# DESCARTES' BABY

## *How the Science of Child Development Explains What Makes Us Human*

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ALSO BY PAUL BLOOM

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Since the eighteenth century, there has been in circulation a curious story about Descartes. It is said that in later life he was always accompanied in his travels by a mechanical life-sized female doll, which, we are told by one source, he himself had constructed "to show that animals are only machines and have no souls." He had named the doll after his illegitimate daughter, Francine, and some versions of events have it that she was so lifelike that the two were indistinguishable. Descartes and the doll were evidently inseparable, and he is said to have slept with her encased in a trunk at his side. Once, during a crossing over the Holland Sea some time in the early 1640s, while Descartes was sleeping, the captain of the ship, suspicious about the contents of the trunk, stole into the cabin and opened it. To his horror, he discovered the mechanical monstrosity, dragged her from the trunk and across the decks, and finally managed to throw her into the water. We are not told whether she put up a struggle.

—Stephen Gaukroger,
*Descartes: An Intellectual Biography*

# PREFACE

Sex with dead animals is disgusting. Someone slipping on a banana peel can be wildly funny. Killing babies is wrong. Splashes of paint on a canvas can be a work of art. Your body will change radically as you age, but you will remain the same person. And when you die, your soul may live on.

There are people who lack these basic notions, such as psychopaths who commit horrific acts without the slightest twinge of conscience, or severely autistic children, who have no understanding that other people have thoughts and emotions. But these unusual cases just prove the rule that notions such as morality, humor, art, and personal identity are aspects of the normal human condition.

How can we best explain this? Some scholars argue that these human characteristics are evolutionary adaptations that are hard-wired into babies' brains. Others see them as the product of culture, independent of biology and genetics, best explained in terms of historical and social processes. But I think a better explanation comes from the work of Charles Darwin. In *The Descent of Man* and *The Expression of the Emotions in Man and Animals,* Darwin proposed that many mental abilities emerged through natural selection—they arose through the reproductive advantages that they gave to our ancestors. But he was also clear that many uniquely human traits are not themselves adaptations. They are the by-products of adaptations—biological accidents.

I will explore Darwin's approach here. In particular, I will suggest that humans have evolved a certain way of thinking about people

and objects. We see the world along the lines proposed by René Descartes, the father of modern philosophy.

Descartes was fascinated by the automata of his time, such as the hydraulically controlled robots at the French Royal Gardens that moved in realistic ways, acting as if angry or modest. He believed the bodies of humans and animals to be nothing more than particularly intricate machines. But for people—unlike for nonhumans, whom Descartes described as "beast-machines"—there is a crucial distinction between *res extensa,* our physiological machinery, and *res cogitans,* which is our selves, our minds. We use our bodies to experience and act on the world, but we ourselves are not physical things. We are immaterial souls.

We can explain much of what makes us human by recognizing that we are natural Cartesians—dualistic thinking comes naturally to us. We have two distinct ways of seeing the world: as containing bodies and as containing souls. These two modes of seeing the world interact in surprising ways in the course of the development of each child, and in the social context of a community of humans they give rise to certain uniquely human traits, such as morality and religion.

The effect that our dualism has on how we think and feel is illustrated by the epigraph that begins this book. There are different versions of this tale. Some have it that Descartes created the robot out of grief after what he described as the greatest sorrow of his life: the death of his daughter, Francine, at the age of five. Others claim that Descartes never had a human daughter, just this mechanical doll, born out of his fascination with automata. But the stories all end the same way, with the horror of the sea captain and the destruction of the machine.

There is something that many find disturbing, even revolting, about the notion of a soulless body, a purely physical creature that acts as though it were a person. This reaction is worrisome, given the scientific consensus that Descartes was mistaken. Modern science tells us that the conscious self arises from a purely physical brain. We do not

have immaterial souls; we are material beings, no less than the "monstrosity" drowned by the captain. We are Descartes' babies.

I begin by laying out the foundations of infants' mental development, showing that before they can speak or walk or control their bowels, babies see the world as containing both physical things, which are governed by principles such as solidity and gravity, and immaterial minds, which are driven by emotions and goals. Babies are natural-born dualists.

Chapters 2 and 3 show how our duality of perception shapes how we make sense of the artificial and natural world. It helps explain why even children are prone to believe in a divine creator. And it explains some mysteries concerning our appreciation of art, such as why we take so seriously the difference between a forgery and the original and what distinguishes a work of art from everything else.

I then turn to how our intuitive dualism underlies our feelings toward other people. Chapter 4 concerns the emergence of moral sentiments in babies and children, and chapter 5 discusses the growth of the "moral circle," the universe of beings encompassed by our developed moral sense. I present a theory of the emergence of a uniquely human morality, and discuss how certain forces can enhance, nourish, and solidify our evolved moral sense, transforming it in profound ways.

Chapter 6 reviews the fascinating literature on disgust. While emotions such as empathy can expand the moral circle, feelings of disgust can diminish it, causing us to see people as creatures without moral worth. This chapter ends with a discussion of slapstick humor, which, surprisingly, also rests on an appreciation of the body/soul duality.

The final two chapters concern our spiritual beliefs. Chapter 7 explores how our intuitive dualism shapes how children and adults think about personal consciousness and life after death. And chapter 8 explores our belief in spiritual beings, such as trees that can remember conversations and the God of the Old Testament. I conclude with a

discussion of how our commonsense dualism meshes with a scientific conception of reality.

I first became interested in these issues about eight years ago, after hearing Paul Rozin talk about his research on disgust. Although my primary interest at the time was the study of language development, the topic intrigued me. When I joined the Psychology Department at Yale University in 1999, I taught a graduate seminar called "Bodies and Souls," and it was there that the idea for this book began to emerge.

Yale University has provided a stimulating and supportive environment to pursue this work, and I owe a lot to my colleagues. I am especially grateful to my long-suffering graduate students, who have been supportive and helpful even as I repeatedly shifted the focus of our lab meetings away from their own substantive research in child development onto topics such as modern art and necrophilia.

Steven Pinker gave me some excellent advice when I was mulling over whether to begin this project. I also benefited greatly from the encouragement and support of my agent, Katinka Matson.

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PART I

# FOUNDATIONS

# 1

# MINDREADERS

The child is father to the man.

—Wordsworth

WHAT DOES IT take to win the World Series of Poker? It is not just luck. Hundreds of players enter the competition, each one with a ten-thousand-dollar stake, and year after year, pretty much the same characters end up at the final table. It is not that they have any special knowledge. The rules of the game, no-limit Texas hold 'em, can be explained to a novice in less than an hour, and anyone with patience and a good head for numbers can learn the percentages. Certainly some elusive quality of character comes into play: you need to know when to hold them and know when to fold them, know when to walk away and know when to run. But this is not what makes the winners special.

Al Alvarez, a poet and poker player, answers the question nicely when he says of a master gambler that he doesn't play the cards—he plays the other players. Those who win the World Series are superb *mindreaders*. As Alvarez says, "One of the many gifts that separates the professionals from the amateurs is the ability to read

their opponents' hands with uncanny accuracy from the tiniest clues: timing, position, the way their fingers move their chips or their eyes flicker, even the pulse beat in their neck."

Poker professionals must be not only adept at reading the minds of others but also capable of obscuring their own thoughts. They must act so that their opponents are either at a total loss when it comes to figuring out their mental states or—even better—mislead their opponents into making false inferences about their mental state, as when they successfully bluff, or convince someone that they are bluffing but actually have a strong hand, or convince someone that they are pretending to bluff, but actually really are bluffing, and so on.

A cynic would say that life is poker writ large. We compete for limited resources, and one person's gain is another's loss. We are in a battle to the finish, where it is not physical strength that matters but the ability to connive, trick, and outplay. This makes sense from an evolutionary point of view. Traits emerge in the course of evolution only if they lead to enhanced reproductive success—better odds of surviving, more offspring. And "success" is a relative notion; it is not how well an animal does in an absolute sense that determines the fate of its genes; it is how well it does relative to everyone else. Natural selection is like the story of the two hikers who see a bear charging at them from a distance. One of them starts frantically putting on his running shoes. His friend shouts at him that it is useless; you can't outrun a bear. And the first guy shouts back: "I don't have to outrun the bear. I just have to outrun you."

But there is more to evolution than this straightforward competition between individuals. From an evolutionary perspective, our fates are yoked to those who share our genes: our kin, and most especially our children. In addition, many animals, including humans, have evolved to cooperate within a larger social setting than just the family; they can work together for mutual gain.

Because of this, our understanding of other minds shows itself in gentler ways. We can teach, an act that requires an exquisite appreci-

ation of the mental states of those who know less than we do, along with the ability to craft our words and acts so as to foster in our pupils new mental and physical capacities. We can relate to others when working toward a common goal. This might mean something as simple as directing someone's attention by pointing and grunting, or as complex as engaging in negotiations with multiple participants. Our social nature also gives rise to the capacity for feelings such as empathy, compassion, and love.

In this chapter I will discuss human beings' understanding of one another in some detail, looking especially at how it develops in young children. Discoveries from developmental psychology, clinical research, and neuroscience provide the basis for the argument that runs through this book: some of our most interesting mental traits are best understood as unexpected by-products of our evolved capacity to understand and respond to the minds of other people.

But this is only half the story. We also have the evolved capacity to perceive and reason about material objects. If you place a rock on the ground, turn away for an instant, and then look back, you expect the rock to be where it was before. It should not hop away, dematerialize, or change into a camel. If you lean against a tree, you expect it to support your weight. If you grab the handle of a cup and pull, you expect the whole cup to move in the direction you are pulling; it should not stretch like rubber, turn to dust, or pull back from your grasp.

If these expectations are not met, you would suspect some sort of trickery, such as trapdoors or hidden wires. If everything were to go wrong at once—the cup pulls away from you, turns rubbery, and then disappears—you would feel as though you had been trapped in a painting by Salvador Dali.

These basic assumptions about how the physical world works are so entrenched and unconscious that it takes some effort to articulate them. Indeed, one of the main goals of psychology and philosophy is to define our most basic assumptions, to make explicit our naïve