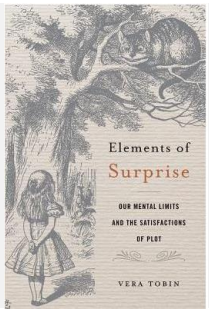


Elements of Surprise

Our Mental Limitations and the Satisfactions of Plot

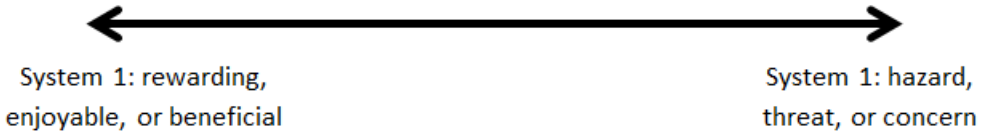
by Vera Tobin

One of the concepts we make use of in developing an understanding of the functions of the human brain is a System 1 vs. System 2 thinking distinction. As many of you will recall from your Professor in LIFE, our brain processes sensory information in two very distinct ways: through our System 1 Circuitry (Fast Thinking) and through our System 2 Circuitry (Slow Thinking) circuits. Our brain's System 1 circuitry is evolutionarily old, automatic, non-conscious, emotional, operates in parallel, and demands relatively little brain energy to function. As our primary, survival-based, brain circuitry, System 1 is responsible for generating fight, flight, or freeze reactions to threatening physical or social stimuli, real or perceived. As such, it cannot be turned off. We have no sense of voluntary control over its activities and its operations. It effortlessly activates our habits (good or bad), and is responsible for making active use of our biases, stereotypes, preconceived ideas, and emotional reactions as it pushes us confidently to quickly jump to conclusions. By contrast, our brain's System 2 circuitry is a more recent, distinctively human system that is rule-based, controlled, conscious, operates in serial, and is highly energy intensive. Its mental processes are learned, flexible, and responsive to rational norms.

Let's explore this a little further to refresh your memory. We are typically conscious of the results of such System 1 thinking, but not of the actual thinking process that led to it. We daily find ourselves confronting a situation to which a reactive thought appears in our consciousness that satisfies the situation, leaving us feeling very confident, almost absolutely so, as to that resolution. For example, being presented with the question "2+2?" very quickly and confidently raises the reaction "4" without much mental energy on our part. A question as to the "Capital of Italy?" also very quickly raises the reaction "Rome" in much the same way. In more difficult situations, consider, for example, the question "17 x 22?" System 2 will focus our attention and consciously call up the necessary cognitive resources to get the job done. For the brain, this System 2 mental cognition and processing is quite effortful and energy demanding.

In these types of situations, System 1 does operate efficiently and effectively much of the time; in this sense, it could be viewed as being quite beneficial. But it can also generate what we refer to as System 1 Cognitive and Emotive Thinking Errors. In such cases, because it operates automatically and below our level of conscious awareness, it can jump to conclusions without System 2's thoughtful consideration of possible consequences. Although we reach this conclusion with a sense of confidence, it can be decidedly incorrect, often to our detriment.

Let's follow this line of inquiry a little further. For simplicity, let's consider our System 1 reactions as being measurable along a continuum, beginning with our System 1 reaction being a hazard, threat, or concern on the far right of the continuum. Let's place System 1 thinking as being rewarding, enjoyable, or beneficial on the far left. Prof. Daniel Kahneman in his book, *Thinking Fast and Slow* (reviewed here earlier) largely looks at our System 1 reactions as being potentially detrimental or even hazardous when not appropriate to the circumstances.



His book largely looks at how System 1 affects our decision-making and problem solving, acting below our level of conscious awareness and causing us to jump to conclusions without sufficient System 2 rational consideration. When asked if he could ever expect that we could learn to control such System 1 mental processes, Prof. Kahneman said,

"I am not very confident that we will get very good at it... However, we can begin to become self-aware of those important situations where we are most prone to error and enlist System 2 to assist our thinking... [In such situations,] System 1 first generates a sense of overconfidence in its nearly instant reaction while System 2 functions to slow our brain down, allowing for thoughtful consideration of possible consequences, and perhaps leading to better outcomes."

He places considerable attention at the "hazardous" end of the continuum, which, although unintentional, can impress upon readers the idea that System 1 thinking is something to be avoided if possible. We have the illusion that in confronting a problem or decision, and particularly those that are more complex, our System 1 circuits will underestimate that complexity, unwittingly take non-conscious mental shortcuts, and direct our "intuition" toward reactions that are not correct or necessarily in our interest; all without us being aware of it until after the fact.

When we first explain this concept to students, they often first react in much this way, coming to the conclusion that they need to somehow stop using System 1 thinking or to at least limit it. While such a shift to full-time System 2 thinking would not only take enormous brain energy, it would actually not even be possible as many bodily functions necessary for our survival are managed very capably (in fact, exclusively) by our System 1 circuits. That said, do we really want to consciously think about every single muscle contraction as we walk or talk or eat or smile? Still, even if we assume we could, do we really want to stop using our System 1 thinking circuits? Our initial reaction to their function – implementing our biases, stereotypes, habits – is that they seem to be quite negative and might lead us to conclude yes at least to a certain degree. Why bother with System 1 when they notoriously assist us in jumping to conclusions without really undertaking the seemingly necessary rational thought processes associated with System 2 thinking? But aside from managing important bodily functions, the underlying assumption driving this "logic" is that our System 1 thinking circuits are otherwise negative, or at least largely negative.

That very interesting "System 1" assumption is the subject of Professor Vera Tobin's book, Elements of Surprise: Our Mental Limits and the Satisfactions of Plot. Calling on a breadth of neuroscience research, Prof. Tobin makes us aware of the many surprising benefits of our System 1 thinking frailties. Do you enjoy a good joke? Do you enjoy the surprise of a great magic trick? Do enjoy the twists and turns through which a great novel can take you? In each of these cases, the provider of that enjoyment has somehow manipulated our System 1 thinking. These sleights-of-hand in large part tap into general tendencies in our human cognition that are vulnerable to such System 1 exploitation. They effectively use the fundamental tendencies of our own minds -- but, in contrast to Prof. Kahneman's principal focus, for us rather than against us. As Prof. Tobin relates, these System 1 tendencies are in a "sweet spot of conscious accessibility" that allow us to recognize them when we fall prey to them even if we are not quite able entirely to control or suppress them.

For those of you who have taken LIFE, recall how easily the LIFE Professor led you through the "bat and ball" and "Joe and Mandy" System 1 mental processes even though you had every reason to expect that that was the intent. While they certainly assisted the Professor in illustrating the negative aspects of System 1 Cognitive Thinking Errors, if you reflect for a moment at the sudden burst of joy you experienced when you realized your brain had taken you down a false path, you can appreciate both the positive and the negative aspects of this human thinking tendency. As an instructional tool, what is particularly handy about exploiting System 1 cognitive biases is that people both succumb to them predictably and are also aware that they exist as a hazard.

As to the middle ground between these two extremes on the continuum, we can find yourselves being manipulated or motivated by our System 1 thinking. In essence, it depends upon the intent

behind the information presented to us. As a readily comprehensible example, this is the ground upon which marketing and sales strategies can often be found. The science behind this can be understood and appreciated by reading the book *Nudge: Improving Decisions About Health, Wealth, and Happiness* by Professors Richard H. Thaler and Case R. Sunstein (Published in 2008, this was the first mass media book that incorporated the System 1 vs. System 2 thinking distinction in much the same way we were at that time). From this perspective, a "nudge" is defined as the use of positive reinforcement and indirect suggestions as ways to activate System 1 thinking with the intent to influence the behavior and decision-making of groups or individuals. The prevalence of such nudges is quite surprising when you understand how they are used. Some common examples include

- the use of a small ceramic fly in male urinals;
- direction arrows in grocery stores that lead you to a specific location in the store (for example, to the fruits and vegetables);
- opt-out options instead of opt-in options;
- making healthy food choices easier to reach than unhealthy snacks in a food line;
- social messages that make individuals feel like outliers (for example, to delinquent taxpayers, the message “9 out of 10 people in your area are up to date with tax payments” and to reduce home energy use, the message “more than 70% of the people in your area use less energy than you do”);
- and a restaurant menu including a higher-priced item on the menu (with little expectation that you will actually select it) as a means to induce you to purchase the second most expensive item which appears as a relative bargain by comparison.

While in each of these cases we certainly have an unrestricted choice, our System 1 circuits often follow the simplest, least demanding, cognitive path to an action or behavior choice, not infrequently to our detriment.

As a business school intent on assisting its students to succeed in the business world, it is perhaps not unexpected that we might be motivated to focus on the effect System 1 cognitive errors have on shaping people's behavior in business-specific applications such as negotiations, sales, marketing, and finance. But our broader focus on personal development makes much of what Prof. Tobin discusses relevant to us. She explains how reading literary fiction and other narratives make use of System 1 cognitive biases in developing our sense of empathy, something we strongly suggest through an extensive list of novels to be read for that express purpose. Of particular interest to both students and coaches is her explanation of theory of mind and the way in which our brain pieces together various bits and pieces of sensory information and interprets it by creating a narrative, a story. She explores the fallacy of memory and the strong influence of our beliefs, values, and preconceived ideas in creating that narrative – consistent with Column 4 in

our 6-Columns development tool, but from an interesting, but very different, perspective. There are a wealth of such gems in this book that make it highly informative but also entertaining.

The final point I would like to make is reflective of Prof. Tobin's discussion on how we might overcome many of these thinking biases (if we want to) through our System 2 self-regulatory ability, using it to suppress distractive, influential extraneous information that influences us to a particular point of view or decision. She makes the point that this is much more difficult for young children. They have far more trouble suppressing extraneous information, often leading them "astray in classic false – belief tasks." In this very sense, I highly encourage you to suppress your self-regulatory ability a little this holiday season (maintaining it, perhaps, with respect to the bounty of edible and drinkable distractions characteristic of this wonderful season) and embrace its simple joys by sharing the unconstrained narrative of the children around you—and enjoy the pure System 1 narrative of Santa, Rudolph, and the elves anew.

Happy Holidays!