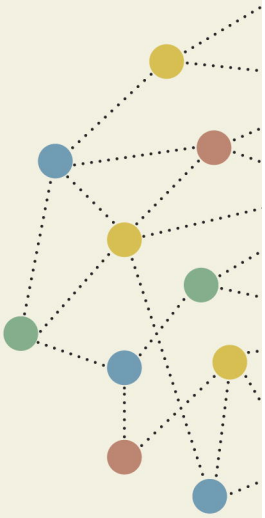

Social

Why Our Brains Are Wired to Connect

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First Edition

For Naomi and Ian,
who showed me what my social brain was for

CONTENTS

PREFACE

Centuries ago, the philosopher Jeremy Bentham wrote, "Pain and pleasure . . . govern us in all we do, in all we say, in all we think." There is little doubt that we are drawn to physical pleasure and work hard to avoid physical pain. But do they "govern us in all we do"? Is this all that we are? I think they govern us far less than we typically assume. The institutions and incentive structures of society operate largely in accordance with Bentham's claim and thus are missing out on some of the most profound motivators of human behavior.

What Bentham and the rest of us typically overlook is that humans are wired with another set of interests that are just as basic as physical pain and pleasure. We are wired to be social. We are driven by deep motivations to stay connected with friends and family. We are naturally curious about what is going on in the minds of other people. And our identities are formed by the values lent to us from the groups we call our own. These connections lead to strange behaviors that violate our expectation of rational self-interest and make sense only if our social nature is taken as a starting point for who we are.

Over the past two decades, my colleagues and I have created a new kind of science called *social cognitive neuroscience*. Using tools like functional magnetic resonance imaging (fMRI), we have made startling discoveries of how the human brain responds to the social world—discoveries that were not possible before. These findings

repeatedly reinforce the conclusion that our brains are wired to connect with other people. Some parts of the social mind can be traced back to the earliest mammals hundreds of millions of years ago. Other parts of the social mind evolved very recently and may be unique to humans. Understanding how these mental mechanisms drive our behavior is critical to improving the lives of individuals and organizations. This book will illuminate the neural mechanisms of the social mind and how they relate to making the most of our social lives.

Part One

Beginnings

CHAPTER 1

Who Are We?

Irv and Gloria lived the American dream for more than half a century. Depression-era children, they lifted themselves up from humble beginnings to become the toast of Atlantic City. They met when they were barely teens and spent their high school years going steady. Irv was admitted to Duke University, but then he signed up to serve his country as a naval pilot in World War II. When he went off to training camp, Gloria went with him. They were married just after the war and gave birth to two baby boomers who went on to become successful lawyers. Irv built the house he and Gloria lived in with his own hands. Later, he worked in real estate, and Gloria worked in his office with him. They had a knack for the business, and it didn't hurt that they had been savvy enough to purchase a few parking lots that the emerging casino industry would later want to snatch up. Irv and Gloria were inseparable. They lived, worked, and vacationed together.

At the age of sixty-seven, Irv learned that he had advanced prostate cancer, and he died soon after. Irv's death was a devastating blow to Gloria. People deal with tremendous adversity all the time and find ways to move on, but Gloria never did. She spent the rest of her days fixated on the loss of her partner, while her mind and memory slowly deteriorated. Over time, she became a different person. Before, she had always been charming and witty, if somewhat of a worrier. After Irv's passing, she became self-centered, inattentive, and even mean-spirited at times.

Gloria's friends wondered what had happened to her as they abandoned her one by one. Family struggled to put up with her moods and behavior. Most of the explanations offered for the changes she had undergone focused on neurobiology. Maybe she had some form of Alzheimer's disease or dementia? But nothing really supported such a diagnosis other than her growing memory loss. Some asked whether the medication she was taking to deal with her acute grief had left her with long-term neurological damage. Gloria, however, did not ponder such questions. She knew what was wrong—she would rather have died than live another day without Irv. I know this because she told me every chance she got. She was my grandmother. In her mind, she was dying of a broken heart. Years later, when I asked my father what had led her to change so radically, he said, "She died the moment he died. She didn't have a happy moment after."

Growing up, I had seen my grandparents as models of adulthood, of a strong, healthy marriage, and of the benefits of lifelong companionship. I spent my early summers living in their house, the one that Pop Irv built. I noticed how attentive and loving they were with each other and how they engaged with everyone else around them. Today, like Irv and Gloria, my wife and I work in the same profession in offices that are 20 feet apart. I learned from my grandparents that this is what it means to be happy. Why is it that the same relationship that can make you so happy for so many years can make life feel like it isn't worth living when the relationship is over or a loved one has passed on? Why have our brains been built to make us feel so much pain at the loss of a loved one? Could our capacity to feel so much pain be a design flaw in our neural architecture?

The research my wife and I have done over the past decade shows that this response, far from being an accident, is actually profoundly important to our survival. Our brains evolved to experience threats to our social connections in much the same way they experience physical pain. By activating the same neural circuitry

that causes us to feel physical pain, our experience of social pain helps ensure the survival of our children by helping to keep them close to their parents. The neural link between social and physical pain also ensures that staying socially connected will be a lifelong need, like food and warmth. Given the fact that our brains treat social and physical pain similarly, should we as a society treat social pain differently than we do? We don't expect someone with a broken leg to "just get over it." And yet when it comes to the pain of social loss, this is a common response. The research that I and others have done using fMRI (functional magnetic resonance imaging) shows that how we experience social pain is at odds with our perception of ourselves. We intuitively believe social and physical pain are radically different kinds of experiences, yet the way our brains treat them suggests that they are more similar than we imagine.

Social will focus on three major adaptations in our brains that lead us to be more connected to the social world and better able to take advantage of these social connections to build more cohesive groups and organizations. The neural overlap between social and physical pain is the first of these adaptations. It ensures that we will spend our entire lives motivated by social *connection*.

Choosing a President

On October 21, 1984, President Ronald Reagan and his challenger, former Vice President Walter Mondale, held the second of two nationally televised presidential debates in the run-up to the presidential election. President Reagan remained popular, but his support was softening in light of growing concerns about his age. His poor performance in the previous debate, three weeks earlier, had opened the door to questions about his mental fitness. If reelected, Reagan would become the oldest sitting president in U.S. history (he was seventy-three at the time of the debate). Reagan's performance at this final debate is frequently cited as a turning point in the election,

when Reagan's popular support solidified, contributing to the largest electoral landslide in history.

How did Reagan demonstrate that he was still in command of all of his faculties? Did he display his erudition on the current issues of the day? Did he play to his own strengths by vigorously attacking Mondale on issues like foreign policy or the tax code? No. It was Reagan's comedic timing that allowed him to carry the day. Reagan delivered a series of prefabricated one-liners with aplomb, regained his momentum, and never looked back. The most notable zinger came when the moderator asked him if age was a concern in the election. Reagan famously replied, "I will not make age an issue of this campaign. I am not going to exploit, for political purposes, my opponent's youth and inexperience." Mondale, not exactly a spring chicken at fifty-six, later commented that he knew at that very moment he had lost the campaign.

That night, nearly 70 million Americans watched the debate and came away convinced that the Gipper still had his mojo. Any fears people had that President Reagan had slipped were assuaged. But how we as a nation reached this conclusion on that night is surprising. Reagan himself didn't change our minds about him. It took a few hundred people in the audience to change our minds. It was their laughter coming over the airwaves that moved the needle on how we viewed Reagan.

Social psychologist Steve Fein asked people who had not seen the debate to watch a recording of it in one of two ways. Some individuals saw clips of the debate and the audience's reaction as it was played on live television, while others saw the debate without being able to hear the audience's reactions. In both cases, viewers heard the president deliver the same lines. Viewers who heard the audience laughter rated Reagan as having outperformed Mondale. However, those who did not hear the laughing responded quite differently; these viewers indicated a decisive victory for Vice President Mondale. In other words, we didn't think Reagan was funny because Reagan was funny. We thought Reagan was funny because

a small group of strangers in the audience thought Reagan was funny. We were influenced by innocuous social cues.

Imagine watching the debate yourself (or maybe you did watch it). Would you think audience laughter could influence your evaluation of the candidates? Would you be influenced by those graphs that CNN shows at the bottom of the screen during today's debates to indicate how a handful of people are responding to the candidates, moment by moment? Would it sway your vote? Most of us, I suspect, would say no. The notion that our decision about who should be the president of our nation could be altered by the responses of a few people in the audience violates our theory of human nature, our sense of "who we are." We like to think of ourselves as independent-minded and immune to this sort of influence. Yet we would be wrong. Every day others influence us in countless ways that we do not recognize or appreciate. If this is true, why would our brains be built to be unwittingly influenced by people we don't even know?

Before judging the gullibility of our gray matter so harshly for using audience reactions to make sense of Reagan, let's take a moment to appreciate just how difficult it is to read other people's minds, to discern their character from the things they say and do. Thoughts, feelings, and personalities are invisible entities that can only be inferred, never seen. Assessing someone else's state of mind can be a herculean undertaking. Was Reagan still Reagan? Or had his mental faculties diminished? How could we know the difference without extensive neurological examinations? We all engage in this kind of mindreading of others every day; and it is so challenging that evolution gave us dedicated neural circuitry to do it.

While we tend to think it is our capacity for abstract reasoning that is responsible for *Homo sapiens'* dominating the planet, there is increasing evidence that our dominance as a species may be attributable to our ability to think socially. The greatest ideas almost always require teamwork to bring them to fruition; social reasoning is what allows us to build and maintain the social

relationships and infrastructure needed for teams to thrive. That the brain has a network devoted to this kind of *mindreading* of others is the second of the three major brain adaptations I will discuss in this book.

The surprising thing is that even though social reasoning feels like other kinds of reasoning, the neural systems that handle social and nonsocial reasoning are quite distinct, and literally operate at odds with each other much of the time. In many situations, the more you turn on the brain network for nonsocial reasoning, the more you *turn off* the brain network for social reasoning. This antagonism between social and nonsocial thinking is really important because the more someone is focused on a problem, the more that person might be likely to alienate others around him or her who could help solve the problem. Effective nonsocial problem solving may interfere with the neural circuitry that promotes effective thinking about the group's needs.

The presence of a dedicated system for social reasoning in our brains still doesn't explain why most people watching the presidential debate were so affected by the responses of the audience. In this situation, the social reasoning system appears to have failed, resulting in distorted perceptions of the debate. Some part of our minds mistook anonymous audience laughter as a valid indicator of Reagan's mental vigor. Why would we substitute the judgment of others for our own? This was no momentary lapse. The world is filled with such laugh tracks and other contextual cues because our brains are designed to be influenced by others. Our brains are built to ensure that we will come to hold the beliefs and values of those around us.

In Eastern cultures, it is generally accepted that only by being sensitive to what others are thinking and doing can we successfully *harmonize* with one another so that we may achieve more together than we can as individuals. We might think that our beliefs and values are core parts of our identity, part of what makes us *us*. But, as I'll show, these beliefs and values are often smuggled into our minds without our realizing it.

In my research, I have found that the neural basis for our personal beliefs overlaps significantly with one of the regions of the brain primarily responsible for allowing other people's beliefs to influence our own. The self is more of a superhighway for social influence than it is the impenetrable private fortress we believe it to be. Our socially malleable sense of self, which often leads us to help others more than ourselves, is the third major adaptation I'll be discussing.

Social Networks for Social Networks

Most accounts of human nature ignore our sociality altogether. Ask people what makes us special and they will rattle off tried-and-true answers like "language," "reason," and "opposable thumbs." Yet the history of human sociality can be traced back at least as far as the first mammals more than 250 million years ago, when dinosaurs first roamed the planet. Our sociality is woven into a series of bets that evolution has laid down again and again throughout mammalian history. These bets come in the form of adaptations that are selected because they promote survival and reproduction. These adaptations intensify the bonds we feel with those around us and increase our capacity to predict what is going on in the minds of others so that we can better coordinate and cooperate with them. The pain of social loss and the ways that an audience's laughter can influence us are no accidents. To the extent that we can characterize evolution as designing our modern brains, this is what our brains were wired for: reaching out to and interacting with others. These are design features, not flaws. These social adaptations are central to making us the most successful species on earth.

Yet these social adaptations also keep us a mystery to ourselves. We have a massive blind spot for our own social wiring. We have a theory of "who we are," and this theory is wrong. The goal of this book is to get clear about "who we are" as social creatures and to

reveal how a more accurate understanding of our social nature can improve our lives and our society.

Because real insight into our social nature has gained momentum only in the last few decades, there are tremendous inefficiencies in how institutions and organizations operate. Societal institutions are founded, implicitly or explicitly, on a worldview of how humans function. These are theories regarding the gears and levers of our nature that institutions try to operate on in order to strengthen society. Our schools, companies, sports teams, military, government, and health care institutions cannot reach their full potential while working from erroneous theories that characterize our social nature incorrectly.

The same holds true for teams within an organization. How should team leaders think about the social well-being of their team members? Does feeling socially connected make people socialize more and work less, or does it make team members work harder because they feel more responsibility for the team's success? Any team leader ought to know which of these claims is more likely to be true because it affects how the team should be managed. As we will see, neuroscience research indicates that ignoring social well-being is likely to harm team performance (and even individual health) for reasons we would not have guessed.

Just as there are multiple social networks on the Internet such as Facebook and Twitter, each with its own strengths, there are also multiple social networks in our brains, sets of brain regions that work together to promote our social well-being.

These networks each have their own strengths, and they have emerged at different points in our evolutionary history moving from vertebrates to mammals to primates to us, *Homo sapiens.* Additionally, these same evolutionary steps are recapitulated in the same order during childhood (see Figure 1.1). Parts Two, Three, and Four of this book each focus on one of these social adaptations:

• *Connection:* Long before there were any primates with a neocortex, mammals split off from other vertebrates and evolved the capacity to feel social pains and pleasures, forever linking our well-being to our social connectedness. Infants embody this deep need to stay connected, but it is present through our entire lives (Part Two: Chapters 3 and 4).

• *Mindreading:* Primates have developed an unparalleled ability to understand the actions and thoughts of those around them, enhancing their ability to stay connected and interact strategically. In the toddler years, forms of social thinking develop that outstrip those seen in the adults of any other species. This capacity allows humans to create groups that can implement nearly any idea and to anticipate the needs and wants of those around us, keeping our groups moving smoothly (Part Three: Chapters 5 through 7).

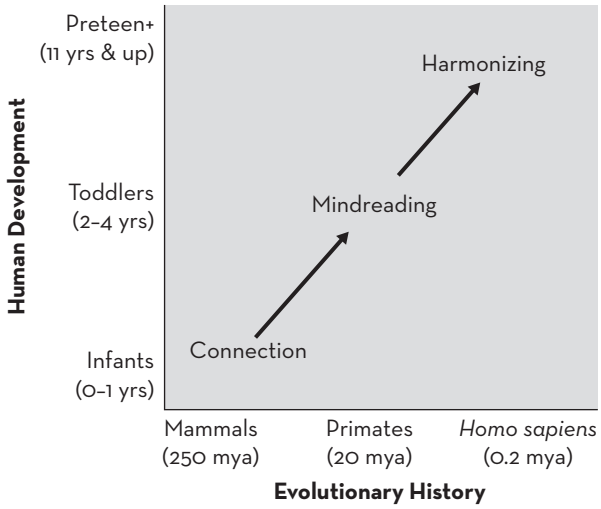

Figure 1.1 Emergence of Social Adaptations Across Evolution and Human Development (mya = millions of years ago)

- *Harmonizing:* The sense of self is one of the most recent evolutionary gifts we have received. Although the self may appear to be a mechanism for distinguishing us from others and perhaps accentuating our selfishness, the self actually operates as a powerful force for social cohesiveness. During the preteen and teenage years, adolescents focus on their selves and in the process become highly socialized by those around them. Whereas *connection* is about our desire to be social, *harmonizing* refers to the neural adaptations that allow group beliefs and values to influence our own (Part Four: Chapters 8 and 9).

Smarter, Happier, and More Productive

After considering how each of these networks shapes the social mind, we will turn to the all-important question for any scientific discovery: so what? How do we use what we have learned to improve the world in meaningful ways? In what ways do these social adaptations serve as principles for organizing groups, enhancing well-being, and bringing out the best in others and ourselves? In Part Five of the book, I will answer the *so-what* question for three domains of life. I will examine how our social connections can be enhanced in our daily lives to increase our overall well-being in life (Chapter 10). I will explore how we can make the workplace more responsive to our social wiring and how leaders can apply what we know about the social brain to improve workplace morale and productivity (Chapter 11). Finally, I will consider a number of ways that we can improve education, particularly in junior high, where motivation and engagement with learning typically plummet (Chapter 12). Humans are adapted to be highly social, but the organizations through which we live our lives are not adapted to us. We are square (social) pegs being forced into round (nonsocial) holes. Institutions often focus on IQ and income and miss out on the social factors that drive us. In Part Five, I will suggest ways to

fix this, making us smarter, happier, and more productive. The social brain has a lot to teach us.

A Note

I came to the brain as an outsider, starting from an interest in philosophy and then getting a PhD in social psychology. I mention this here at the outset because I want you to understand that I appreciate what it is like to be interested in the brain but to find brain science daunting. The brain is at the seat of who we are, so it is intrinsically fascinating and holds the keys to unlocking untold mysteries. At the same time, the human brain is the most complicated device the universe has ever known. The brain contains billions of neurons, and each of these is connected to many others, creating an incalculable tangle of neural traffic. To make matters worse, we have awkward Latin names for each part of the brain (worse yet, multiple Latin names for the exact same part of the brain!). I spent years studying neuroscience before I stopped feeling completely overwhelmed. Throughout *Social*, I will focus on one brain region or system at a time. I will tell you what you need to know about the region or system, but I will keep the focus on what the study of such brain regions tells us about the mind, about who we are, about our social nature.