New studies of the brain show that leaders can improve group performance by understanding the biology of empathy. **by Daniel Goleman and Richard Boyatzis**

Social Intelligence *and the Biology of* Leadership

IN 1998, ONE OF US, DANIEL GOLEMAN, published in these pages his first article on emotional intelligence and leadership. The response to "What Makes a Leader?" was enthusiastic. People throughout and beyond the business community started talking about the vital role that empathy and self-knowledge play in effective leadership. The concept of emotional intelligence continues to occupy a prominent space in the leadership literature and in everyday coaching practices. But in the past five years, research in the emerging field of social neuroscience – the study of what happens in the brain while people interact – is beginning to reveal subtle new truths about what makes a good leader.

Jean-François Podevin

The salient discovery is that certain things leaders do – specifically, exhibit empathy and become attuned to others' moods – literally affect both their own brain chemistry and that of their followers. Indeed, researchers have found that the leader-follower dynamic is not a case of two (or more) independent brains reacting consciously or unconsciously to each other. Rather, the individual minds become, in a sense, fused into a single system. We believe that great leaders are those whose behavior powerfully leverages the system of brain interconnectedness. We place them on the opposite end of the neural continuum from people with serious social disorders, such as autism or Asperger's syndrome, that are characterized by underdevelopment in the areas of the brain associated with social interactions. If we are correct, it follows that a potent way of becoming a better leader is to find authentic contexts in which to learn the kinds of social behavior that reinforce the brain's social circuitry. Leading effectively is, in other words, less about mastering situations – or even mastering social skill sets – than about developing a genuine interest in and talent for fostering positive feelings in the people whose cooperation and support you need.

The notion that effective leadership is about having powerful social circuits in the brain has prompted us to extend our concept of emotional intelligence, which we had grounded in theories of individual psychology. A more relationship-based construct for assessing leadership is *social intelligence*, which we define as a set of interpersonal competencies built on specific neural circuits (and related endocrine systems) that inspire others to be effective.

The idea that leaders need social skills is not new, of course. In 1920, Columbia University psychologist Edward Thorndike pointed out that "the best mechanic in a factory may fail as a foreman for lack of social intelligence." More recently, our colleague Claudio Fernández-Aráoz found in an analysis of new C-level executives that those who had been hired for their self-discipline, drive, and intellect were sometimes later fired for lacking basic social skills. In other words, the people Fernández-Aráoz studied had smarts in spades, but their inability to get along socially on the job was professionally self-defeating.

What's new about our definition of social intelligence is its biological underpinning, which we will explore in the following pages. Drawing on the work of neuroscientists, our own research and consulting endeavors, and the findings of researchers affiliated with the Consortium for Research on Emotional Intelligence in Organizations, we will show you how to translate newly acquired knowledge about mirror neurons, spindle cells, and oscillators into practical, socially intelligent behaviors that can reinforce the neural links between you and your followers.

Do Women Have Stronger Social Circuits?

People often ask whether gender differences factor into the social intelligence skills needed for outstanding leadership. The answer is yes and no. It's true that women tend, on average, to be better than men at immediately sensing other people's emotions, whereas men tend to have more social confidence, at least in work settings. However, gender differences in social intelligence that are dramatic in the general population are all but absent among the most successful leaders.

When the University of Toledo's Margaret Hopkins studied several hundred executives from a major bank, she found gender differences in social intelligence in the overall group but not between the most effective men and the most effective women. Ruth Malloy of the Hay Group uncovered a similar pattern in her study of CEOs of international companies. Gender, clearly, is not neural destiny.

Followers Mirror Their Leaders – Literally

Perhaps the most stunning recent discovery in behavioral neuroscience is the identification of *mirror neurons* in widely dispersed areas of the brain. Italian neuroscientists found them by accident while monitoring a particular cell in a monkey's brain that fired only when the monkey raised its arm. One day a lab assistant lifted an ice cream cone to his own mouth and triggered a reaction in the monkey's cell. It was the first evidence that the brain is peppered with neurons that mimic, or mirror, what another being does. This previously unknown class of brain cells operates as neural Wi-Fi, allowing us to navigate our social world. When we consciously or unconsciously detect someone else's emotions through their actions, our mirror neurons reproduce those emotions. Collectively, these neurons create an instant sense of shared experience.

Mirror neurons have particular importance in organizations, because leaders' emotions and actions prompt followers to mirror those feelings and deeds. The effects of activating neural circuitry in followers' brains can be very powerful. In a recent study, our colleague Marie Dasborough observed two groups: One received negative performance feedback accompanied by positive emotional signals – namely, nods and smiles; the other was given positive feedback that was delivered critically, with frowns and narrowed eyes. In subsequent interviews conducted to compare the emotional states of the two groups, the people who had received positive feedback accompanied by negative emotional signals reported feeling worse about their per-

formance than did the participants who had received good-natured negative feedback. In effect, the delivery was more important than the message itself. And everybody knows that when people feel better, they perform better. So, if leaders hope to get the best out of their people, they should continue to be demanding but in ways that foster a positive mood in their teams. The old carrot-and-stick approach alone doesn't make neural sense; traditional incentive systems are simply not enough to get the best performance from followers.

Here's an example of what does work. It turns out that there's a subset of mirror neurons whose only job is to detect other people's smiles and laughter, prompting smiles and laughter in return. A boss who is self-controlled and humorless will rarely engage those neurons in his team members, but a boss who laughs and sets an easygoing tone puts those neurons to work, triggering spontaneous laughter and knitting his team together in the process. A bonded group is one that performs well, as our colleague Fabio Sala has shown in his research. He found that top-performing leaders elicited laughter from their subordinates three times as often, on average, as did midperforming leaders. Being in a good mood, other research finds, helps people take in information effectively and respond nimbly and creatively. In other words, laughter is serious business.

It certainly made a difference at one university-based hospital in Boston. Two doctors we'll call Dr. Burke and Dr. Humboldt were in contention for the post of CEO of the corporation that ran this hospital and others. Both of them headed up departments, were superb physicians, and had published many widely cited research articles in prestigious medical journals. But the two had very different personalities. Burke was intense, task focused, and impersonal. He was a relentless perfectionist with a combative tone that kept his staff continually on edge. Humboldt was no less demanding, but he was very approachable, even playful, in relating to staff, colleagues, and patients. Observers noted that people smiled and teased one another – and even spoke their minds – more in Humboldt's department than in Burke's. Prized talent often ended up leaving Burke's department; in contrast, outstanding folks gravitated to Humboldt's warmer working climate. Recognizing Humboldt's socially intelligent leadership style, the hospital corporation's board picked him as the new CEO.

The "Finely Attuned" Leader

Great executives often talk about leading from the gut. Indeed, having good instincts is widely recognized as an advantage for a leader in any context, whether in reading the mood of one's organization or in conducting a delicate negotiation with the competition. Leadership scholars characterize this talent as an ability to recognize patterns, usually born of extensive experience. Their advice: Trust your gut, but get lots of input as you make decisions. That's sound practice, of course, but managers don't always have the time to consult dozens of people.

Findings in neuroscience suggest that this approach is probably too cautious. Intuition, too, is in the brain, produced in part by a class of neurons called *spindle cells* because of their shape. They have a body size about four times that of other brain cells, with an extra-long branch to make attaching to other cells easier and transmitting thoughts and feelings to them quicker. This ultrarapid connection of emotions, beliefs, and judgments creates what behavioral scientists call our social guidance system. Spindle cells trigger neural networks that come into play whenever we have to choose the best response among many – even for a task as routine as prioritizing a to-do list. These cells also help us gauge whether someone is trustworthy and right (or wrong) for a job. Within one-twentieth of a second, our spindle cells fire with information about how we feel about that person; such "thin-slice" judgments can be very accurate, as follow-up metrics reveal. Therefore, leaders should not fear to act on those judgments, provided that they are also attuned to others' moods.

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Such attunement is literally physical. Followers of an effective leader

experience rapport with her – or what we and our colleague Annie McKee call "resonance." Much of this feeling arises unconsciously, thanks to mirror neurons and spindle-cell circuitry. But another class of neurons is also involved: *Oscillators* coordinate people physically by regulating how and when their bodies move together. You can see oscillators in action when you watch people about to kiss; their movements look like a dance, one body responding to the other seamlessly. The same dynamic occurs when two cellists play together. Not only do they hit their notes in unison, but thanks to oscillators, the two musicians' right brain hemispheres are more closely coordinated than are the left and right sides of their individual brains.

Firing Up Your Social Neurons

The firing of social neurons is evident all around us. We once analyzed a video of Herb Kelleher, a cofounder and former CEO of Southwest Airlines, strolling down the corridors of Love Field in Dallas, the airline's hub. We could practically see him activate the mirror neurons, oscillators, and other social circuitry in each person he encountered. He offered beaming smiles, shook hands with customers as he told them how much he appreciated their business, hugged employees as he thanked them for their good work. And he got back exactly what he gave. Typical was the flight attendant whose face lit up when she unexpectedly encountered her boss. "Oh, my honey!" she blurted, brimming with warmth, and gave him a big hug. She later explained, "Everyone just feels like family with him."

Unfortunately, it's not easy to turn yourself into a Herb Kelleher or a Dr. Humboldt if you're not one already. We know of no clear-cut methods to strengthen mirror neurons, spindle cells, and oscillators; they activate by the thousands per second during any encounter, and their precise firing patterns remain elusive. What's more, self-conscious attempts to display social intelligence can often backfire. When you make an intentional effort to coordinate movements with another person, it is not only oscillators that fire. In such situations the brain uses other, less adept circuitry to initiate and guide movements; as a result, the interaction feels forced.

The only way to develop your social circuitry effectively is to undertake the hard work of changing your behavior (see "Primal Leadership: The Hidden Driver of Great Performance," our December 2001 HBR article with Annie McKee). Companies interested in leadership development need to begin by assessing the willingness of individuals to enter a change program. Eager candidates should first develop a personal vision for change and then undergo a thorough diagnostic assessment, akin to a medical workup, to identify areas of social weakness and strength. Armed with the feedback, the aspiring leader can be trained in specific areas where developing better social skills will have the greatest payoff. The training can range from rehearsing better ways of interacting and trying them out at every opportunity, to being shadowed by a coach

Are You a Socially Intelligent Leader?

To measure an executive's social intelligence and help him or her develop a plan for improving it, we have a specialist administer our behavioral assessment tool, the Emotional and Social Competency Inventory. It is a 360-degree evaluation instrument by which bosses, peers, direct reports, clients, and sometimes even family members assess a leader according to seven social intelligence qualities.

We came up with these seven by integrating our existing emotional intelligence framework with data assembled by our colleagues at the Hay Group, who used hard metrics to capture the behavior of top-performing leaders at hundreds of corporations over two decades. Listed here are each of the qualities, followed by some of the questions we use to assess them.

EMPATHY

- ☐ **Do you understand** what motivates other people, even those from different backgrounds?
- ☐ **Are you sensitive** to others' needs?

ATTUNEMENT

- ☐ **Do you listen attentively** and think about how others feel?
- ☐ **Are you attuned** to others' moods?

and then debriefed about what he observes, to learning directly from a role model. The options are many, but the road to success is always tough.

How to Become Socially Smarter

To see what social intelligence training involves, consider the case of a top executive we'll call Janice. She had been hired as a marketing manager by a *Fortune* 500 company because of her business expertise, outstanding track record as a strategic thinker and planner, reputation as a straight talker, and ability to anticipate business issues that were crucial for meeting goals. Within her first six months on the job, however, Janice was floundering; other executives saw her as aggressive and opinionated, lacking in political astuteness, and careless about what she said and to whom, especially higher-ups.

To save this promising leader, Janice's boss called in Kathleen Cavallo, an organizational psychologist and senior consultant with the Hay Group, who immediately put Janice through a 360-degree evaluation. Her direct reports, peers, and managers gave Janice low ratings on empathy, service orientation, adaptability, and managing conflicts. Cavallo learned more by having confidential conversations with the people who worked most closely with Janice. Their complaints focused on her failure to establish rapport with people or even notice their reactions. The bottom line: Janice was adept neither at reading the social norms of a group nor at recognizing people's emotional cues when she violated those norms. Even more dangerous, Janice did not realize she was being too blunt in managing upward. When she had a strong difference of opinion with a manager, she did not sense when to back off. Her "let's get it all on the table and mix it up" approach was threatening her job; top management was getting fed up.

When Cavallo presented this performance feedback as a wake-up call to Janice, she was of course shaken to discover that her job might be in danger. What upset her more, though, was the realization that she was not having her desired impact on other people. Cavallo initiated coaching sessions in which Janice would describe notable successes and failures from her day. The more time Janice spent reviewing these incidents, the better she became at recognizing the difference between expressing an idea with conviction and acting like a pit bull. She began to anticipate how people might react to her in a meeting or during a negative performance review; she rehearsed more-astute ways to present her opinions; and she developed a personal vision for change. Such mental preparation activates the social circuitry of the brain, strengthening the neural connections you need to act effectively; that's why Olympic athletes put hundreds of hours into mental review of their moves.

At one point, Cavallo asked Janice to name a leader in her organization who had excellent social intelligence skills. Janice identified a veteran senior manager who was masterly both in the art of the critique and at expressing disagreement in meetings without damaging relationships. She asked him to

ORGANIZATIONAL AWARENESS

- ☐ **Do you appreciate** the culture and values of the group or organization?
- ☐ **Do you understand social networks** and know their unspoken norms?

INFLUENCE

- ☐ **Do you persuade others** by engaging them in discussion and appealing to their self-interests?
- ☐ **Do you get support** from key people?

DEVELOPING OTHERS

- ☐ **Do you coach** and mentor others with compassion and personally invest time and energy in mentoring?
- ☐ **Do you provide feedback** that people find helpful for their professional development?

INSPIRATION

- ☐ **Do you articulate a compelling vision,** build group pride, and foster a positive emotional tone?
- ☐ **Do you lead** by bringing out the best in people?

TEAMWORK

- ☐ **Do you solicit input** from everyone on the team?
- ☐ **Do you support** all team members and encourage cooperation?

help coach her, and she switched to a job where she could work with him – a post she held for two years. Janice was lucky to find a mentor who believed that part of a leader's job is to develop human capital. Many bosses would rather manage around a problem employee than help her get better. Janice's new boss took her on because he recognized her other strengths as invaluable, and his gut told him that Janice could improve with guidance.

Before meetings, Janice's mentor coached her on how to express her viewpoint about contentious issues and how to talk to higher-ups, and he modeled for her the art of performance feedback. By observing him day in and day out, Janice learned to affirm people even as she challenged their positions or critiqued their performance. Spending time with a living, breathing model of effective behavior provides the perfect stimulation for our mirror neurons, which allow us to directly experience, internalize, and ultimately emulate what we observe.

Janice's transformation was genuine and comprehensive. In a sense, she went in one person and came out another. If you think about it, that's an important lesson from neuroscience: Because our behavior creates and develops neural networks, we are not necessarily prisoners of our genes and our early childhood experiences. Leaders can change if, like Janice, they are ready to put in the effort. As she progressed in her training, the social behaviors she was learning became more like second nature to her. In scientific terms, Janice was strengthening her social circuits through practice. And as others responded to her, their brains connected with hers more profoundly and effectively, thereby reinforcing Janice's circuits in a virtuous circle. The upshot: Janice went from being on the verge of dismissal to getting promoted to a position two levels up.

A few years later, some members of Janice's staff left the company because they were not happy – so she asked Cavallo to come back. Cavallo discovered that although Janice had mastered the ability to communicate and connect with management and peers, she still sometimes missed cues from her direct reports when they tried to signal their frustration. With more help from Cavallo, Janice was able to turn the situation around by refocusing her attention on her staff's emotional needs and fine-tuning her communication style. Opinion surveys conducted with Janice's staff before and after Cavallo's second round of coaching documented dramatic increases in their emotional commitment and intention to stay in the organization. Janice and the staff also delivered a 6% increase in annual sales, and after another successful year she was made president of a multibillion-dollar unit. Companies can clearly benefit a lot from putting people through the kind of program Janice completed.

Hard Metrics of Social Intelligence

Our research over the past decade has confirmed that there is a large performance gap between socially intelligent and socially unintelligent leaders. At a major national bank, for example, we found that levels of an executive's social intelligence competencies predicted yearly performance appraisals more powerfully than did the emotional intelligence competencies of self-awareness and self-management. (For a brief explanation of our assessment tool, which focuses on seven dimensions, see the exhibit "Are You a Socially Intelligent Leader?")

The Chemistry of Stress

When people are under stress, surges in the stress hormones adrenaline and cortisol strongly affect their reasoning and cognition. At low levels, cortisol facilitates thinking and other mental functions, so well-timed pressure to perform and targeted critiques of subordinates certainly have their place. When a leader's demands become too great for a subordinate to handle, however, soaring cortisol levels and an added hard kick of adrenaline can paralyze the mind's critical abilities. Attention fixates on the threat from the boss rather than the work at hand; memory, planning, and creativity go out the window. People fall back on old habits, no matter how unsuitable those are for addressing new challenges.

Poorly delivered criticism and displays of anger by leaders are common triggers of hormonal surges. In fact, when laboratory scientists want to study the highest levels of stress hormones, they simulate a job interview in which an applicant receives intense face-to-face criticism – an analogue of a boss's tearing apart a subordinate's performance. Researchers likewise find that when someone who is very important to a person expresses contempt or disgust toward him, his stress circuitry triggers an explosion of stress hormones and a spike in heart rate by 30 to 40 beats per minute. Then, because of the interpersonal dynamic of mirror neurons and oscillators, the tension spreads to other people. Before you know it, the destructive emotions have infected an entire group and inhibited its performance.

Leaders are themselves not immune to the contagion of stress. All the more reason they should take the time to understand the biology of their emotions.

The way to develop your social circuitry is to **undertake the hard work of changing your behavior.**

Social intelligence turns out to be especially important in crisis situations. Consider the experience of workers at a large Canadian provincial health care system that had gone through drastic cutbacks and a reorganization. Internal surveys revealed that the frontline workers had become frustrated that they were no longer able to give their patients a high level of care. Notably, workers whose leaders scored low in social intelligence reported unmet patient-care needs at three times the rate – and emotional exhaustion at four times the rate – of their colleagues who had supportive leaders. At the same time, nurses with socially intelligent bosses reported good emotional health and an enhanced ability to care for their patients, even during the stress of layoffs (see the sidebar "The Chemistry of Stress"). These results should be compulsory reading for the boards of companies in crisis. Such boards typically favor expertise over social intelligence when selecting someone to guide the institution through tough times. A crisis manager needs both.

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As we explore the discoveries of neuroscience, we are struck by how closely the best psychological theories of development map to the newly charted hardwiring of the brain. Back in the 1950s, for example, British pediatrician and psychoanalyst D.W. Winnicott was advocating for play as a way to accelerate children's learning. Similarly, British physician and psychoanalyst John Bowlby emphasized the importance of providing a secure base from which people can strive toward goals, take risks without unwarranted fear, and freely explore new possibilities. Hard-bitten executives may consider it absurdly indulgent and financially untenable to concern themselves with such theories in a world where bottom-line performance is the yardstick of success. But as new ways of scientifically measuring human development start to bear out these theories and link them directly with performance, the so-called soft side of business begins to look not so soft after all.

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Thomas Cheney

"So, what makes you think you'd fit in?"

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