

The Neuroscientist and author explains **how to break out** of stale, well-worn thinking patterns.

Interview by Stephen Watt

In *On Being Certain*, you compare the mind to ‘a stream that flows along certain well-worn paths.’ How can we break out of stale thought patterns?

One of the keys to dealing well with a complex problem is not to leap to an immediate decision. Emergencies require immediate decisions, but in most situations, you need some time to think things through. The unconscious creates our initial reflexive thoughts, such as when we blurt out something in conversation before we are even aware of what we really want to say. Proper thought, on the other hand, requires time and quiet rumination. When I pose a problem to people whose opinions I respect, they are often completely quiet at first. They react with ‘down time’, which doesn’t indicate that they are lacking in ideas, but just the opposite: that their ideas are percolating.

To break out of stale thinking patterns, you have to take the first reflexive thought that comes to you, step back from it, and ask if this idea (which came from your unconscious) is really correct or not. Another key step is to ask yourself, “What would this look like from another person’s point of view?” You will have your own set of biases, and other people will have theirs. Try to think of the matter from as many points of view as possible. Avoid the questions that everyone else asks – such as whether it is your conscious or unconscious mind making decisions – by rethinking the problem from even *before* the question. You can do that by imagining that you have never heard the question before.

Changing mental habits is difficult. Sometimes you have to do something dramatic and step outside of yourself by staying up all night or travelling to a different country. If you are still stuck on a problem, let it go for a while and come back to it. Allow for the fact that your brain might come up with a creative solution if left to its own devices.

Where does the best decision-making come from: the unconscious mind, which can process a wide array of complex factors, or the conscious mind, with its rational deliberations?

The division between conscious and unconscious thought can be misleading. In my view, it's better to think in terms of cognition as occurring both *within* and *outside* of our awareness, and to recognize that these processes are intimately interrelated. The vast majority of decision-making occurs in the unconscious mind, but unconscious cognition includes conscious inputs.

Say someone shows you a picture of an iceberg calving off into the waters of the Antarctic. That image is perceived and processed unconsciously; how you experience it will depend on your biological predispositions and prior experience. You will then begin your conscious deliberations based upon what your unconscious mind has chosen to deliver into awareness, including the feelings that accompany the image. Your assessment of this image will then be affected by everything from unconscious biases to conscious deliberation. The evidence you gather and opinions you form will be stored into memory, and the next time 'global warming' comes up, your unconscious cognition will take into account this new information—some of which was generated by conscious thought—as well as all the unconscious data that you have accumulated since the last discussion of global warming. In short, reason is not separate from the unconscious mind; it contributes to unconscious cognition but does not exist independently from unconscious involuntary cognitive processes.

Your background in Neurology has given you some fascinating insights into the nature of knowing, or more specifically, our feeling that we know something. Please discuss.

The art of talking and listening to patients has been almost lost in the field of Neurology. When I first entered the profession in the 1960s, there were no MRI scans or the other forms of technology that we see today. Your first step was to have a detailed conversation, and this remains an immensely revealing tool. My initial hunch that the feeling of knowing was a *sensation*—as opposed to some logical conclusion—came when a woman told me, "I know with certainty that I'm dead, but I still have a pulse." That such an illogical feeling could occur as the result of a specific brain insult led me to wonder if the feeling of certainty arose out of primary brain functions as opposed to being the result of conscious deliberation.

The more you see these peculiar syndromes, the more you realize that the feeling of 'knowing' is just that—an involuntary *feeling* that overwhelms logical evidence to the contrary. Through years of research, we have come to understand that

this sensation of conviction arises from the limbic system and partially from the frontal lobe. In a way it is analogous to a feeling of pain; both are subjective sensations that feel 'true' to the person, but require outside validation as to the accuracy and 'truth' of the feeling. A persistent arm pain can reflect an underlying 'reality' such as tendonitis—or can be profoundly misleading, as in the perceptual illusion of an amputee experiencing phantom limb pain.


The fact that certainty *feels* true is not enough: you must go out and try to prove your contention. Think of what a poor state Science would be in if researchers put full faith in their gut instincts. Science is in a constant state of evolution, which means we should be wary of trusting our convictions too dogmatically. Some self-questioning is always beneficial, regardless of the field of study. The reverse of this—the idea that you start with a certainty and then go out and try to prove it—is the basis of many fundamentalist religions, and the cause of many of the world's conflicts.

In addition to your work in Neurology, you have a career as a successful novelist. What insights have you gained into the workings of the brain as it engages in the creative process?

The ability to 'let your mind go' is important for a novelist. Rather than force your mind to produce a plot point, a writer must step back and just watch as the mind lays out the details of a scene. This is a process similar to that practised by Zen Buddhists: you just watch your mind thinking through the various possibilities, as opposed to guiding it. People who regularly practise meditation are aware of how the mind feels when it is processing ideas, including creative ideas. A novelist also develops a form of this awareness during the creative process.

Imagine picking up an object that you have never seen before and do not recognize: you can feel your mind sorting through the alternatives before coming to a conclusion. If you are aware of this process, you can allow the mind to keep going, to produce as many ideas as possible, even if they are ludicrous. This is where new ideas come from, and it is also a way to gain new insights into yourself.

When writing a novel, you alternate between two modes of thinking: the 'editor on' and the 'editor off' modes. If you sit down to write and are willing to write anything, without regard for whether it will work or not, new ideas will emerge. If you think of the creative writing process as the unconscious emerging into consciousness, that is the 'editor off' mode. As soon as you put the 'editor on' mode, by deciding, for example, that you want one character to kill another, you have just determined—quite consciously—the scene you are going to



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write. Creative writing allows you to trust in the pursuit of your ideas at the beginning point, but does not tell you if the ideas are any good. You have to go back and reread your work to make that decision properly.

When I started writing *On Being Certain*, I did not know what the book was going to be about. I trusted myself to start writing without a set goal, knowing that the theme would emerge over time. You have to be in this ‘editor off’ mode to allow your mind to wander through all the possibilities, rather than starting with your thesis and setting out to prove it. Once you allow your mind to operate in this way, you realize the limitations of drawing a distinction between the conscious and unconscious minds. In creativity, as in decision making, the two work in tandem.

If we can’t trust our gut instincts, how can we know if we have arrived at the right decision?

In *Blink*, Malcolm Gladwell tells the story of a curator at the Getty Museum in Los Angeles who bought an ancient Greek statue for a staggering sum of money. After it had become part of the collection, other art critics came along and declared it to be an absolute fake. Gladwell uses this anecdote to illustrate the strength of a snap judgement when it is based on years of prior experience. But expertise – which the critics all had – merely informs the unconscious. It helps unconscious decision-making, but is still subject to error. The interesting question, however, is how did the art critics in this case know that they were right and the curator was wrong? If you read the Getty Museum catalogue today, you will find the statue is listed as either a forgery *or* an original: none of the studies to date have been able to make a final determination. The example that Gladwell uses to show the value of split-second decisions actually demonstrates the central limitation of trusting gut instincts: expertise will increase the odds of being

right, but only objective measures can make the final determination. If the tests are inconclusive, the best you can claim is that you ‘feel’ you are right, but are not completely certain. Gut feelings are nothing more than your unconscious decision-making process accompanied by the involuntary mental sensation that the decision is correct – the feeling of ‘knowing’. Those who uncritically act on their gut feelings are going to make many mistakes.

A simple way to avoid this trap: before trusting in the answer that your unconscious has provided, ask yourself whether the answer can lend itself to falsification. For example, if you are asked whether or not you support euthanasia, ask yourself if you view it as a scientific, religious or moral problem. Categorize your answer. Then ask yourself how you can see it from another point of view – from that of the patient, the doctor, the family, society, economists, since there are many ways of looking at the problem. The more ways you can think about it, the more informed and balanced your decision will be.

Think of the game of poker, where what matters most is not the cards that you hold in your hand, but what your opponent *thinks* you hold in your hand. The best decision making in this scenario requires you to look beyond the cards you are holding and consider how your hand ‘looks’ to your opponents. Likewise, if the goal of a decision is to improve a given situation, it’s important to spend time mulling over what others might be thinking. Instead of blindly defending your own position, put it to the side and consider how the rest of the world thinks. **R**

Robert Burton is the former chief of Neurology and associate chief of the Department of Neurosciences at Mt. Zion-UCSF Hospital in San Francisco. He is the author of *On Being Certain: Believing You Are Right Even When You’re Not* (St. Martin’s Press, 2008.) His writing career includes three critically acclaimed novels and a neuroscience and culture column, *Mind Reader*, at Salon.com.