Thinking, Fast and Slow

Daniel Kahneman, (New York: Farrar, Straus and Giroux, 2011), 418 pp.

Reviewed by Frank J. Babetski

Few books are "must reads" for intelligence officers. Fewer still are "must reads" that mention Intelligence Community functions or the CIA only once, and then only in passing. Daniel Kahneman has written one of these rare books. *Thinking, Fast and Slow* represents an elegant summation of a lifetime of research in which Kahneman, Princeton University Professor Emeritus of Psychology and Public Affairs, and his late collaborator, Amos Tversky, changed the way psychologists think about thinking. Kahneman, who won the 2002 Nobel Prize in Economics for his work with Tversky on prospect theory, also highlights the best work of other researchers throughout the book. *Thinking, Fast and Slow* introduces no revolutionary new material, but it is a masterpiece because of the way Kahneman weaves existing research together.

Expert intelligence officers at CIA, an agency with the "human intelligence" mission at its core, have come through experience and practice to understand and exploit the human cognitive processes of which Kahneman writes. These expert officers will have many moments of recognition in reading this book, which gives an empirical underpinning for much of their hard-won wisdom.

Kahneman also may challenge some strongly held beliefs. *Thinking, Fast and Slow* gives experts and newer officers, regardless of the intelligence agency in which they serve, an enormously useful cognitive framework upon which to hang their experiences.

The title of the book refers to what Kahneman, adapting a device that other researchers originally proposed, calls the "two systems" of the human mind. System 1, or fast thinking, operates automatically and quickly with little or no effort and no sense of voluntary control. Most System 1 skills—such as detecting the relative distances of objects, orienting to a sudden sound, or detecting hostility in a voice—are innate and are found in other animals. Some fast and automatic System 1 skills can be acquired through prolonged practice, such as reading and understanding nuances of social situations. Experts in a field can even use System 1 to quickly, effortlessly, and accurately retrieve stored experience to make complex judgments. A chess master quickly finding strong moves and a quarterback changing a play sent to him from the sideline when he recognizes a defensive weakness are examples of acquired System 1 thinking.

System 2, or slow thinking, allocates attention to the mental activities that demand effort, such as complex computations and conscious, reasoned choices about what to think and what to do. System 2 requires most of us to "pay attention" to do things such as drive on an unfamiliar road during a snowstorm, calculate the product of 17x24, schedule transportation for a teenage daughter's activities, or understand a complex logical argument.

Kahneman focuses much of the book on the interactions of System 1 and System 2 and the problems inherent in those interactions. Both systems are "on" when we are awake. System 1 runs automatically and effortlessly but

System 2 idles, because using it requires effort and is tiring. System 1 generates impressions and feelings, which become the source of System 2's explicit beliefs and deliberate choices. System 1, when it encounters something it cannot quickly understand and did not expect (in other words, a surprise), enlists System 2 to make sense of the anomaly. The alerted System 2 takes charge, overriding System 1's automatic reactions. System 2 always has the last word when it chooses to assert it.

The systems operate to minimize effort and maximize performance and are the result of hundreds of thousands of years of human evolution in our environment. They work extremely well, usually. System 1 performs well at making accurate models and predictions in familiar environments. System 1 has two significant weaknesses: it is prone to make systemic errors in specified situations—these are "biases"—and it cannot be turned off. System 2 can, with effort, overrule these biases if it recognizes them. Unfortunately, System 2 is demonstrably very poor at recognizing one's own biased thinking. Trying to engage System 2 at all times to prevent System 1 errors is impractical and exhausting.

In terms of Kahneman's construct, a significant part of the missions of intelligence agencies boils down to seizing opportunities presented by the flawed interactions of the System 1 and System 2 thinking of foreign actors while at the same time recognizing and mitigating the flaws of their own System 1 and System 2 interactions. Hostile services and organizations try to do the same thing in return. Operations officers rely on the biases of foreign counterintelligence officers, essentially advising assets to avoid exciting any System 2 thinking in people positioned to do them harm. Aldrich Ames's Soviet handlers preferred that we not focus System 2 thought on how he bought a Jaguar on a GS-14 paycheck—System 1 found a tale about his wife's inheritance cognitively easy to accept.[a]

A target's biases put the "plausible" in plausible deniability during covert actions. Effective deceptions also fundamentally rely on a target's unchallenged biases and so make it easy for the target to believe what they already are predisposed to believe. Effective fabricators, especially those with tantalizing access, rely on our biased desire to believe them. One or two plausible reports from such a person may be enough to engage the exaggerated emotional coherence or halo effect. Roughly put, once lazy System 2 is satisfied, it tends to defer to System 1, which in turn projects positive qualities in one area into a generalized positive assessment.

Terrorists rely on these biases, but they are also vulnerable to them. Terrorism works because it provides extremely vivid images of death and destruction, which constant media attention magnifies. These images are immediately available to a target's System 1. System 2, even when armed with reliable statistics on the rarity of any type of terrorist event, cannot overcome System 1's associative reaction to specific events. If you are a CIA officer who was working in Langley on 25 January 1993, then chances are that you cannot make the left turn into the compound from Dolley Madison Boulevard without thinking of Aimal Kasi, the Pakistani who killed two CIA officers and wounded three others at that intersection that day.

The 9/11 hijackers on the first three planes could count on passengers to stay seated, relying on their ability to quickly remember accounts of previous hijackings in which the hijackers were motivated to survive—this is what Kahneman calls the availability bias. However, because of their success at the World Trade Center and the Pentagon, the terrorists unwittingly and immediately rendered hijacking a less effective tactic. The passengers on Flight 93, quickly armed with knowledge of the other three flights, were able to engage System 2 to overcome System 1's existing avail-

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[a] If you think that you certainly would have known Ames was a Soviet spy had you known of his Jaguar, then you are probably guilty of hindsight bias, or the tendency to underestimate the extent to which you were surprised by past events. On the other hand, you are not guilty of hindsight bias if you think this (before having read about Ames) and have ever reported a colleague to counterintelligence for owning a Jaguar.

ability bias and make the decision to physically overpower the terrorists.

Kahneman's insights pertain to the entire spectrum of intelligence operations. We accept information security practices that demonstrably impede productivity in order to reduce the danger of worse losses posed by cyberattack or penetration. At the same time, we would almost certainly consider the same amount of lost productivity a major defeat if a hacker had inflicted it on us. This is what Kahneman calls the loss aversion bias. System 2 does not assert control over System 1's cognitive ease at imagining a disaster because increased productivity is much more difficult for System 2 to imagine.

Any intelligence officer making budget decisions should read Kahneman's thoughts on the biases underlying the sunk-cost fallacy, or the decision to invest additional resources in losing endeavors when better investments are available. People find it difficult to engage System 2 to cut their losses in such situations, especially when System 1 can easily convince them of the loss of prestige that would surely follow. How often does the same officer who started an expensive major project also decide to kill it? You likely did not have to engage System 2 to answer the question.

Likewise, none of us are immune to what Kahneman calls the planning fallacy, which describes plans and forecasts that are unrealistically close to best-case scenarios and could be improved by consulting statistics in similar cases. This review, for example, took twice as long to write as I thought it would, just like almost every other paper I have ever written.

Intelligence analysts should pay particularly close attention to Kahneman's chapters on the nested problems of prediction, intuition, and expertise.[a] Forecasting and prediction are core mission elements for analysts. Kahneman breaks them down into two main varieties. The first, such as those engineers make, rely on

look-up tables, precise calculations, and explicit analyses of outcomes observed on similar occasions. This is the approach an analyst uses to predict the amount of explosive force needed to penetrate a certain thickness of concrete, or calculate how much fuel a certain type of airplane needs to complete a certain type of mission.

Other forecasts and predictions involve intuition and System 1 thinking. Kahneman further breaks down this variety of prediction into two subvarieties. The first draws on the skills and expertise acquired by repeated experience, in which a solution to the current problem comes quickly to mind because System 1 accurately recognizes familiar cues. The second subvariety of intuitive prediction, which is often indistinguishable from the first, is based on biased judgments. This type of intuitive prediction, typically forwarded with considerable confidence, very often leads to trouble. The expanded use in intelligence analysis of structured analytic techniques and approaches adopted in the wake of the 9/11 attacks and the National Intelligence Estimate on Iraqi weapons of mass destruction represents in part an effort to eliminate this latter type of prediction.

The trick is in using structured techniques and approaches—or applied System 2 thinking—in a way that eliminates biased intuitive forecasts and predictions without also discouraging, delaying, or even eliminating the intuitive insights that true expertise provides. This dilemma probably explains in part why some experts in the CIA's Senior Analytic Service remain ambivalent about structured analytic techniques and approaches.

Kahneman, despite his stated preference for statistics and algorithms, cannot dismiss out of hand the value of intuitive prediction borne of true expertise. His "Expert Intuition: When Can We Trust It?" chapter centers on what he calls his adversarial collaboration with Gary Klein, a leading proponent of Naturalistic Deci-

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[a] Many intelligence analysts are familiar with some of these theories from Richards J. Heuer, Jr.'s *Psychology of Intelligence Analysis* (Washington, DC: Center for the Study of Intelligence, 1999), which is based in part on earlier versions of Kahneman's and Tversky's work. This publication is available online at https://www.cia.gov/library/center-for-the-study-of-intelligence/csi-publications/books-and-monographs/psychology-of-intelligence-analysis/index.html.

sion Making, who rejects Kahneman's emphasis on biases and focuses instead on the value of expert intuition and on how intuitive skills develop. It is not difficult to imagine that their collaboration was more difficult than Kahneman generously portrays it to have been, which makes the areas on which they were able to agree even more noteworthy.

They agreed that the confidence that experts express in their intuitive judgments is not a reliable guide to their validity. They further agreed that two basic conditions must be present before intuitive judgments reflect true expertise: an environment that is sufficiently regular to be predictable and an opportunity to learn these regularities through prolonged practice. An expert firefighter's sensing the need to order his men to evacuate a burning building just before it collapses or a race driver's knowing to slow down well before the massive accident comes into view are due to highly valid clues that each expert's System 1 has learned to use, even if System 2 has not learned to name them.

Learning, in turn, relies on receiving timely and unambiguous feedback. Many if not most of the issues with which intelligence analysts are seized are what Kahneman and Klein would probably call "low-validity" environments, in which the intuitive predictions of experts should not be trusted at face value, irrespective of the confidence with which they are stated. Moreover, they would probably consider the feedback available to analysts—from policymakers and events—inadequate for efficient learning and expertise development. Kahneman was not referring specifically to intelligence analysts when he wrote, "it is wrong to blame anyone for failing to forecast accurately in an unpredictable world," but he has given interviews in which he discusses intelligence analysts in this context. At the same time, he also wrote, "however, it seems fair to blame professionals for believing they can succeed in an impossible task." In short, Kahneman concedes that intuition has to be valued, but it cannot necessarily be trusted.

Thinking, Fast and Slow provides intelligence officers with an accessible vocabulary to discuss the processes of human cognition—the interactions between System 1 and System 2 thinking—which are at the center of their work. It does not, however, provide solutions or reliable approaches to bias mitigation. According to Kahneman, the best we can hope to do is learn to recognize situations in which mistakes are likely, and try harder to avoid specific errors when the stakes are high. Kahneman also spends very little time discussing how biases work in collaborative environments, despite his own very insightful accounts of his collaboration with Tversky. We can hope he will explore that in his next work.

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