

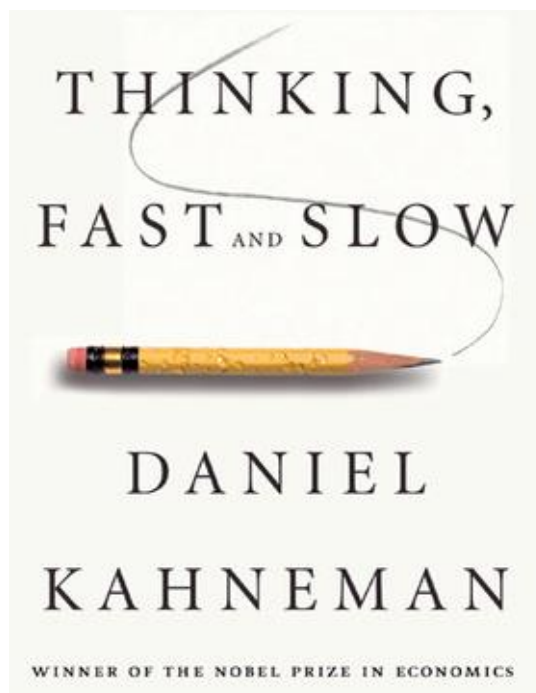
Taking and Managing Risk: Thinking, Fast and Slow

A general introduction

The bestselling book [*Thinking Fast and Slow*](#) was written by the Nobel Prize-winning psychologist and economist Daniel Kahneman and first published in 2011. This paper describes observations and reflections on this highly acclaimed body of knowledge that relate to how people take and manage risk (arguably a common thread throughout the book). This paper includes “Risk tips” (that are not from the book) along the way. Plus, as well as relating to *Thinking, Fast and Slow*, references to associated aspects of cognitive science are made, such as those discussed by Kahneman and Gary Klein in an interview with the McKinsey Quarterly in March 2010, titled [“Strategic decisions: When can you trust your gut?”](#)

Thinking, Fast and Slow offers us a window into the way our minds work and how we make decisions. It explains why we are more irrational than we like to think, how we understand less about the past than we think we do, and how our biases play a large part in shaping how we envisage the future – which we often predict quite poorly.

The book offers many valuable pieces of advice and nuggets of wisdom. To appreciate *Thinking, Fast and Slow* fully, consider applying “[Kolb’s learning cycle](#)”. Enjoy the “concrete experience” of reading the book; “reflective observation” about the many elements it covers; “abstract conceptualisation” to make sense of it in your own mind; and “active experimentation” to apply what you have learned. By appreciating a little better how our brains work, we can all improve how we take and manage risk and make decisions to achieve our objectives.



An introduction to the work of Kahneman, and Tversky

For many years, Daniel Kahneman worked with Amos Tversky, investigating how people think and make decisions and the biases we all have that influence our decision-making. Tversky died in 1996 at the age of 59.

In [a paper published in 1979](#), Kahneman and Tversky developed an account of decision-making focused on human psychology. They called it “*prospect theory*”. The theory was developed through framing high-risk choices for people. Their experiments found that people are, in general, loss-averse – that is to say, we generally dislike losses more than we like the equivalent gains.

Our understanding of cognitive bias was quite rudimentary until a few decades ago. During their long working relationship, Kahneman and Tversky performed a series of experiments that revealed twenty or so “cognitive biases” – the unconscious errors of reasoning that distort our judgment of the world. Since this time, a large amount of information has become available (for an example list of biases, visit [this web page](#)).

Kahneman was [awarded the Nobel Prize in economic sciences in 2002](#) for having integrated insights from psychological research into economic science, especially concerning human judgment and decision-making under uncertainty. Later in his career, Kahneman has worked on defining and understanding “[hedonic psychology](#)” – “the science of happiness”.

Thinking, Fast and Slow draws upon the deep reservoirs of research that Kahneman and Tversky conducted, and that Kahneman continued to pursue after Tversky passed away. The book is a thought-provoking narrative of how our minds work – how we think through situations, how we make decisions and how we can improve the way in which we see things – an important part of which is being aware of and handling our cognitive biases. The New York Times columnist David Brooks [has said](#) that Kahneman and Tversky’s work “will be remembered hundreds of years from now,” and that it is “a crucial pivot point in the way we see ourselves.”

Let’s begin with rationality. We are not as rational as we think...

Do you assume that people assess risk by looking at a rational analysis every time they have a decision to make, in their professional and personal lives? The reality is usually very different, a conclusion that is supported by various psychological experiments that were carried out in the 1980s and afterwards, including by Kahneman and his colleagues.

Researchers have found compelling evidence that people use a set of mental shortcuts – what is referred to in *Thinking, Fast and Slow* as “System 1” – for measuring danger and risk. We do it unconsciously, all of the time. Instinct plays a much larger role in our decisions and in our actions than we consciously realise. The world is full of risks and uncertainty (for the purposes of this paper, we will use both terms interchangeably), large and small. The mental shortcuts we use help us figure out which risks to worry about and which risks to forget about, or not act upon.

However, our shortcuts are not always correct – indeed, more often than we probably realise they are completely wrong.

“The world in our heads is not a precise replica of reality.” Kahneman writes in *Thinking, Fast and Slow*. “Our expectations about the frequency of events are distorted by the prevalence and emotional intensity of the messages to which we are exposed.”

Consider the example of rail travel and the risk of high speed train crashes. Usually, we dismiss this risk, knowing that a high speed train *can* crash but the chances (and statistical probability) of us being on a train that crashes are very small. We decide that the benefits we achieve of travelling by train from A to B outweigh the risks. If two major high speed train crashes occur in quick succession (whether in the same part of the world or in different parts) and if they are reported widely (major train crash events tend to attract widespread media coverage, as do similar transport disasters such as plane crashes), travelling by high speed train may suddenly feel a bit higher in risk, although statistically nothing will have changed.

Even if we are presented with statistics which show that high speed train crashes are a statistical aberration with little bearing on the safety of our next train trip, System 1 will recall the recent news about train crashes and make a shortcut connection for us. It will “build a narrative”.

If you then take a few trips and all goes well, your brain will start telling you again that travelling by high speed train is safe. *Recency bias* kicks in, and a new narrative is formed.

Thinking, Fast and Slow – say hello to System 1 and System 2

The terms “System 1” and “System 2” [have been used in psychology for many years](#) as a simple way to describe brain function. System 1 and System 2 are not descriptors of biological functions. Rather, they are concepts to help us understand why we act and behave in certain ways. System 1 and System 2 are the “main actors” in *Thinking, Fast and Slow* – and they are the main actors in this paper.

System 1 is our “auto-pilot”. It’s what we use to filter out noise (or what our brain *thinks* is noise) in order to make sense of the world. We take what it does for granted, but System 1 is quite wondrous in its abilities. It can quickly generate complex patterns of ideas and stitch them together in an instant. System 1 is sometimes referred to as “gut instinct” (to explore aspects of this further, read the McKinsey Quarterly interview with Kahneman and Gary Klein “[Strategic decisions: when can you trust your gut?](#)”). System 1 often gets things right, but it also gets things wrong. Rather than rely on it all the time to make the best choice, it can pay dividends for us to draw upon its co-collaborator, **System 2**. System 2 is the area of the brain that takes time to process a situation – to think through and reflect on it, and to make sense of it. System 2 has an important characteristic – it requires us to focus and concentrate in order for it to function well. This is often challenging – System 2 is quickly disrupted when our attention is drawn away to something else, which happens all too easily in our modern world.

System 1 and System 2 work together all the time without us consciously realising it. If you suddenly hear a loud and unexpected noise, System 1 will immediately orientate you in the direction of where your brain thinks the noise came from. If it judges that it has time, System 2 will analyse and work out what it thinks is happening, taking in different details and assessing the situation. It will advise System 1 on what to do next. If your brain assesses that you are in an urgent situation, System 1 will act on instinct and you will immediately respond. System 1 and System 2 function together in all situations and environments we find ourselves in. When you are in a work meeting and you are asked for a point of view, System 1 will likely be immediately ready to offer an opinion. Whether you quickly check with System 2 for validation about the question being asked and whether you are answering it properly depends on your situational awareness at the time, and a multitude of factors relating to the moment.

Risk practice tip 1:

See if you can keep in mind the concept of System 1 and System 2. They are always working together. For example, when you are asked for an opinion by someone, try asking yourself “Is System 2 making sure I’ve understood the question?” before providing an answer. See if it makes any difference.

How System 1 and System 2 combine together

With System 1 our “auto-pilot” – always on, always running – and System 2 “on and normally in low-effort mode”, System 1 continuously suggests things to System 2, which it usually accepts without engaging in much interrogation or questioning. We usually follow our initial System 1 impressions and act on our immediate thoughts. This approach to decision-making in life works fine most of the time. Acting on our initial impressions can work fine when the situation is familiar, simple and routine and the risk of making a mistake is acceptable. You don’t need to interrogate when to take your toast out of the toaster if you start to smell it burning. In unusual and/or novel situations and highly complex ones, it pays to properly engage System 2 whenever we are able to do so.

When we are confronted with an unusual, new or novel situation, the cognitive biases that we carry with us can make us blind to important aspects about it. If we engage System 2 properly to think carefully in situations that merit proper thought, and have the awareness to take a course of action that keeps our biases “in check”, we can reach a better decision on next steps and the way forward.

Examples of how this plays out are plentiful, from serious matters to fun ones. You may have heard about and seen a famous experiment called “The invisible gorilla”. It was documented by [Daniel Chabris and Daniel Simons](#) in 1999. Chabris and Simons instructed people to watch a recording of a basketball passing exercise performed by two teams, and to count the number of passes made by the team wearing white shirts and ignore players wearing black shirts. If you haven’t watched The invisible gorilla, [click here](#) to view the original video. Even if you have seen it before, if you watch it again, make sure you focus hard on counting the number of passes being made by the team wearing white shirts. How many passes do you count?

Half-way through the video, something happens. Did you spot it?

When Chabris and Simons first conducted the experiment, they were astonished to find that about half the people who took part did not notice “what happens”. Kahneman cites this experiment in *Thinking, Fast and Slow* as an example of how “**we can be blind to the obvious, and we are also blind to our blindness**”.

This is one example of research showing us that when we focus hard on something, we become blind to things, even when they are right in front of us. The effect is called “inattention blindness”. When it happens, we miss “obvious” details and signs of things. Have you ever worked hard on a paper, a report or a spreadsheet of numbers only to find out that when someone else reviews it, they point out a really obvious mistake in it, or a major omission? That is inattention blindness at work.

Risk practice tip 2:

Inattention blindness can easily occur when you are focusing hard on something. How can you avoid it? Be alert to what is going on around you – keep your focus fresh. When you are working on something, take regular breaks to stay alert. Ask others to review your work. When you have prepared something important, take a break and review it again (maybe with others) before sending it, or presenting it.

As well as being blind to what is going on around us, we can be easily distracted when we undertake a demanding cognitive task. Studies have shown that when we are engaged in effort and focus, we are likely to yield to a new temptation if it is placed in front of us. This is System 1 at work. When System 2 is busy, System 1 can find ways to easily and immediately distract us.

Furthermore, the mental effort required to engage in a demanding task immediately after a previous one is a challenge. After carrying out a demanding cognitive task, we are less likely to commit the same degree of control to another one right afterwards. We usually want something easier to do. Our brain wants a break.

Risk practice tip 3:

Bear in mind that, when you are focusing hard on something, System 1 has a lot of leverage and influence on your behaviour – it can easily distract you. In such times, try to ‘keep in check’ the System 1 impulse (maybe apply the “take a break” principle at certain times).

This same point applies to those you liaise with. If you are due to meet someone and just before greeting them you notice they are highly focused on something, consider whether it is worth interrupting them right then, or perhaps to wait just a bit.

When you are working with people on specific activities that require a high degree of focus, plan short breaks at suitable times. Be flexible about when these breaks occur, and keep people supplied with glucose (such as providing sweets in a workshop room) to “keep the energy levels up”.

System 2 is lazy

As well as being easily interrupted, System 2 will be lazy if you allow it to be. It is *supposed* to be continuously parsing the information it receives from System 1, accepting and allowing some of it straight through and modifying/questioning others. Yet System 2 has a tendency to allow too many things straight through without “stopping and thinking” about them.

To demonstrate this point, Kahneman gives the example in *Thinking, Fast and Slow* of [the “bat and ball” question](#) (which has been posed in various ways by different people):

- A bat and ball cost \$1.10 (or whatever your local currency is)
- The bat costs \$1 more than the ball.
- *How much does the ball cost?*

Your System 1 will likely come to an immediate answer: “That’s easy – 10 cents”. Did System 2 interject, or did you accept System 1’s immediate answer?

If System 2 is activated to think about this question, it would suggest a different answer. Imagine a dialogue taking place inside your brain (this is my interpretation):

- *System 1*: Easy. The ball costs 10 cents. Decision made.
- *System 2*: Hang on – let’s just confirm if this is correct.
 - o The information given is that the bat costs \$1 *more than* the ball. So, if the ball costs 10 cents, the bat must cost \$1.10 – because that’s \$1 more than the ball. If so, when I add \$1.10 (cost of the bat) to \$0.10 (cost of the ball), that comes to \$1.20. That doesn’t add up to \$1.10.
- *System 1*: What is it then? Hurry up!
- *System 2*: Don’t rush me!
 - o For the bat to cost \$1 more than the ball and for them both to add up to \$1.10, I need to think through the maths. \$1.10 minus \$1 is 10 cents. There are two parts, so what if I divide 10 cents by two. If the bat costs \$1 more than the ball, the bat costs \$1.05 and the ball 5 cents. That adds up to \$1.10. So, the ball costs 5 cents. That’s the right answer.
- *System 1*: Ah, OK! I guess I answered the question a bit hastily. Next time I’ll try to ask you for your opinion!

Replying with an answer of “10 cents” is a natural and immediate System 1 response. In experiments with this question with students at Harvard, Princeton and MIT, more than half of them answered “10 cents”.

Why do so many of us answer this simple maths question incorrectly? The reason is that System 2 is lazy. It allows System 1 to substitute difficult problems with simpler ones in order to quickly solve them. It looks for a quick route, and System 2 lets it do so without challenging. Sometimes this approach is fine, but not always.

In the bat and ball question, we unconsciously substitute the “more than” statement in the problem (the bat costs \$1 **more than** the ball) with an absolute statement (**the bat costs \$1**). This simplifies the calculation for us – if a ball and bat together cost \$1.10 and the bat costs \$1, then the ball costs 10 cents.

With those two words, “**more than**”, we are required to do more thinking, and lazy System 2 doesn’t bother. As Kahneman says, **when faced with a difficult question we often answer an easier one instead, usually without noticing the substitution we made**. Cognitive effort is hard, and we have a tendency to avoid it. System 2 is lazy.

Prior to reviewing the bat and ball example, it was mentioned that our brains find it harder to concentrate on something when we have just had to concentrate on a previous activity requiring focus. So, if you had just carried out an effortful mental activity *before* approaching the bat and ball question (which also required effort and focus), there’s even less chance that System 2 would question your immediate System 1 response to it.

Risk practice tip 5:

When you are having to focus hard on solving one or multiple problems, be aware that at some point, your brain may be substituting a simple question in place of the harder one that you are supposed to answer. System 2 is lazy, and it will allow System 1 to answer an easier question if you allow it to – especially when you are busy, tired or stressed or if you have just had to carry out another mentally demanding task. Remind yourself to ensure you understand and are answering the question or problem you are facing, especially when you are under pressure.

Linking System 1 and System 2 to taking and managing risk

Risk is uncertainty. It is defined in the international standard for risk management, [ISO 31000:2018 \(Risk Management – Guidelines\)](#), as “**the effect of uncertainty on objectives**”. A risk can be an opportunity or a threat. Many people tend to think of risks as “the downside” of things that could happen. However, the potential impacts or consequences of a risk can be multiple, and they can be a blend of good or bad.

How we take and manage risk reflects how we deal with uncertainty. Many influences are at play, from experiences and memories built up over time to the context of the particular situation. In order to assess our risk and the uncertainty we face, and to focus on “the uncertainty that matters”, we need to engage System 2. We can’t just accept without interrogation what System 1 suggests to us. We need to probe and think through things.

Studies show that an important aspect of assessing risk and uncertainty is to consider diverse views about the matter at hand – to obtain a “rounded picture” of the situation, not just our own impressions. To be sure, in urgent situations we need to make an immediate decision. But in many situations, we have time to think through things.

To obtain diverse views about the risks we face, we have to make time to seek out and listen to people, and we have to make time to find good quality data so that we assess facts in an unbiased way. We need to be aware of the biases that influence us, and be able to learn from the past, both in terms of what has worked well and from mistakes that have been made. To do this, we need System 2 to be active, not passive.

When we obtain diverse views about the risks we face, we need to be ready to change our minds and admit to mistakes if the facts change or a reasoned viewpoint calls for a different approach. We need System 2 to spot when circumstances are or might be changing, and to think through the implications.

Risk practice tip 6:

When you are reviewing risks and uncertainty with people, make sure you are properly focused and open to different views. This requires concentration, so don't get distracted by dings on your smartphone, smartwatch or any other "smart" device that interrupts your focus (and may well annoy those you are with). As you seek diverse views, be forthcoming to admit your own learnings and mistakes as easily as you may point out those of others.

Don't worry, be happy...and other sources of optimism

System 2, studies show, is particularly accepting of your System 1 "quick sketch of the situation" when you are in a happy mood. When the world seems fine and nothing can go wrong, you are less inclined to question what is in front of you.

Risk practice tip 7:

When you are in a happy mood (and there's nothing wrong with that), just be aware that it's a time when System 2 can fail to show up.

Some cognitive biases consistently show themselves in studies and experiments. Consider, for example, what Kahneman calls "*the planning fallacy*" – our tendency to overestimate benefits and underestimate costs and timeframes, and hence to take on projects or activities, or make any type of plan without properly understanding the risks and the degree of uncertainty. This applies to any venture or project you care to consider – from a house extension to a major industrial or infrastructure capital project, a new IT system implementation or a new intergovernmental agreement on climate change. The planning fallacy is "only one of the manifestations of a pervasive optimistic bias," Kahneman writes, which "may well be the most significant of the cognitive biases."

To be clear, having optimism and an optimistic attitude is a strength. It was key to mankind stepping foot on the Moon in July 1969. It was key to the Sydney Opera House being approved to be built, and it is key to making just about any plan and striving to achieve goals. We just need to keep in mind that *over-optimism* is often an underlying cause of why projects and initiatives take longer, and/or cost more, and/or turn out to be harder than we first thought. In such cases, we underestimated the challenges we faced, displaying *optimism bias*. System 2 allowed optimistic and / or unchecked assumptions through too easily.

Risk practice tip 8:

It is good to be optimistic with projects and initiatives that we undertake – in a measured way. We need to ensure that we do enough planning to think through all aspects in enough detail, and to have rigour in our approach to manage change. This is where good project management discipline is vital.

If we are “going for a moon-shot target”, we need to be clear in our communication about this, and that things could easily take longer and/or cost more if activities turn out to be more complex or harder to achieve than hoped. When you have a high degree of complexity and/or a number of “firsts of a kind” (FOAKs) on a project, that is a sign that you need to tread with caution. If you are pursuing optimistic targets in such situations, be clear about this in your communication.

Just to repeat, optimism is a strength. As Kahneman states, exaggerated optimism serves to protect both individuals and organisations from being controlled by another bias, “*loss aversion*”, which is our tendency to fear losses more than we value gains. Kahneman also reminds us that we are all prone to an exaggerated sense of how well we understand the world, which can lead to over-confidence. So, whilst it’s important to be optimistic and to have a can-do mindset, we should be ready and willing to “activate the sceptic within us” to avoid over-confidence and optimism bias.

Some surprisingly simple tips exist to encourage our inner sceptic. For example, the mere action of frowning has been shown to stimulate System 2. Kahneman found in tests that frowning reduces our over-confidence and reduces our reliance on intuition. Frowning is linked to inducing cognitive strain, which activates System 2 to help us “better manage our intuition”.

So, let’s gauge our optimism with a range of scenarios...

To take and manage risk well (to achieve whatever we are setting out to achieve) whilst remaining optimistic about our targets and objectives, it’s important to think through things properly. Various techniques and tools exist to help us think carefully through the opportunities and threats to achieving our objectives. To use these techniques and tools well, we need to seek out diverse views and be ready to consider a range of outcomes, including some that we may feel are implausible. We need to ensure we do not destroy our optimism – we just need to make sure it is gauged.

Scenario analysis and **What if? analysis** can help us think through how our path towards achieving our objectives could unfurl, good and bad.

When we think through scenarios, and the threats and opportunities to achieving our objectives, we should make sure we think of an appropriately wide range of possibilities – what could be called *plausible outcomes*. It is all too easy to focus too narrowly on a small range of outcomes and disregard what we think of as “outliers”, which could in fact offer us valuable perspectives.

Scenario / What if analysis isn’t a once-a-year or occasional type of activity. It should be done regularly and stitched into business-as-usual. It can help us to anticipate, prepare and be ready to respond to changes and events, and it can be done in a holistic way or with precise data sets.

PreMortems are a form of scenario analysis that help us to think about a “very bad outcome” (the opposite of a PreMortem is a ProMortem, which is to envisage a fantastic success). PreMortems are a way to look at things with “prospective hindsight”.

[Gary Klein](#) has written extensively about this technique, and how it can be used to help us to identify trigger points to things potentially going wrong. It's not about being negative to the point that we refuse to try to achieve a goal; it's about thinking through how very bad outcomes might occur and, whilst we cannot predict the future, working out how to anticipate and be ready to prevent very bad outcomes from occurring.

Black Hat thinking is part of [the Six Thinking Hats concept](#) developed by Edward de Bono. With the Black Hat, we look at a decision's potentially negative outcomes – that is, we seek to prevent optimism bias. Black Hat thinking can help us to make our plans more reasonable and resilient, and to look for and uncover blind spots. It's a way of guarding against thinking too positively and looking ahead for potential problems in advance.

Risk practice tip 9:

Tools and techniques for taking and managing risk exist to help us achieve objectives and success. We need to take risks to succeed – so let's do so in a risk-informed way. Using risk tools and techniques to assess and gauge our optimism against possible outcomes (ideally looked at as a range of outcomes, including the use of data and facts to support us) can help us to understand and to be honest about how optimistic our targets really are.

Don't fall into risk aversion...

Whilst it is important to guard against over-optimism and to avoid optimism bias, we do not want negativity to prevent us from capturing good opportunities. We do not want to be prisoners of the past either. To continuously improve and to achieve ambitious goals, we should encourage innovation and a willingness to try new approaches. Using the Six Thinking Hats model for example, you could try **the Green Hat** of creativity. We should seek to gain insights and encourage exploration, acknowledging that the act of exploration entails risk, and some ideas or efforts may not work well or may fail. There is a balance between focusing on reducing errors and threats to an acceptable level and taking risk in an appropriate way. These two sides of the coin can be thought of as your "risk appetite" for pursuing actions to achieve objectives.

Money isn't everything – and it blinds us to other things...

One of the interesting insights described in *Thinking, Fast and Slow* is the effect that thinking about money (or other financial rewards) has on us. [Research](#) from Kathleen Vohs has shown that money primes us for individualism, and it encourages individualistic actions. In general terms, thinking about money invokes a reluctance to be involved with others, or to depend on others, or to accept their opinions. This is dangerous when we are looking at financial aspects of risk and uncertainty, because we want to have a holistic view of risk and we want diverse views. If we focus too much on the financial impacts of risk, we may unconsciously be blind to other impacts and long-term considerations that have a bearing on financial outcomes.

For example, focusing entirely on achieving a short-term financial gain and looking at the monetary factors alone may make us blind to a safety, sustainability or reputation impact that some actions may inadvertently create (which actually link to financial impacts anyway). It is important to consider all aspects and impacts to the risks we identify. Maybe we should not label them against a particular “category”, such as “financial”, “reputation”, “safety” or something else, and look at our risks holistically. Perhaps the use of techniques such as [a Balanced Scorecard](#) can ensure people use various lenses to look at the risks to achieving their objectives.

Bias-busting

As Kahneman describes with a number of examples in *Thinking, Fast and Slow*, we are prone to many biases. From confirmation bias and optimism bias to loss aversion, recency bias and more, our immediate System 1 instincts are a powerful force that can cause us to make ill-judged decisions.

We all relate to norms

How many animals of each kind did Moses take into the ark?

The percentage of people who *immediately* detect what is wrong with this question is quite small. It has become known as “[the Moses illusion](#)”. Of course, you now say! Noah took animals onto the ark, two of each, not Moses! But did you spot the name switch straight away?

Kahneman and his colleague, Dale Miller, have written about how events are perceived by us as normal or abnormal. In this example, there are “norms” in the statement that we immediately associate with. Animals going into the ark is a biblical reference which we know about. Mention of Moses, another biblical reference, is not abnormal in this context. Also, Moses and Noah sound similar. The subtle but significant change in the question is a nuance, and it is easy to miss if we are not alert to it. System 1 processes the question quickly and serves up an answer and lazy System 2 lets it through. If the question had contained a name that clearly jarred – say Florence rather than Moses, we would spot the trick far more easily.

Risk practice tip 10:

There’s nothing wrong with relating to norms – just have your System 2 on alert to spot subtle ones.

We confirm what we want to know, whether we know it or not...

The workings of our associative memory contribute towards *confirmation bias* – which is to seek out evidence to justify what we want to believe. Rather than testing hypotheses or beliefs by trying to prove they are *not* true (a practice that the scientific community has long adhered to), we tend to seek evidence and facts (or stories) that are aligned with the beliefs we already have.

System 1 is in confirmation bias mode by default. Consider how many things you quickly take for granted each day. We tend to frame things in a certain way with [the framing effect](#), we look for information that suits our needs and we make links that combine to create what psychologists call “[the halo effect](#)” – the tendency to like or dislike everything about a person, including things you have not even observed.

System 1 searches for patterns, sequences, coherence and reasoning to the point that we block out other aspects and possibilities (as seen in The invisible gorilla exercise). This is all the more reason why it is important to seek diverse and independent views on matters, and to do so in a psychologically safe environment where people are not feeling pressured or influenced (consciously or subconsciously) to refrain from saying what they truly think or know.

Particularly when it comes to decisions that have major consequences, we need to guard against overconfidence, we need to be aware of how things are being “framed” to us, and we need to be wary of *information bias*. If we don’t question things enough, we risk being flawed in our decision-making. Of course, this can be hard when we have ambitious targets and objectives to meet – perhaps a tight schedule for a project or a budget target to meet.

Risk practice tip 11:

In order to make good decisions in which we properly consider the threats and opportunities amidst uncertainty, we need to be mindful that System 1 will quickly jump to conclusions and it will form convenient patterns. It will form opinions based on imperfect information, which we must keep in check by using System 2 to properly look at facts and information required to make an informed decision in an unbiased way. Listen to opinions, act on facts.

We drop anchor – because it’s easy...

Kahneman describes in *Thinking, Fast and Slow* how both System 1 and System 2 can fall prey to [the anchoring bias](#), which occurs when we depend on, and are influenced too much by the initial information we receive. For System 1, it occurs in [the priming effect](#). For System 2, it occurs in a deliberate process of adjustment.

When it comes to System 1, the priming effect manifests itself in the form of suggestions. It’s similar to what we described earlier about the framing effect. When it comes to System 2, we must remember that because it is, by nature, lazy we often fail to sufficiently adjust our expectations from an anchor point, to the detriment of our decision-making.

Risk practice tip 12:

Always be mindful of anchoring bias. Try to ensure System 2 is activated properly to avoid falling into various anchoring traps. For example, when you have “a number on the table” such as a target financial goal or a schedule completion date to meet, think about whether there are anchoring effects at play, and get System 2 ready to question assumptions about it (in a positive and constructive way).

If it's immediately available to us, why not use it...?

An aspect that can be linked to the anchoring bias is the *availability bias*, or [*the availability heuristic*](#). The availability heuristic is our tendency to use information that comes to mind quickly and easily when we make decisions. We quickly make judgements (System 1 is at play here) when we see information. Resisting this urge, and looking instead at data and searching for facts (including those that may be counter to your preference), takes time and effort, and we know that System 2 has a tendency towards laziness. Yet it is a good discipline to have, as it helps us to critically review options.

Randomness – we may not like it, but it's out of our control...

To quote the title of a book by Nasim Nicholas Taleb, we can be "[fooled by randomness](#)." There are many examples in the world that demonstrate how we find meaning and cause in randomness. Consider sport. How many times do we see the effect on us of someone who is "on form" in the sport they are participating in. When someone or a team is on a "hot streak" (be it goals scored, points racked up, athletic times or distances, or runs made), we associate it to a cause and infer that it has a greater probability of continuing. As Kahneman writes, studies show that the inference of being on a hot streak is *in the eye of the beholder*. Statistical analysis invariably shows that the person / team outcomes still adhere to randomness, yet we find a cause. Our memory associates one thing with another to find (often convenient, if not correct) causes and causal links.

Many studies have shown that statistics have a valuable role to play in determining risks, and possible courses of action in response to them, yet many of us do not use statistics. A statistical view on an event or occurrence relates it to what could have happened instead. We are not assessing causes and a "chain of events" that led it to happen, we are calculating the chance of it happening compared to other possibilities. There is a big difference.

To quantify risk, we can use statistics and formulas (methods, models, analysis) to weigh up the chance of risks occurring. We can model how risks can turn into events at random, and we can use sampling methods to look at probabilities. Yet randomness is not something that System 1 likes dealing with. It prefers neat patterns that it comes up with itself, even if they are incorrect. Coupled with having excessive confidence in our ability to understand the past trend, this can easily lead us towards over-confidence (optimism bias) in our ability to forecast the future.

In statistics, we trust...right...?

Statistics and formula-led analysis should be our allies to help us understand, take and manage risk. Good examples exist of where it has worked well. To continue on the sporting theme, the book *Moneyball*, published by Michael Lewis in 2003, describes how statistics was successfully used by the Oakland Athletics baseball team and its general manager Billy Beane.

It's just one example of the benefits of using statistics to achieve success. On a global health perspective, the judicious use of statistics is proving to be vital to countries all around the world understanding how to best move forward during the highly uncertain time of the COVID-19 pandemic.

Kahneman suggests a somewhat surprising conclusion in the section of *Thinking, Fast and Slow* on intuition vs formulas – and perhaps one that people may intuitively disagree with and be sceptical of. To achieve good predictive accuracy, final decisions are best left to formulas, especially in low-validity environments.

Whilst we can probably all think of cases where statistics have been used, or misused, to tell a biased story (sometimes wilful, sometimes accidental), these examples are caused by people and their inherent biases, not the numbers themselves.

It is important that we do not take numbers and statistics that are presented to us for granted. We need to understand the origin of the data and its validity, and question all assumptions made about them.

Risk practice tip 13:

In order to make good decisions in which we properly consider risk and uncertainty, we should think about what we need for good quality statistical evidence and analysis, and the judicious quantification of risk. Using statistics and risk quantification is not the sole way of looking at risk and uncertainty, but it adds a great deal of value as part of the overall picture.

Statistics, intuition and experience – the right combination?

In *Thinking, Fast and Slow* Kahneman outlines his collaboration with the cognitive scientist, Gary Klein to discuss expert intuition. Klein is known for his studies on expert intuition and “naturalistic decision making”. He is the author of several books that include this subject (an interview with Gary is available [here](#)). Their discussions led to a paper they co-wrote in 2009 titled “[Conditions for Intuitive Expertise: A Failure to Disagree](#)”. They also participated in an interview with the McKinsey Quarterly in March 2010, titled “[Strategic decisions: When can you trust your gut?](#)”

What defines expert intuition? When people spend enough time in an environment or sphere of activity that is sufficiently regular to be predictable, and when they gain enough practice at it, System 1 can learn to use them as cues, especially when it can obtain regular and immediate feedback on decisions made and actions implemented.

However, experts can fall prey to overconfidence. They harbour the same types of biases as anyone else. Indeed, it can sometimes be the case that, the better known the expert, the more overconfidence they may have.

In low-validity environments with many variables, complexity and a lot of unknowns and randomness, this is all the more important. Kahneman mentions the work of Philip Tetlock in this field when discussing the validity of forecasts.

In an environment which is less regular and has low validity, our System 1 biases and heuristics that we have described in this paper will all too easily come out – and System 2 will probably be too lazy to interject and fact-check.

Finding a balance of using good data, and analysing and interpreting events with the use of facts, is an important part of good decision-making.

Risk practice tip 14:

In a low-validity environment, err on the side of caution and thoroughly review everything. Seek a good combination of data and expert guidance. Accept that randomness will play a part in the outcome. The accuracy of your predictions in a low-validity environment may be quite poor.

System 2 and “deep work”

To link to the work of Kahneman in *Thinking, Fast and Slow*, how can we ensure System 2 helps us achieve the type of deep work and thinking that helps us take and manage risk well? In a world full of distractions, it requires willpower and conscious effort. System 2 is key to this – yet in a world of constant distraction, continuous partial attention is a constant threat to focus and deep work. For a detailed guide to achieving and succeeding with deep work, consider reading Cal Newport’s book on the subject, [Deep Work](#) and [other material that Newport publishes](#).

Use stories well

We like stories. They provide meaning and causal paths for us that System 1 gravitates towards. Our minds are tuned to respond to stories with “active agents” that have personalities and abilities. It’s important to appreciate this when we are talking about risks. Whilst we may need to provide a lot of detail, we need to think through how best to present it and how people will receive the message.

This is all the more important in a work environment that is low validity where outcomes are hard to predict. How can we use stories to help people think through situations and be agile in a proactive and reactive way to deal with risk?

In order to use stories well, we should make sure we use facts properly, and communicate and engage with others in a way that avoids the traps of biases and convenient but incorrect causal paths.

A few final thoughts

Thinking, Fast and Slow provides context about how our minds work, including:

- why we are more irrational than we like to think;
- how we understand less about the past than we think we do, and
- how our biases play a large part in shaping how we envisage the future – which we often predict quite poorly.

The following points may be worth bearing in mind when it comes to taking and managing risk to achieve objectives, using System 1 and System 2 together:

- Think about how you are framing objectives, activities, initiatives and projects that you are working on. Are you looking at them in a genuinely unbiased way?
- When you are working to solve problems and challenges, make sure you are always focusing on what is really required, and that you are answering the key questions and challenges, not substituting them for easier ones to solve.
- Apply good techniques to ensure your decisions are de-biased, and to avoid various heuristics that can colour your judgment.
- When you have an important decision to make, be careful to avoid optimism bias and confirmation bias. Seek advice from a wide range of people, don't just go to people who will tell you what you want to hear.
- Do not get fixated on finite positions: think about target ranges of outcomes. Avoid the planning fallacy, do the right planning work and set a reasonable target to work towards. If you are going for a moonshot, be clear about it.
- Make the time to think through well-considered scenarios. Look at ranges of outcomes and "what ifs", including good use of data. Discuss these ranges in reviews with a diverse group of people and respect everyone's opinions.
- Use data and rigorous statistical analysis to understand trends, and to help you make informed decisions – including changing course if the evidence justifies it.
- When circumstances change, or signals indicate that they may change, review your position. Do not get caught in an "anchoring bias".
- Question your assumptions regularly, not just when circumstances change.
- Remember that some decisions will turn out to be wrong with the benefit of hindsight. Learn from what goes right and what goes wrong and move forwards.
- Be ready to admit to your own mistakes as well as to see those made by others.
- Learn continuously through fast, pointed reviews (such as [After Action Reviews](#)).

System 1 provides the impressions that often turn into our beliefs. It drives our impulses that often turn into our decisions, and hence our actions. It creates a model of our world that evaluates events and circumstances in an instant. It is the source of immediate and often precise judgements, and it serves us very well for much of the time. Yet it is also the source of many errors that are built into our intuition.

Be mindful to keep System 1 in check when you are reviewing a situation, especially one that is new or novel to you, and / or complex and has major ramifications (be it in a business context or a personal one).

Pause and reflect. Keep System 2 properly engaged and watchful – it is naturally lazy, so stay curious and don't let things slip through.

About the author

[Gareth Byatt](#) is an Independent Risk Consultant and owner of [Risk Insight Consulting](#). He has over 20 years experience working in international risk and project management, and resilience.



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