Book Review

Daniel Kahneman
Thinking Fast and Slow
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This is an important book by the only psychologist ever to win the Nobel Prize for economics. In it Daniel Kahneman, emeritus professor of psychology at Princeton University, summarizes the work that he and the late Amos Tversky did on human cognition and decision-making. It has some cautionary implications for students of innovation.

The argument is that humans have two systems for problem solving and decision-making. System 1 (S1) is rapid, intuitive and emotional. This is the system described by Malcolm Gladwell in *Blink*. System 2 (S2) is slow, deliberative and logical. Only S2 can apply rules. S1 is obviously useful, even necessary, for survival when a rapid decision may mean safety and success and a slow one danger or failure. However, the dominance of S1 goes much further in determining our decisions and our behaviour. It demands explanations and "excels at constructing the best possible story that incorporates ideas currently activated" (85), but it doesn't allow for information that we don't have. It is " a machine for jumping to conclusions".

S2 is much more shrewd, but it gets tired easily and is lazy. It has a limited attention span. Moreover, Kahneman says when we S2 is "otherwise engaged, we will believe almost anything" (81). S2 is capable of correcting errors made hastily by S1, but sustained effort can lead to "the well-known phenomenon of ego depletion" where there is a loss of motivation and mental energy (41). Kahneman calls S2 the "lazy controller".

More fundamentally, S1 is behind our insatiable desire for narrative. We want coherent explanations, and favour causal thinking over statistical reasoning. "When uncertain, S1 bets on an answer and bets are graded by experience" (77). This leads to the "illusion of understanding" (199). Unfortunately, in this process, we give too much weight to small numbers and overrate the importance of details (153). We are unwilling to believe that much of what we see is random: "causal explanations of chance events are inevitably wrong" (118). Thus causal thinking prevails over statistics, and we prefer stories to base rates. We overrate small risks: after 9/11 people avoided flying and the numbers of the more probable highway deaths increased.

The results of this kind of thinking are devastating. Kahneman tells stories, but they are not anecdotes, they are summaries of studies in many different areas. Israeli parole judges were much more likely to grant parole to cases that came before them early in the day or right after lunch but as time went on they returned to the lower mean. Psychologists observing trials of the recruits in the Israeli army were completely unable to predict which participants would make good officer material. Guidance counsellors and university admissions officers were similarly inept, which led Kahneman to say that admission interviews lowered the validity of admissions. Various kinds of financial experts

had dismal results. A bank of 11,600 market forecasts by chief financial officers of a large number of private corporations collected at Duke University proved to be quite worthless. Financial advisers and experts asked to pick promising stocks did no better than rolling dice. In the realm of political predictions, Kahneman found that the most knowledgeable experts were less realistic than reasonably well-informed amateurs. He even turned his eye to his own profession and challenged the idea that students' names should appear on their examinations, so that the professor can put their answers into context. Kaheneman calls this the halo effect and found that results were considerably different when the names were omitted.

So Kahneman is skeptical of experts. They overrate the value of their knowledge and, even when faced with overwhelming evidence to the contrary, they persist in what they do. Practitioners value experience over statistics; there is a "deep resistance to demystification of expertise" (288). Kahneman looks at two cases discussed by Gladwell and concludes that intuition in an expert is recognition (as Herbert Simon said). If an environment is regular enough to be predictable and the expert has had prolonged experience, then, as in the case of the fireman who called his men out of a burning building just before the floor collapsed without knowing why he sensed the danger, expertise has shaped S1 successfully. Yet expertise can also generate intuitions that are false. Kahneman writes of "theory-induced blindness", of the "illusion of control", and the experts' "unshakeable faith in themselves". Undue optimism leads them often to persist with costly results. He considers performance bonuses in business and finance to be rewards for luck.

Kahneman finds that protocols or algorithms do consistently better than expert judgment in making predictions or obtaining desired results. While the mind prefers causal explanations and profiles, statistics and base rates work better. On picking officer candidates for the Israeli military, he found that experts could do quite well if they rated recruits on a half dozen characteristics, whereas a single intuitive judgement was of no value. Since the experts were very resistant to being obliged simply to apply formulae, he allowed them to make a global assessment once the protocol had been followed and concluded that intuition adds value, but only after a disciplined collection of objective information and a disciplined scoring of separate traits.

In addition to this preference for protocols and base rates over expert opinion, Kahneman offers some practical advice on avoiding the illusion of understanding. First, we should constantly question our own thinking and be aware of our own biases. Second, we should get information from different sources. Before discussion at a meeting, for example, he recommends asking each participant to write a brief summary of their position, since many of these will be lost once discussion begins. He even suggests snack breaks for people with jobs requiring sustained attention, like the Israeli parole board judges. Maybe the idea of a health break or a *pause-santé* is not so ridiculous. Another very important point is that experts are needed to establish the protocols that are then to be rigorously applied.

This leads one to wonder about those scientific and technical advances that turn out after much verifying to be true. Was this just chance? I don't think so. The distinguishing feature of science is its insistence on replication and methodological critique. Is Kahneman's charge more applicable in the case of social sciences? This would seem to be true, when the objective is to predict an outcome. Here, Kahneman supports the ideas of N. N. Taleb in *The Black Swan,* concerning our preference for narrative over probabilities. I don't think we have to throw out our great classics like Weber, Eisenstadt, Simon, Friedrich, Gabriel Almond, Michel Crozier or Henry Mintzberg. They were identifying the deep tendencies of social systems and not concerned with predictions in specific

circumstances. Something like Robert Michels' Iron Law of Oligarchy seems to fit this argument. There may be exceptions but, over time and in a wide variety of contexts, this proposition has been validated as a general proposition.

What does all this have to do with innovation? First, creative thinking clearly lies in S1, but it can be primed, as both scientists and innovation-seeking organizations like the Bell Laboratories have shown. Second, this approach supports the separation of the brainstorming and the analytical stages, bringing in S2 after the stage of creative thinking to test feasibility. Third, it is important to listen to the stakeholders in order to have a wide variety of points of view. Moreover fourth, Kahneman has lots of evidence that loss aversion is greater that desire for gain, so it becomes vital to consult those who stand to lose in an innovation (team owners in the National Hockey League might have thought of this). Finally, Kahneman's findings should lead to more modesty in claims for the certainty of our propositions. His work supports increased efforts to arrive at algorithms or protocols that should only be deviated from in the case of clear evidence, not merely "expert opinion".

In the public sector, the possibilities of using such an approach will be limited by political and public resistance. If a patient is denied treatment on the basis of an algorithm, there will be many who will reject the latter. Still, Kahneman's plea for better education in statistical reasoning among the broader public appears to be borne out by the quality of policy debates in most elections. The book is a great wakeup call for many of us who are excessively fond of our professional opinions.

About the Author:

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