

CHAPTER 1

A PUZZLING PRIMATE

You and I are members of a rather peculiar species, a puzzling primate.

Long before the origins of agriculture, the first cities, or industrial technologies, our ancestors spread across the globe, from the arid deserts of Australia to the cold steppe of Siberia, and came to inhabit most of the world's major land-based ecosystems—more environments than any other terrestrial mammal. Yet, puzzlingly, our kind are physically weak, slow, and not particularly good at climbing trees. Any adult chimp can readily overpower us, and any big cat can easily run us down, though we are oddly good at long-distance running and fast, accurate throwing. Our guts are particularly poor at detoxifying poisonous plants, yet most of us cannot readily distinguish the poisonous ones from the edible ones. We are dependent on eating cooked food, though we don't innately know how to make fire or cook. Compared to other mammals of our size and diet, our colons are too short, stomachs too small, and teeth too petite. Our infants are born fat and dangerously premature, with skulls that have not yet fused. Unlike other apes, females of our kind remain continuously sexually receptive throughout their monthly cycle and cease reproduction (menopause) long before they die. Perhaps most surprising of all is that despite our oversized brains, our kind are not that bright, at least not innately smart enough to explain the immense success of our species.

Perhaps you are skeptical about this last point?

Suppose we took you and forty-nine of your coworkers and pitted you in a game of Survivor against a troop of fifty capuchin monkeys

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from Costa Rica. We would parachute both primate teams into the remote tropical forests of central Africa. After two years, we would return and count the survivors on each team. The team with the most survivors wins. Of course, neither team would be permitted to bring any equipment: no matches, water containers, knives, shoes, eyeglasses, antibiotics, pots, guns, or rope. To be kind, we would allow the humans—but not the monkeys—to wear clothes. Both teams would thus face surviving for years in a novel forest environment with only their wits, and their teammates, to rely on.

Who would you bet on, the monkeys or you and your colleagues? Well, do you know how to make arrows, nets, and shelters? Do you know which plants or insects are toxic (many are) or how to detoxify them? Can you start a fire without matches or cook without a pot? Can you manufacture a fishhook? Do you know how to make natural adhesives? Which snakes are venomous? How will you protect yourself from predators at night? How will you get water? What is your knowledge of animal tracking?

Let's face it, chances are your human team would lose, and probably lose badly, to a bunch of monkeys, despite your team's swollen crania and ample hubris. If not for surviving as hunter-gatherers in Africa, the continent where our species evolved, what are our big brains for anyway? How did we manage to expand into all those diverse environments across the globe?

The secret of our species' success lies not in our raw, innate, intelligence or in any specialized mental abilities that fire up when we encounter the typical problems that repeatedly challenged our hunter-gatherer ancestors in the Pleistocene. Our ability to survive and thrive as hunter-gatherers, or anything else, across an immense range of global environments is not due to our individual brainpower applied to solving complex problems. As you will see in chapter 2, stripped of our culturally acquired mental skills and know-how, we are not so impressive when we go head-to-head in problem-solving tests against other apes, and we certainly are not impressive enough to account for the vast success of our species or for our much larger brains.¹

In fact, we have seen various versions of the human half of our *Survivor* experiment many times, as hapless European explorers have struggled to survive, stranded in seemingly hostile environments, from the Canadian Arctic to the Gulf Coast of Texas. As chapter 3 shows, these cases usually end in the same way: either the explorers all die, or some of them are rescued by a local indigenous population, which has comfort-

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ably been living in this “hostile environment” for centuries or millennia. Thus, the reason why your team would lose to the monkeys is that your species—unlike all others—has evolved an addiction to culture. By “culture” I mean the large body of practices, techniques, heuristics, tools, motivations, values, and beliefs that we all acquire while growing up, mostly by learning from other people. Your team’s only hope is that you might bump into, and befriend, one of the groups of hunter-gatherers who live in the central African forests, like the Efe pygmies. These pygmy groups, despite their short stature, have been flourishing in these forests for a very long time because past generations have bequeathed to them an immense body of expertise, skills, and abilities that permit them to survive and thrive in the forest.

The key to understanding how humans evolved and why we are so different from other animals is to recognize that we are a *cultural species*. Probably over a million years ago, members of our evolutionary lineage began learning from each other in such a way that culture became cumulative. That is, hunting practices, tool-making skills, tracking know-how, and edible-plant knowledge began to improve and aggregate—by learning from others—so that one generation could build on and hone the skills and know-how gleaned from the previous generation. After several generations, this process produced a sufficiently large and complex toolkit of practices and techniques that individuals, relying only on their own ingenuity and personal experience, could not get anywhere close to figuring out over their lifetime. We will see myriad examples of such complex cultural packages, from Inuit snow houses, Fuegian arrows, and Fijian fish taboos to numerals, writing, and the abacus.

Once these useful skills and practices began to accumulate and improve over generations, natural selection had to favor individuals who were better cultural learners, who could more effectively tap in to and use the ever-expanding body of adaptive information available. The newly produced products of this cultural evolution, such as fire, cooking, cutting tools, clothing, simple gestural languages, throwing spears, and water containers, became the sources of the main selective pressures that genetically shaped our minds and bodies. This interaction between culture and genes, or what I’ll call *culture-gene coevolution*, drove our species down a novel evolutionary pathway not observed elsewhere in nature, making us very different from other species—a new kind of animal.

However, recognizing that we are a cultural species only makes an evolutionary approach even more important. As you’ll soon see in chap-

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ter 4, our capacities for learning from others are themselves finely honed products of natural selection. We are adaptive learners who, even as infants, carefully select when, what, and from whom to learn. Young learners all the way up to adults (even MBA students) automatically and unconsciously attend to and preferentially learn from others based on cues of prestige, success, skill, sex, and ethnicity. From other people we readily acquire tastes, motivations, beliefs, strategies, and our standards for reward and punishment. Culture evolves, often invisibly, as these selective attention and learning biases shape what each person attends to, remembers, and passes on. Nevertheless, these cultural learning abilities gave rise to an interaction between an accumulating body of cultural information and genetic evolution that has shaped, and continues to shape, our anatomy, physiology, and psychology.

Anatomically and physiologically, the escalating need to acquire this adaptive cultural information drove the rapid expansion of our brains, giving us the space to store and organize all this information, while creating the extended childhoods and long postmenopausal lives that give us the time to acquire all this know-how and the chance to pass it on. Along the way, we'll see that culture has left its marks all over our bodies, shaping the genetic evolution of our feet, legs, calves, hips, stomachs, ribs, fingers, ligaments, jaws, throats, teeth, eyes, tongues, and much more. It has also made us powerful throwers and long-distance runners who are otherwise physically weak and fat.

Psychologically, we have come to rely so heavily on the elaborate and complicated products of cultural evolution for our survival that we now often put greater faith in what we learn from our communities than in our own personal experiences or innate intuitions. Once we understand our reliance on cultural learning, and how cultural evolution's subtle selective processes can produce "solutions" that are smarter than we are, otherwise puzzling phenomena can be explained. Chapter 6 illustrates this point by tackling questions such as, Why do people in hot climates tend to use more spices and find them tastier? Why did aboriginal Americans commonly put burnt seashells or wood ash into their cornmeal? How could ancient divination rituals effectively implement game theoretic strategies to improve hunting returns?

The growing body of adaptive information available in the minds of other people also drove genetic evolution to create a second form of human status, called prestige, which now operates alongside the dominance status we inherited from our ape ancestors. Once we understand prestige, it will become clear why people unconsciously mimic more

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successful individuals in conversations; why star basketball players like LeBron James can sell car insurance; how someone can be famous for being famous (the Paris Hilton Effect); and, why the most prestigious participants should donate first at charity events but speak last in decision-making bodies, like the Supreme Court. The evolution of prestige came with new emotions, motivations, and bodily displays that are distinct from those associated with dominance.

Beyond status, culture transformed the environments faced by our genes by generating social norms. Norms influence a vast range of human action, including ancient and fundamentally important domains such as kin relations, mating, food sharing, parenting, and reciprocity. Over our evolutionary history, norm violations such as ignoring a food taboo, botching a ritual, or failing to give one's in-laws their due from one's hunting successes meant reputational damage, gossip, and a consequent loss of marriage opportunities and allies. Repeated norm violations sometimes provoked ostracism or even execution at the hands of one's community. Thus, cultural evolution initiated a process of *self-domestication*, driving genetic evolution to make us prosocial, docile, rule followers who expect a world governed by social norms monitored and enforced by communities.

Understanding the process of self-domestication will allow us to address many key questions. In chapters 9 to 11, we'll explore questions such as, How did rituals become so psychologically potent, capable of solidifying social bonds and fostering harmony in communities? How do marriage norms make better fathers and expand our family networks? Why is our automatic and intuitive response to stick to a social norm, even if that means paying a personal cost? Similarly, when and why does careful reflection cause greater selfishness? Why do people who wait for the "walk signal" at traffic lights also tend to be good cooperators? What was the psychological effect of World War II on America's Greatest Generation? Why do we prefer to interact with, and learn from, those who speak the same dialect as we do? How did our species become the most social of primates, capable of living in populations of millions, and at the same time, become the most nepotistic and warlike?

The secret of our species' success resides not in the power of our individual minds, but in the *collective brains* of our communities. Our collective brains arise from the synthesis of our cultural and social natures—from the fact that we readily learn from others (are *cultural*) and can, with the right norms, live in large and widely interconnected groups (are *social*). The striking technologies that characterize our species, from

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the kayaks and compound bows used by hunter-gatherers to the antibiotics and airplanes of the modern world, emerge not from singular geniuses but from the flow and recombination of ideas, practices, lucky errors, and chance insights among interconnected minds and across generations. Chapter 12 shows how it's the centrality of our collective brains that explains why larger and more interconnected societies produce fancier technologies, larger toolkits, and more know-how, and why when small communities suddenly become isolated, their technological sophistication and cultural know-how begins to gradually ebb away. As you'll see, innovation in our species depends more on our sociality than on our intellect, and the challenge has always been how to prevent communities from fragmenting and social networks from dissolving.

Like our fancy technologies and complex sets of social norms, much of the power and elegance of our languages come from cultural evolution, and the emergence of these communication systems drove much of our genetic evolution. Cultural evolution assembles and adapts our communicative repertoires in ways similar to how it constructs and adapts other aspects of culture, such as the making of a complicated tool or the performance of an intricate ritual. Once we understand that languages are products of cultural evolution, we'll be able to ask a variety of new questions such as, Why are languages from people in warmer climates more sonorous? Why do languages with larger communities of speakers have more words, more sounds (phonemes), and more grammatical tools? Why is there such a difference between the languages of small-scale societies and those that now dominate the modern world? In the longer run, the presence of such culturally evolved communicative repertoires created the genetic selective pressures that drove our larynx (the voice box) down, whitened our eyes, and endowed us with a bird-like propensity for vocal mimicry.

Of course, all these products of cultural evolution, from words to tools, do indeed make us individually smarter, or at least mentally better equipped to thrive in our current environments (so, "smarter"). You, for example, probably received a massive cultural download while growing up that included a convenient base-10 counting system, handy Arabic numerals for easy representation, a vocabulary of at least 60,000 words (if you are a native English speaker), and working examples of the concepts surrounding pulleys, springs, screws, bows, wheels, levers, and adhesives. Culture also provides heuristics, sophisticated cognitive skills

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like reading, and mental prostheses like the abacus that have evolved culturally to both fit, and to some degree, modify our brains and biology. However, as you'll see, we don't have these tools, concepts, skills, and heuristics because our species is smart; we are smart because we have culturally evolved a vast repertoire of tools, concepts, skills, and heuristics. Culture makes us smart.

Besides driving much of our species genetic evolution and making us (somewhat) "self-programmable," culture has woven itself into our biology and psychology in other ways. By gradually selecting institutions, values, reputational systems, and technologies over the eons, cultural evolution has influenced the development of our brains, hormonal responses, and immune reactions, as well as calibrating our attention, perceptions, motivations, and reasoning processes to better fit the diverse culturally constructed worlds in which we grow up. As we'll see in chapter 14, culturally acquired beliefs alone can change pain into pleasure, make wine more (or less) enjoyable, and, in the case of Chinese astrology, alter the length of believers' lives. Social norms, including those contained in languages, effectively supply training regimes that shape our brains in various ways, ranging from expanding our hippocampus to thickening our corpus callosum (the information highway that connects the two halves of our brains). Even without influencing genes, cultural evolution creates both psychological and biological differences between populations. You, for example, have been altered biologically by the aforementioned cultural download of skills and heuristics.

In the chapter 17, I'll explore how this view of our species changes how we think about several key questions:

1. What makes humans unique?
2. Why are humans so cooperative compared to other mammals?
3. Why do societies vary so much in their cooperativeness?
4. Why do we seem so smart compared to other animals?
5. What makes societies innovative, and how will the Internet influence this?
6. Is culture still driving genetic evolution?

The answers to these questions alter how we think about the interface of culture, genes, biology, institutions, and history and how we approach human behavior and psychology. This approach also has important practical implications for how we build institutions, design policies, address social problems, and understand human diversity.