



WIRED FOR CHANGE: LEVERAGING INSIGHTS FROM BIOLOGY

BY ANN BUTLER

“Almost no one expected what was coming. It’s not fair to blame us for not predicting the unthinkable.”

—Daniel H. Mudd,
former chief executive, Fannie Mae
in *The New York Times*, October 8, 2008

Either way you spell it, this former CEO’s name is “mud.” Though the pun may be entertaining, the result of failing to explore “unthinkable” scenarios of the future—as evidenced by the current financial crisis—is not.

All of us are susceptible to this shortcoming at some point, in part because of what cognitive scientists and others refer to as “mental models.” These deeply held assumptions—formed through experience, biology, and culture—filter our perceptions and fix the scope of our thoughts, words, and actions.

Mental models may work for us (for example, when our assumption of future success fuels such an outcome) or against us (as when fear of making a mistake dooms our best-laid plans). Either way, what all mental models share are stealth and a resistance to modification. They persist because they influence what we see by causing us to select information that supports them and filter out contradictory data. So, if I believe all small cars are unsafe, I will notice news stories of crashes involving small vehicles and ignore any stories involving large ones.

TEAM TIP

Consider the investment in building the skills needed to stretch your mental models as a “must have” rather than a “nice-to have.”

Unless we learn to identify and modify outmoded mental models, we will continue to cling to a partial view of reality. This tendency can lead to conflict with others who have a different perception, an inability to see new options or solutions to problems, and adherence to existing ways of doing things. Fortunately, the field of neuroscience offers evidence that biology may be on our side: the discovery of so-called mirror neurons and their possible role in hard-wiring empathy and perspective-taking. The act of walking in another’s shoes can be the first step toward identifying and modifying our own outdated mental models.

Monkey See, Monkey Do

As is often told of scientific breakthroughs, the discovery of mirror neurons was serendipitous. In the early 1990s, neuroscientist Giacomo Rizzolatti and colleagues were studying brain activity in macaques performing simple tasks, such as eating peanuts. During a break between experiments, a lab assistant picked up a peanut in view of a monkey that was still wired to electrodes capturing brain activity. To Rizzolatti’s surprise, the monkey’s brain responded as if it had carried out the action itself. This was the first evidence of motor neurons firing in the absence of physical activity. “It took us several years to believe what we were seeing,” said Rizzolatti.

Because these nerve cells appeared to be involved in mentally “mirroring” the actions of others, they were eventually termed “mirror neurons”; just the sound of a particular action in the dark can stimulate them. In macaques, mirror neurons reside in the part of the brain that processes sensory informa-



tion and emotions. Additional studies proved mirror neurons in humans to be even more numerous, widespread, and robust than in monkeys.

In 2005, human brain imaging studies performed by Marco Iacoboni, a neuroscientist and professor at UCLA, established the connection between mirror neurons and empathic response. While mirror neurons responded moderately in subjects watching a hand grasp a coffee cup, substantial neural firing took place when the action was part of a social scene—a table set for a party or a messy table in need of clearing.

“The mirror neurons are not just encoding the actions, but going deeper,” said Iacoboni. “They seem to respond to emotions or intentions, as well.” Researchers suspect that mirror neurons also play a major role, not only in the evolution of empathy, but also in imitative learning and social understanding as well.

Wired for Empathy

Before the discovery of mirror neurons, psychologists believed that we simply theorized other’s intentions; now research posits that a biological mechanism is involved. “Our empathic resonance is grounded in the experience of our acting body and the emotions associated with specific movements,” said Iacoboni, “as when I observe a circus performer on a hanging wire; I feel I am inside his body.”

V.S. Ramachandran, UCSD neuroscience professor and author of the four-volume *Encyclopedia of the Brain*, makes an even bolder claim, stating that the discovery of mirror neurons—which he terms “Gandhi neurons”—is

the underreported story of the decade: “They will do for psychology what DNA did for biology: they will provide a unifying framework and help explain a host of mental abilities that have hitherto remained mysterious and inaccessible to experiments.”

Ramachandran’s lab investigates the interplay of mirror neurons and the distinctly human achievements of abstraction, symbolism, and language. Mirror neurons may drive our ability to make and understand metaphor and may explain the evolution of the self. According to Ramachandran, neural mirrors create a reinforcing loop between self-awareness and other-awareness: “an autocatalytic cascade that culminated in the fully human sense of self. You say you are being ‘self-conscious’ when you really mean being conscious of someone else being conscious of you.”

Mindfulness for a Change

So, how can this knowledge about mirror neurons help us overcome the negative affects of our mental models? First, knowing that we may be wired for communal meaning-making strengthens the case for practices and tools that bring people together to openly express their individual experiences and per-

spectives. These include methods that support shared visioning, group learning, scenario planning, dialogue, and non-hierarchical decision-making.

Second, in *The Fifth Discipline* and *The Fifth Discipline Fieldbook*, Peter Senge and his coauthors address ways we can air out unproductive mental models on an individual level. These include recognizing when we jump to conclusions rather than maintain an observational stance, and being vigilant of contradictions between what we say we believe and what we actually do. The ladder of inference, balancing advocacy and inquiry, and the left-hand column are just some of the ways in which we can improve communication and open ourselves to different perspectives.

Finally, beyond empathy and rigorous self-examination, simply being more mindful helps us identify and adjust our working mental models. Mindfulness is placing one’s full attention on what is happening in and around oneself from moment to moment. While bringing our chattering brain to stillness is a challenge, regular practice can help us get there (see “Mindfulness 101”). When freed from the impulse to integrate our experience of the here and now with the past, the future, arising emotions,

and the continual self-talk, we can achieve a state of clarity and start to see the world in new ways.

Some corporations have already begun to bring mindfulness techniques into the workplace, including Apple Computers, Toyota, Volvo, General Motors, and IBM. They report reduced turnover and healthcare costs, improved job satisfaction and performance, and a rise in empathy and teamwork. With the recent advances in the science of mirror neurons, it appears our biology supports these practices typical of authentic learning organizations. ■

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MINDFULNESS 101

- Bring mind and body to stillness
- Focus on the breath
- Allow the here and now to take all your attention
- Receive these sensations without judgment
- Be an objective observer of any thoughts and emotions which arise
- Neither grasp nor push away the experience