Daniel Kahneman, Thinking, Fast and Slow. New York: Farrar, Straus and Giroux, 499 pages.

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Have you ever hired an employee who made a great first impression but did not have a very strong resume, only to regret your decision months later when, consistent with their weaker resume, they underperformed on the job? Have you been a part of a "status quo" organization that lost its competitive advantage because executives were more concerned with short-run earnings stability in their particular units and therefore avoided taking risks that could have led to long-term earnings growth? Have you ever observed an investor selling well-performing stocks to lock-in gains while holding onto underperforming investments because they simply did not want to incur a loss? Understanding why people make these and many other wrong-headed decisions is the topic of Thinking, Fast and Slow, a recently published book by cognitive psychologist and Nobel Laureate Daniel Kahneman.

Kahneman has for many years been regarded as one of the leading academic researchers on the subjects of behavioral economics, judgment and decision-making and hedonic psychology. His work provides a cognitive basis for understanding human judgment and decision-making errors. In Thinking, Fast and Slow, Kahneman takes a conversational approach to discuss recent developments in cognitive and social psychology which help explain how the mind works and why certain judgment and decision-making errors commonly occur. Thinking "fast" occurs when one relies on what psychologists refer to as "system 1", a mode of thinking that occurs automatically and very quickly, and is associated with intuition, for example. Thinking "slow" happens when one relies on "system 2", a more effortful way of thinking that requires focused attention. Sensing hostility in a co-worker's voice is a system 1 activity; determining what is the right course of action in response to hostility expressed in the workplace is a system 2 activity.

Using the system 1/system 2 framework, Kahneman provides example after example of how people really make decisions, including common errors of judgment and choice that occur because they fail to use or use adequately the more effortful system 2. Reading the book requires a fair amount of system 2 thinking, but the insights gained will prove worth the effort. After reading it, I am better able to see these errors in my own thinking and in others'.

The book is not short, consisting of 38 chapters, a conclusion, an introduction, plus two optional appendices, both of which can be avoided without losing an understanding of the rest of the readings. The introduction frames the rest of the book, and is worth re-reading after completing it to help re-connect the book's five parts.

In Part 1, "Two Systems", Kahneman explains in some detail how system 1 and system 2 thinking works. One of the more interesting discussions in Part 1 involves an explanation of why people tend to believe frequently repeated statements just because they become "familiar", regardless of whether they are true, and why they often do not search for additional information to critically challenge familiar statements.

Part 2, "Heuristics and Biases" concern judgment heuristics, or simple rules that purportedly help explain how people make judgments, and cognitive biases, or broadly speaking, thought

patterns that result in irrational decisions. He considers how these rules apply to statistics, a discipline that requires one to think about many different issues at once. The statistical issues he addresses are lower-level concerns and easily accessible to most whom have a baseline familiarity with statistical thinking through, say, an introductory high school or college statistics course. While this part includes a host of interesting insights, one of the more relevant discussions to managers concerns how numbers are used as "anchors" in decision-making. Once a person has a set figure associated with a particular item (e.g. a wage earned at a previous job), they are reluctant to move away from that figure, and will usually only do so if they expect a worthwhile gain in income at their next employment opportunity. Furthermore, this increase in income should not come with a reduction in, say, benefits or leisure time because employees are reluctant to give up what they have had before, viewing it as a loss. Never mind that they may face a very tough labor market, and absent a job, be forced to spend down at least part of their savings.

"Overconfidence", specifically the tendency to overestimate what we know about the world around us and underestimate the significant role that chance plays in determining many events, is the subject of Part 3. Whether a new business or product succeeds or fails, and whether earnings increase or fall are two examples where chance plays a significant role in determining outcomes. Yet many will attribute favorable outcomes exclusively to entrepreneurial or marketing savvy in the first instance, or outstanding leadership and management in the second. Read this book and you will understand why such attributions are often wrong, but common.

Part 4, "Choices", may be the most academic section of the book, focusing on the rationality assumption favored by economists and unfortunately presented as a legitimate assumption in many basic economics courses. Kahneman reviews strong and clear evidence showing that this assumption is simply wrong – that time after time, humans deviate from rational choices because they rely too much on system 1thinking and not enough on system 2. The gap between what a consumer will pay to acquire an item (e.g. buy a toaster), versus what they must be compensated to sell the same item (it's higher almost always) presents one example of irrational decision-making. If a toaster was worth $20 when you bought it, and nothing has changed except now you own it, why do you need to be compensated more than $20 to give it up? Yet study after study involving a wide array of items shows that such is quite often the case. Human preferences are not logically consistent, and if you doubt this fact, read Part 4.

The fifth and final part of the book, "Two Selves", sets forth the "remembering self" and the "experiencing self". Memory formation occurs automatically, thanks to system 1, and does not capture the full range of experience, placing undue weight on its peak and its end. The remembering self makes disparaging comments about a previous employer who laid them off due to economic hardship, even though the employee's experience with the employer was otherwise very favorable. The experiencing self, in comparison, makes choices considering the experience up until now. Recent research shows that people rely more on the remembering self than the experiencing self when deciding whether to repeat an experience. An upshot is that companies need to pay particular attention to how experiences end, whether it is a consumer purchasing one of their products, a CEO making a presentation to investors, or a team meeting to discuss process improvements in an organization. Strong endings overly influence the creation of good memories, while weak endings can prove disproportionately damaging when attempting to re-engage one's constituents moving forward.

If you want a "how to get rich quick using a few simply rules" book, this is not your pick. If, instead, you are fascinated by the fact that a 401(k) plan that requires employees to opt out will attract far more participants than one that requires them to opt in, or that many U.S. citizens will

list fear of flying as one of their leading fears even though they are far more likely to die in a car accident, then this is a book for you. While the book emphasizes behavioral research, its applications certainly should influence the more quantitatively oriented business fields, including economics (e.g. foundational assumptions), finance (e.g. investing behaviors, savings behaviors, the limits of income in creating additional happiness), business statistics (e.g. sampling, probabilities and decision weights), and accounting (e.g. motivation for committing fraud, differences of opinion regarding valuations, and audit sampling practices) . The book is best-suited for those able to grapple with the complexities of human behavior, both in theory and in practice.