illusion, shown below, you cannot help but perceive the top line as longer, even after you measure it. Cognitive illusions, mental processes which are predictably biased, persist in the same way. We are wise to learn to identify visual and cognitive illusions so we can employ methods to overcome them. (Cognitive Illusions)



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If you like someone's politics, you probably also like their appearance as well. Evidence of positive characteristics make you inclined to view all characteristics favorably, and vice versa. (Halo Effect)

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"Michelle is intelligent and strong. Will she be a good leader?" You probably think she is, since the stated qualities are desirable. But what if she is also manipulative and cruel? We make judgments based on available evidence without feeling a need to seek out more detail. (What You See Is All There Is)

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Repeated statements become increasingly more believable and likeable. Repeated statements become increasingly more believable and likeable. (Mere Exposure Effect)

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The answer to “How happy are you with your life?” is strongly influenced by how happy you are at that particular moment. When asked a hard question, you sometimes answer an easier question without even knowing it, like “How happy am I now?” (Substitution)

Part 2: Heuristics and Biases

Kahneman was particularly interested in the degree to which people do or do not (mostly do not) have an intuitive understanding of probability and statistics. He identified numerous consistent flaws in reasoning (Biases) and problem-solving approaches (Heuristics).

The lowest concentrations of cancer are in rural states. You can easily construct a causal story to explain this (e.g., cleaner environment). However, the highest concentrations of cancer are also in rural states. You can again come up with a causal story (e.g., poor access to health care). Both cannot be true. The real story is that there are fewer people in rural states, and outliers are more likely when a sample set is small. (Law of Small Numbers)

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Two groups of people were asked how old Gandhi was when he died. But before they were asked to guess, Group A was first asked if he was over 114, while Group B was asked if he was under 35. Group A guessed considerably higher than Group B. Even though the initial numbers were transparently unreasonable, they nevertheless influenced the guesses. If you think those marked down prices on the sale rack don't impact your purchasing decisions, think again. (Anchors)

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Earthquake insurance purchases increase after earthquakes. This is because when asked about probability, you actually assess how easy it is to think of specific instances. The prob-

lem is that things other than frequency determine how easy it is to recall instances, such as media coverage or personal experience. (Availability Heuristic)

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Google the “Linda Problem.” You will probably share the intuition that Linda is more likely to be a feminist bank teller than just a bank teller. This is impossible since the former is a subset of the latter. Your intuition is due to the fact that more detailed descriptions often seem intuitively more likely. (Less is More)

Part 3: Overconfidence

The test of an explanation is whether it makes events predictable in advance, not whether it can explain past events. Prediction error is inevitable because the world is unpredictable. Short-term trends can be forecasted and behaviors can be predicted from the past, but a success rate of 20 percent is excellent. There is no harm in attempting forecasts, but it is dangerous to be overly confident in them.

There is great demand for two genres of business writing: the history of the rise/fall of a company, and an analysis of differences in successful and unsuccessful companies. After the books are written, most of the chronicled successful companies perform worse. These stories typically ignore the role of luck, which is involved in most great successes. It's difficult to develop skill at creating successful companies because one can only make a small number of attempts in one's lifetime, and the reason for failure or success is often not apparent. (Narrative Fallacy)

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When you buy a stock, who sells it, and why? Both sides have an illusion that they have better information, even though the evidence clearly shows that the performance of the most active traders is no better than random. Yet investors feel as if they are exercising skill, and when evidence conflicts with personal experience, the evidence is ignored. Remember: unless there's specific evidence that you're not average, you most likely are. (Illusory Skill)

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Seasoned surgeons have extremely accurate, almost magical, intuitions about when a patient is at risk during a surgery. However, their ability to forecast recovery time is no better than random guessing. What is the difference? The fact that surgery has the following characteristics which allow for the development of skilled intuition, whereas long-term forecasting does not:

- A somewhat predictable environment
- Regular feedback on success/failure
- The opportunity to learn regularities through prolonged practice (about 10,000 hours, or five years of 40 hours/week)

(Low-Validity Environment)

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Kahneman planned to complete a project in 2 years. His plans were unaffected by information that in similar projects only 40 percent succeeded and those who did took 7 to 10 years. His project ultimately failed after 8 years. When you plan, you prefer to see yourself as a special case (Inside View) instead of part of a reference class (Outside View). You also tend to prefer best-case to realistic assessments (Optimism Bias) and to keep investing in lost causes to avoid admitting failure (Sunk Cost Fallacy).

Part 4: Choices

This part deals with Kahneman's contributions to the field of Decision Science. This research made him one of the founders of Behavioral Economics and won him the Nobel Prize in Economics.

Today, Jack and Jill each have wealth of \$5 million. Yesterday, Jack had \$1 million and Jill had \$9 million. Are they equally happy? Of course not—Jack is ecstatic and Jill is distraught. The absolute value of wealth does not determine your happiness as much as your change in wealth from your previous reference point. (Reference Points)

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Consider each of the choices below independently.

1. You are given \$1000. Choose to get \$500 for sure or 50 percent chance to get \$1,000.
2. You are given \$2000. Choose to lose \$500 for sure or 50 percent chance to lose \$1,000.

You probably prefer the sure thing in Choice 1, but prefer the gamble in Choice 2. You tend to be risk averse when facing two gains and risk accepting when facing two losses. Yet the choices are mathematically identical. The sizes of initial gifts aren't appropriately taken into account by our intuitions. They become reference points, and as such are treated as valueless. (Prospect Theory)

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Participants were given one of two gifts of approximately equal value (a pen or a chocolate bar) and asked to fill out a questionnaire. After they completed the questionnaire, they were asked if they wanted to trade their gift for the opposite one. Only about 10 percent switched. Ownership has intrinsic value. (Endowment Effect)

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"Mr. Brown almost never picks up hitchhikers. Mr. Smith frequently does. Today both of them picked up hitchhikers and were robbed. Who will experience greater regret? Who will be criticized more severely?" You are likely inclined to believe that Mr. Brown will experience more regret, yet Mr. Smith is more blameworthy. Regret comes from taking a specific action out of character. Social blame comes from acting out of the norm. (Hindsight Bias)

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For a certain health insurance plan, smokers pay 20 percent more than non-smokers. Should this be explained as a surcharge on the smokers or a discount for non-smokers? The psychological difference between these two framings is significant. Richard Thaler and Cass Sunstein's book *Nudge* dives into the practical applications of these types of considerations, as well as many other parts of Kahneman's work. (Framing)

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Part 5: Two Selves

- Would you go on a vacation if you knew your memory and all evidence of it would be erased?
- Would you prefer a drug that dulled the pain 50 percent throughout a painful surgery, or one that merely caused you to forget that the pain occurred?

Separate from the two Systems are two Selves: the Experiencing Self and the Remembering Self. The former has sensations in the current moment, while the latter accesses and reflects upon those experiences. Kahneman studied situations in which the interests of these Selves were put at odds with each other. In most cases the Remembering Self's interests trump the Experiencing Self's. You strive to maximize memories of experiences, not actual experiences.

You must place your hand in uncomfortably cold water for a period of time. Which of the following do you prefer?

- A. 60 seconds at 14° (Celsius)
- B. 60 seconds at 14° and 30 seconds at 15°

Although B is clearly worse, you should choose B, since the slightly warmer water at the end will lead you to have a more favorable memory of B. (Peak End Rule, Duration Neglect)



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Does money buy happiness? Research shows that being poor makes you miserable, but being rich does not on average improve well-being. The most influential factors for happiness include how often you spend doing activities you would rather continue (Flow) and how much time you spend with people you love. (Experienced Well-Being)

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What proportion of a day do paraplegics spend in a bad mood? You're inclined to say a fairly large percentage, but there is actually no difference from the general population. Paraplegics become less happy when they focus on their condition, but for most of their life they adapt and have positive and negative experiences just like anyone else. (Focusing Illusion)

CONCLUSION

A summary can hardly do the book justice, but I hope this has inspired you to read more. *Thinking, Fast and Slow* is influential, entertaining, and potentially life-changing. ▼