

Access all content in electronic devices now >>

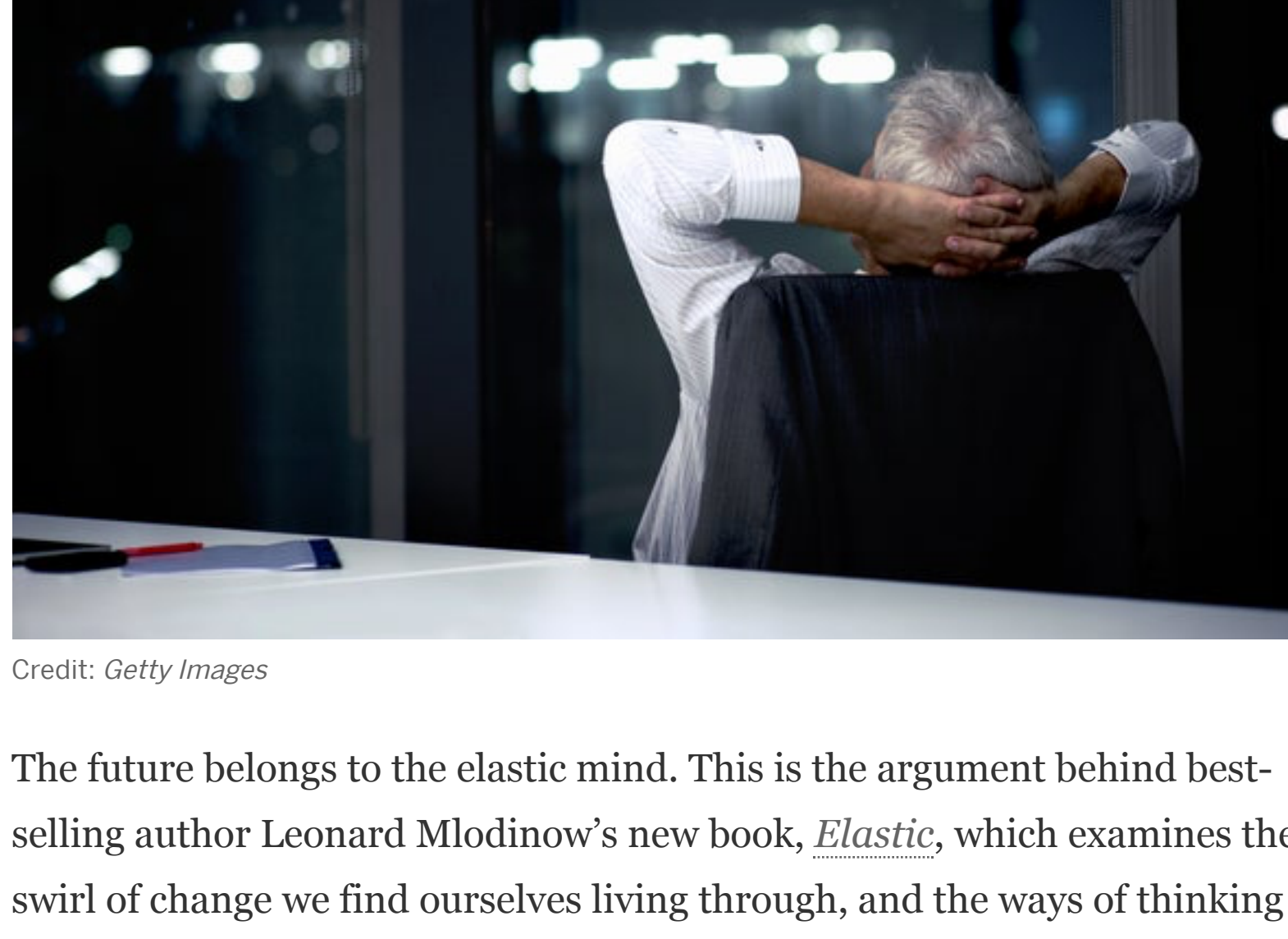
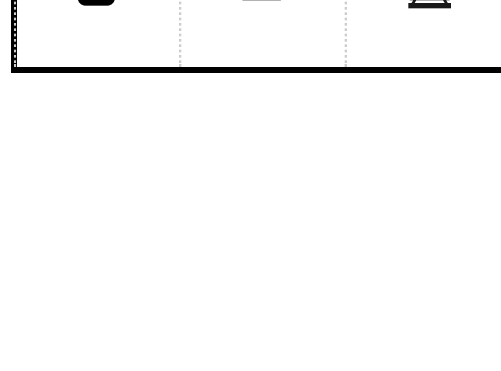


COGNITION

The Power of Flexible Thinking

The cognitive style you need in times of change, explained by best-selling author Leonard Mlodinow

By Gareth Cook on March 21, 2018



Credit: Getty Images

The future belongs to the elastic mind. This is the argument behind best-selling author Leonard Mlodinow's new book, *Elastic*, which examines the swirl of change we find ourselves living through, and the ways of thinking best suited to it. We all have what is needed for "elastic thinking"—to a greater extent, perhaps, than we realize. It's just a matter of recognizing the needed skills, Mlodinow argues, and nurturing them. He answered questions from Mind Matters editor Gareth Cook.

You argue in this book that times we live in demand an "elastic" style of thinking. Can you please explain what you mean by this, and what led you to this conclusion?

It is often remarked that, since the 1960s, the speed and processing power of computers has grown exponentially. But exponential growth has long been a fact of life for many types of technological, cultural and social change, and it has reached a point where even the calmest among us might start to feel dizzy. In politics, we now have to cope with more scandals in a single year than we used to encounter in a lifetime. Our elections are being interfered with. Our news sources have come into question. As one usually Zen-like friend—Deepak Chopra—lamented to me, "the world has become an insane asylum." Meanwhile, in my field, science, researchers are overwhelmed by something more constructive, the more than three million new journal articles each year. In personal technology, we must all learn to navigate a landscape in which the number of websites has been doubling every two to three years, and the way we use and access them is subject to frequent "disruptive change." More importantly, social attitudes are changing just as fast—compare the pace of the civil rights movement to the speed at which the campaign for gay rights swept the developed world. Or look at the overnight rise of the "me too" movement.

ADVERTISEMENT

The failure of businesses to adapt has led to the quick demise of countless companies, and major power shifts in industries from taxis to hospitality. But we must adapt to thrive in our personal lives, too. We have to be willing to rise above conventional mindsets, to reframe the questions we ask, to be open to new paradigms. We have to rely as much on our imagination as on logic, and have the ability to generate and integrate a wide variety of ideas, to welcome experiment, and be tolerant of failure. I call that manner of thought elastic thinking, in contrast to rational or logical thought.

Rational/logical thought is an analysis that can be described by an algorithm of the kind that computers follow. Elastic thought cannot. We evolved the capacity for the former in order to help us face the everyday challenges of life. We evolved the latter to help us succeed when circumstances change—which is why it is increasingly important to hone those skills today. Elastic thought is where your new ideas come from. Imaginative, original, and non-linear, it is "bottom-up" thinking, in which insights percolate into the mind, seemingly from nowhere. Logical thought can determine how to drive from your home to the grocery store most efficiently, but it's elastic thought that gave us the automobile.



Leonard Mlodinow. Credit: Ralph Adolphs

What makes it hard to think "elastically"?

Elastic thinking comes naturally to all humans, but one way it may be inhibited is through another power exercised by our brain, the ability to ignore inappropriate urges and tune out "crazy" ideas. The human brain doesn't act like a single information processor grinding through an algorithm on its way to solving a problem. Instead, it acts as a set of interacting and competing systems. That's why scientists often speak of distinctions such as conscious/unconscious, reason/emotion, or right-brain/left-brain. When it comes to elastic thinking, those structures that generate new ideas must compete with other structures that censor them. We need the latter because our minds are so amazingly prolific that without some filter, we'd be unable to focus, and drown in our own thoughts.

Our mental censors don't randomly kill ideas. They use our knowledge and expectations of the world to assess which ideas are most promising, and only then do they eliminate the rest. Each day, some neural responses are strengthened, and others suppressed. The result is a brain well adapted to its environment, but wired to interpret the world through the lens of what has worked in the past. That approach is well suited to a stable environment. But it can be suboptimal when circumstances change and what is needed is a new way of thinking, or when the usual change doesn't work and we need a new way of looking at a problem.

ADVERTISEMENT

For example, a recent *JAMA* study found that the 30-day mortality among high-risk acute care patients was a third lower when the top doctors were *out of town*, as when they were away at conferences, leaving more junior doctors in charge. The authors explained that most errors doctors make are connected to a tendency to form opinions quickly, based on prior experience, but in cases that are not routine that can be misleading—the expert doctors may miss important aspects of the problem that are not consistent with their initial analysis. So a dose of inexperience can be beneficial. The same is true for eccentricity, or "childishness." That's why when my mother, now 95, still scolds me for "acting like a child," I've learned to take it as a compliment.

Yet you think we are not generally as averse to change as has been portrayed, is that right?

Right. When I started writing *Elastic*, it confused me—I kept running into articles in the *Harvard Business Review* and other business journals about how people have a natural aversion to change. The psychology literature, meanwhile, spoke of the human attraction to novelty and change. Psychologists have a word for it, "neophilia." It is what encouraged our prehistoric ancestors to explore and experiment even when their lives were just fine. Evolution favored that behavior because it led to the discovery of alternate food and water sources, and the invention of new hunting methods and tools, all of which became vital when times changed for the worse. Scientists have identified a gene associated with that novelty-seeking tendency, DRD4, affecting the way our brains respond to the neurotransmitter dopamine, which is important in the brain's motivational circuitry.

Sign up for Scientific American's free newsletters. [Sign Up](#)

So why do business articles commonly say things like "Employees tend to instinctively oppose change," and ask, "Why is change so hard?" That's simple—while management endows change initiatives with names like restructuring, turnaround, or strategic shift, employees often see them as something else: more work for the same pay, layoffs, or just plain chaos. To oppose that isn't change aversion, it's negative consequence aversion, or unemployment aversion.

We all experience that. There are times in our lives when change is a real pain in the butt. Changing from PC to MAC. Changing doctors. Changing residences, with all the work that entails. We don't like change if it harms us, creates undue risk, or causes us to expend extra effort. On the other hand, no one likes a repetitive job, or watching the same episode of the same television show every night. We were built to prefer variety, at least if there is little or no cost.

ADVERTISEMENT

Ask someone to do more work for the same pay, and they will bristle; but if you ask them to do less work for the same pay, they'll throw a party. If employees expected that the terms restructuring, turnaround, or strategic shift referred to beneficial alterations in the workplace, those *Harvard Business Review* articles would be saying "Employees tend to instinctively love change," and asking "Why is change so easy?" And that, the psychologists tell us, is our more natural tendency.

How can we learn to be more elastic in our own thinking?

One of the abilities most important to elastic thinking is the power to relax your mind, to let your guard down. Being focused is important in rational/logical thinking, but it means your filters are turned up high, so your ideas may have a narrow range, and tend to be conventional. Your focus may also impede any tendency to question the assumptions behind whatever issue you are considering. On the other hand, when your mind is relaxed, you can play with the idea of a new paradigm. You're not worried about why your ideas might be wrong. You're not worried about failure. You can experiment. Your mind can wander to new territory, and stumble upon novel ideas, and new ways of looking at things.

That's why it is often fruitful to think intensely about an issue, and then take a break in which you engage in a mild physical activity, but are not mentally focused—as when jogging or in the shower. Or to work out intensely, and then let your mind wander as you cool down and have some water, or even better, a beer. Similarly, researchers have found that quietly pondering an issue when you are intellectually exhausted, at the end of the day, or still in a mental haze, at the beginning, can allow original ideas, which might not otherwise surface, to get through.

ADVERTISEMENT

One can also cultivate insight by adjusting one's external conditions. For example, studies show that sitting in a darkened room, or closing your eyes, can widen your perspective; so can expansive surroundings, even high ceilings. Low ceilings, narrow corridors, and windowless offices have the opposite effect. And a well-lit room can make it difficult to ignore objects in your surroundings that stimulate mundane thoughts, showing aside imaginative musings generated by your right hemisphere. Being able to think without any kind of time pressure is also important when striving for insight, because if you have to start on something else soon, your awareness of that can pull your mind back to the external world. Just as important, interruptions are deadly. A short phone call, email or even a text message can redirect your attention and thoughts. Even the *thought* that some message may be awaiting you can have the same effect.

As a more general exercise to nurture my mental flexibility, I focus on one of my strongly held beliefs. I imagine that someone tells me that the belief is false, and try harder to be open to the possibility that I'm mistaken. I ask questions: Why do I hold that belief? Why might others have come to a different conclusion? I try to take that point of view seriously, and to recall times in the past that I was wrong about something, even though I'd been confident of being right. In fact, more generally, introducing a little discord to your intellectual interactions is also helpful. Yes, much as we may wish to shun those with opposing opinions, studies show—surprisingly—that even if we assign no validity to their opinion, it broadens our perspective to speak to people who disagree with us. And finally, there is positive emotion. Happiness, contentment, and gratitude are not just important life goals; they also prompt us to widen our range of thoughts and actions, explore our environment, and open ourselves to new information, all of which are important to success. So next time you have to choose between work and pleasure, choose pleasure, if only because it'll make you more productive at work.

Are you a scientist who specializes in neuroscience, cognitive science, or psychology? And have you read a recent peer-reviewed paper that you would like to write about? Please send suggestions to Mind Matters editor Gareth Cook, a Pulitzer prize-winning journalist, is the series editor of Best American Infographics and can be reached at garethideas AT gmail.com or Twitter @garethideas.

ABOUT THE AUTHOR(S)

Gareth Cook
Gareth Cook is a Pulitzer Prize-winning journalist who edits Scientific American's Mind Matters online news column.
Recent Articles
The Underappreciated Genuses among Us
Does Consciousness Permeate the Universe?
Botany at the Bar

NEWSLETTER

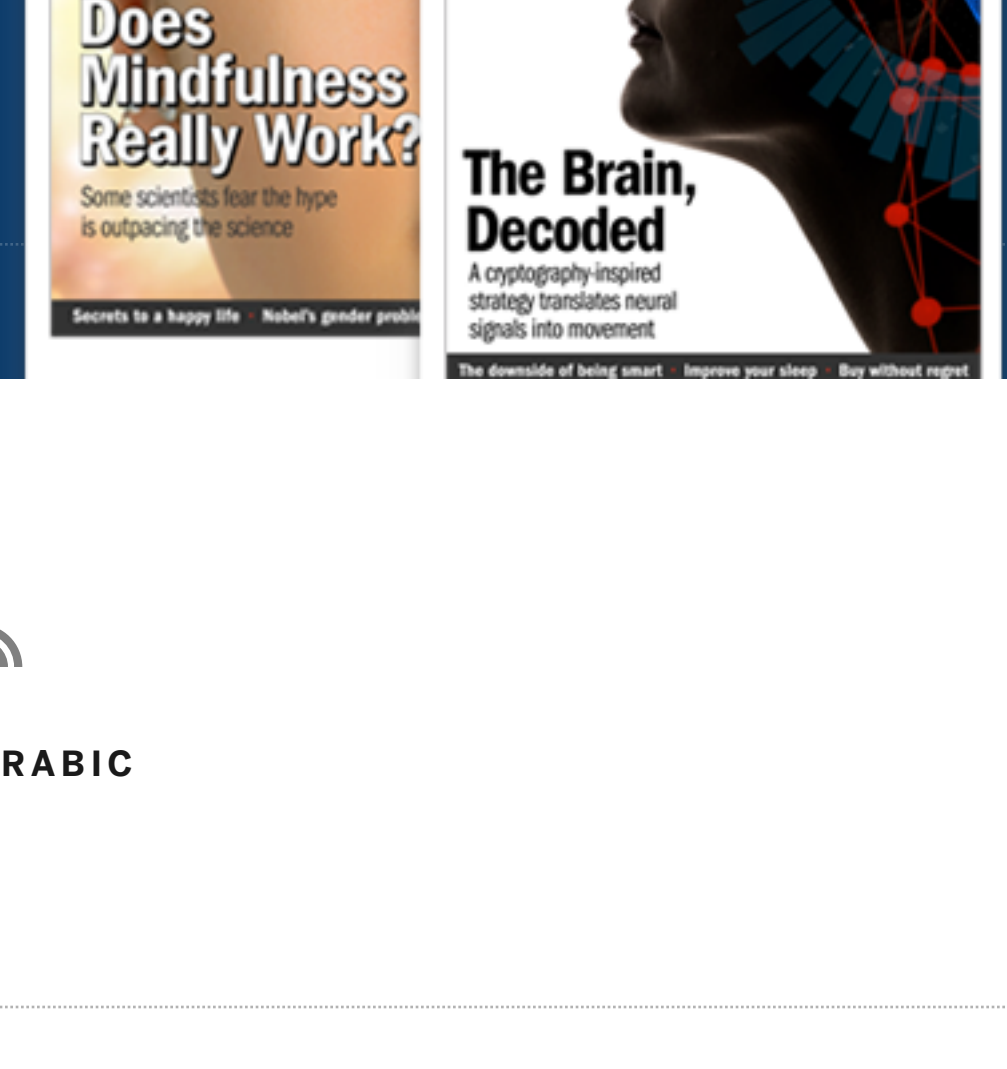
Get smart. Sign up for our email newsletter.

[Sign Up](#)

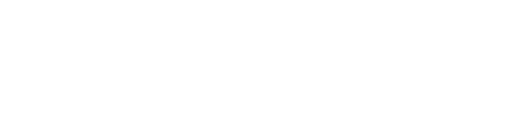
Support Science Journalism

Discover new insights into neuroscience, human behavior and mental health with Scientific American Mind.

[Subscribe Now!](#)



FOLLOW US



SCIENTIFIC AMERICAN ARABIC

العربية

[Return & Refund Policy](#) [About](#) [Press Room](#) [FAQs](#) [Contact Us](#) [Site Map](#) [Advertise](#) [SA Custom Media](#) [Terms of Use](#) [Privacy Policy](#) [Use of Cookies](#) [International Editions](#)

Scientific American is part of Springer Nature, which owns or has commercial relations with thousands of scientific publications (many of them can be found at www.springernature.com/us). Scientific American maintains a strict policy of editorial independence in reporting developments in science to our readers.