## **CHAPTER ONE**

### **Survival of the Kindest**

Why are we kind? Are we born to love one another? Are we made in the image of our gods to be a moral animal, or do we have to learn how to be good and decent, to curb our self-centered instincts through culture, civilization or religion?

How do we make moral choices? It’s a question that has puzzled philosophers and theologians down through the ages, and then Charles Darwin published *On the Origin of Species* in 1859.

People all over the world have some familiarity with *On the Origin of Species* and have no doubt that the human race evolved over several million years to become the upright, intelligent, complex individuals inhabiting the earth today.**[[1]](#endnote-1)**

Many of these people also presume that evolution required people to battle against each other "red in tooth and claw", so that the weak fell by the wayside, while the strong passed their genes onto the next generation.

Darwin’s theory suggests that a process called Natural Selection has had a profound influence on every living species, including human beings. Traits that were adaptive – that had increased our chances of survival – have been passed down from generation to generation. Charles Darwin liked a phrase that Herbert Spencer coined to describe the outcome: Survival of the Fittest.

For decades, biologists believed that evolution and altruism were irreconcilable. Richard Dawkins once wrote, “Let us try to teach generosity and altruism, because we are born selfish.” Francis Collins, a former Director of the Human Genome Project, believed that our selfless moral feelings conflict with the evolutionary urge to preserve our DNA, and could only have come to pass as a result of divine intervention.

They were both wrong.

The problem goes back to the original definition of altruism, as an act of generosity that comes at a personal cost. Scientists applied the idea to evolution, arguing that if generosity blesses those who give as much as those who take, then it isn’t altruistic. Kindness doesn’t count unless it comes at the cost of biological fitness. Natural Selection was moralized into an intellectual cul-de-sac. Theoretically, the likelihood that true selflessness could persist in a species was reduced to the point of extinction.

The old paradigm encouraged belief in two mutually incompatible propositions. On the one hand genes were “blind replicators” that stumbled onto successful ways of producing copies and mutations of themselves through Natural Selection, including the extraordinary examples of collaboration found in the evolution of multi-cellular plants and animals. On the other hand they were selfish actors, fine-tuning organisms that carried them so that their descendent genes could achieve a kind of immortality.

Kindness was a paradox, an aberration that had to be explained. An inner moral voice that made us feel good when we did good, and feel bad when we did bad, was either a figment of our imagination or a meme that restrained our natural instincts through the rule of law and laborious cultural indoctrination in childhood.

Of course, not everyone feels bad when they do bad. Roughly 1% of women and 3% of men suffer from Antisocial Personality Disorder, more commonly referred to as sociopathy. They struggle to control impulses to manipulate others with no regard to their feelings. Sufferers may deploy cognitive empathy to consciously and deliberately show consideration to others, but the emotional brakes on bad behavior are faulty, if not completely absent. In layman’s terms, they lack a conscience.

So there are some people who can behave ruthlessly without remorse. But that still leaves us with a puzzle. Why do almost all of us (99% of women and 97% of men) have a conscience? And is it anything to write home about anyway?

### **Kin Altruism**

They say it takes a village to raise a child. What they don’t tell you is that the village will hand your child back the second she starts having a meltdown. Newborns are wired to respond to familiar voices. Three-day-old babies will adapt their suckling on a pacifier to hear their mother’s voice, but not the voice of a stranger.[[2]](#endnote-2)

Parenthood can be exhausting, particularly for humans, thanks to a unique shift in how early hominins evolved. By the beginning of the Pleistocene, a period from about 2.6 million years ago to 11,700 years ago, more commonly known as the Ice Age, our ancestors displayed one striking characteristic that differentiates us from our closest relatives, the common chimpanzees and bonobos – the ability to walk upright for extended periods of time. This gavehominins a larger foraging range, as well as the ability to spot predators over tall grasses.

Their prefrontal cortexes, or the "executive function" of the brain, which mulls the consequences of conflicting actions, started to grow, helping them to anticipate, plan and adapt to their environment. The legs of our bipedal ancestors lengthened, their fingers became more dexterous, and they developed arches on their feet to support their weight while running.

These hominins were smart, but there is a great deal we don’t know about them.[[3]](#endnote-3) Sophisticated Stone Age tools have been found from the early Pleistocene onwards, and at some point between 1.5 million and 0.5 million years ago they learnt how to control fire, although they may not have used it to cook meat. The archaeological record for culture is much more limited. There is some evidence that hominins were butchering large game animals methodically about 250,000 years ago, just before modern humans emerged, which might indicate a degree of coordinated, collaborative behavior, but thus far we have discovered no evidence of homo erectus art or music, and, apart from the questionable claims for homo naledi, a precursor of humans who became extinct 250,000 years ago, no evidence for ritual treatment of the dead.[[4]](#endnote-4)

The legacy of our hominin ancestors, our ability to walk upright, has been key to our success, but it came at a cost. Our brains are five times larger relative to body size than other large mammals and require four times as much energy. Consequently, the human body has to withstand far greater obstetric pressure and metabolic demands than that of a four-legged creature, which limits the size a baby can grow to at birth. In order to give birth safely, we have to emerge from the womb at a much earlier stage of development, when the neck muscles are not strong enough to support the weight of our heads.[[5]](#endnote-5) Within a few days of birth, a baby held upright with her head supported, will cheerfully swing her legs in a walking motion. Flip her horizontal, cradle her under the chest and she will revert to a crawl, months before she can do this on her own. In a very real sense, all human babies are born prematurely.

The slow pace at which our brains mature gives us the longest childhood of any creature on the planet, making us the “Mama’s Boys” of nature. The ongoing nurturing of our parents is crucial to our survival.[[6]](#endnote-6)This massive investment in child-rearing encourages what evolutionary biologists call kin altruism – we are wired to be kind to our kin who will pass our genes on to the next generation.[[7]](#endnote-7)

Human males spend far more time looking after their children than any other ape species, often in monogamous relationships.[[8]](#endnote-8) Sexual dimorphism, or size differences between males and females, are much lower for humans than for many other apes, suggesting that in the distant past, human “alphas” did not routinely compete to acquire a harem of females. The average man is 9% taller and 20% heavier than the average woman, whereas a male silverback gorilla can be twice the size of the females he mates with.[[9]](#endnote-9) Women have had an incentive to find mates willing to dedicate themselves to raising their children. Genetic “fitness” has favored attributes such as kindness, protectiveness, generosity and loyalty, at least within the nuclear family.[[10]](#endnote-10)

There is evidence that single men fight over status where there is a dearth of single women, such as in the Wild West, but violence and criminality dropped sharply when these men settled down. This is consistent with child-rearing in monogamous relationships, although despite lower levels of sexual dimorphism, bonobos do not compete over sexual partners for very different reasons: they're wildly promiscuous.

Kin altruism continues to have powerful effects in hunter-gatherer societies, where close relatives spend more time living together, working together, protecting each other and adopting each other’s children. In the developed world, relatives are more likely to aid one another in life or death situations, and parents invest heavily in their own children. Blood is still thicker than water.

In modern western society, raising kids correlates strongly with reduced crime and violence. In a study that tracked low-income young offenders in Boston over 45 years, the most significant predictor of recidivism was whether someone settled down and got a steady job upon his release. Only one in three men who got married were convicted of a further crime, compared to three out of four men who stayed single.[[11]](#endnote-11)

Kin altruism has been observed in other species, not just humans. Monogamous behavior has been observed in species where males spend a lot of time rearing their young, including the beautiful white-handed Lar Gibbons, Prairie Voles, California Mice, the East African Antelope Kirk’s Dik-Dik, Convict Cichlid fish, Shingleback Skink lizards, Mute Swans, Penguins and many other bird species.[[12]](#endnote-12)

### **Reciprocal Altruism**

Through our mitochondrial DNA, we've been able to trace all modern humans back to a common female ancestor, nick-named Eve.[[13]](#endnote-13) By looking at how long it takes mitochondrial DNA to mutate, scientists have been able to calculate that she lived about 200,000 years ago.[[14]](#endnote-14) In evolutionary terms, *homo sapiens sapiens* have been around for the blink of an eye.[[15]](#endnote-15)

For most of that time, there were very few of us. We know that compared to other species, the human genome lacks diversity. Seventy thousand years ago our entire ancestral population may have been as few as 3,000 people.[[16]](#endnote-16) We've lived in low population densities for 95% of our history. Based on the evidence of ancient camps and settlements, our global population may have been under half a million people as recently as 20,000 years ago. The implications are profound.

A hunter-gatherer band of 100 people typically requires a home range of 32 square miles in order to feed themselves.[[17]](#endnote-17) This is small enough to allow them to walk to or from any point in their range within a day. Modern Tanzania, Kenya and Ethiopia, where many early hominin remains have been found, cover an area of just under one million square miles. This would have allowed a population of roughly three million people, living in more than 30,000 bands, to co-exist without significant pressure on food resources.

Our ancestral population of 70,000 years ago occupied less than 1% of the immediately available foraging area. Before they had to cross the Sahara, sail the seas, or brave the mosquito-borne malaria of West Africa, they could expand into another million square miles across the rest of East Africa (Uganda, Somalia, Eritrea, Rwanda, Burundi, Djibouti, Mozambique, Malawi, Zimbabwe and Zambia). In the absence of permanent settlements, the potential for large scale warfare and the spread of pandemic disease was limited. There was substantial scope for expansion without conflict among homo sapiens.

When food and land are abundant, the fittest have a huge incentive to collaborate in hunting and gathering, warding off predators, sharing tools and match-making across bands, rather than competing over resources.[[18]](#endnote-18) Bands of 100 people need 40% less foraging area per person to survive than people living in bands of 10 or less, although some bands fragment into nuclear families in seasons where vegetation is scarce and re-form for large hunts at other times.[[19]](#endnote-19)

We lived in this ample and abundant environment for 190,000 of our 200,000 years as *homo sapiens*. We helped fellow band members to acquire food and safety even if they weren’t close relatives, while at the same time creating the likelihood that they would do the same for us. We formed nonreproductive unions – friendships – with others.[[20]](#endnote-20) The psychologist Jonathan Haidt calls human beings “the world champions of cooperation beyond kinship.”

Evolution selected for in-group bias, encouraging kindness to those who were kind to us, and creating the expectation that we had a right to see our kindness reciprocated. This sort of mutually beneficial collaboration is also called reciprocal altruism. One requirement of reciprocal altruism, the ability to distinguish familiar faces, is a hard-wired trait, as is the ability to learn a language.[[21]](#endnote-21) Sophisticated reciprocal altruism may only exist in humans, although symbiotic and collaborative relationships can be seen across species.[[22]](#endnote-22) Sharks and cleaner fish, for example, or the domestication of dogs from wolves 15,000 years ago, just before the rise of agriculture, and as anyone who has had a dead mouse dropped on their doorstep can tell you, even cats know how to say thank you.

Reciprocal altruism doesn't stop fights from breaking out. Sometimes you don’t need a biological incentive to find someone annoying. But in an era of very low population density, rather than challenge someone to mortal combat, with all the attendant risks that involved, you could just move to the next valley or the neighboring band.[[23]](#endnote-23) In this environment, any behavioral trait that helped us to collaborate with each other would have an evolutionary edge.[[24]](#endnote-24)

### **How We Got Out of Africa**

Intrepid hunter-gatherer bands moved out of Africa long before the Mesolithic era began. Here's how:

1. We probably reached Australia 65,000 years ago, Siberia, Korea and Japan about 35,000 years ago, and the Americas between 35,000 and 25,000 years ago.[[25]](#endnote-25)

2. We reached the southern part of Europe around 45,000 years ago, and followed the retreating glaciers northwards as the volatile Pleistocene climate was replaced by the warmer Holocene about 12,000 years ago.[[26]](#endnote-26) Over the last 10,000 years, European skin lightened to absorb vitamin D from sunlight in the colder northern latitudes.

3. There's evidence for the presence of sapiens in the Near East as early as 125,000 years ago, and human teeth found in China have been dated to 80,000 years ago.[[27]](#endnote-27)

As *homo sapiens* reached out of Africa, it had been thought that we wiped out earlier species of hominins, either directly through massacre, or indirectly, by occupying their habitat, forcing them into marginal areas where they could no longer cope.

Recent research suggests that fight or flight were not the only options. There was at least a third F. Up to 5% of European DNA is Neanderthal, and other early hominin Denisovan DNA from Siberia has been found in modern humans in places such as Papua New Guinea. Rather than being wiped out, at least some earlier hominins married up (or down, Neanderthal brains are bigger than ours).[[28]](#endnote-28)

As it happens, humans have the largest penises of any ape species, more than twice the size of an average silverback gorilla. Other ape species, especially bonobos, also use sex to ease tensions, but there are some ways in which the human pursuit of love, not war, is unique.

### **The Morality Instinct**

Charles Darwin observed that homo sapiens is the only species that has an involuntary blush response when we do anything we feel ashamed of. It seems designed to prevent us from doing wrong by revealing our inner emotional state to others. Scientists have asked whether our long-term incentives to collaborate led to a hard-wired moral framework that rewards good behavior and punishes the bad.

Toddlers try to soothe others spontaneously, or to open doors for people carrying heavy loads. To ascertain whether kindness was learned or instinctive, we needed to find a way to test children’s responses before they learned a language, or the moral values of their parents.

Experiments by Paul Bloom on 3-month-olds and 6-month-olds have proven that nature, rather than nurture, is responsible for giving us a “rudimentary moral sense,” although it is very influenced by environmental factors thereafter. When looking at shows featuring a puppet that's trying to push a ball uphill, or roll a ball to other puppets, 3-month-olds will watch a good guy who helps, or a neutral guy who does nothing, rather than a bad guy who tries to hinder or steal the ball.

When offered the puppet characters after the show, 6-month-olds “overwhelmingly” choose the good puppet over the neutral puppet, and the neutral puppet over the bad puppet. This moral sense can be punitive as well as kind. A 12-month-old child used the good guy to hit the bad guy over the head. Our built-in righteousness may come with a hard-wired sense of wrath.[[29]](#endnote-29)

We used to think that it was a dog-eat-dog world. To survive, we had to be cognizant of that fact. But this brutal and nihilistic concept doesn't fit our modern view of evolution. The latest research from biology, archaeology and psychology has shown us that at the earliest stages of human existence, our hunter-gatherer ancestors didn’t prevail by being stronger, but by working together.

Evolution does not insist that we are naughty or nice. A behavioral trait will prosper if it increases the chances that our genes will make copies of themselves. Since modern *homo sapiens* evolved, about 200,000 years ago, we have had powerful motives to collaborate, rather than compete.

Traits that improved collaboration increased our chances of survival.[[30]](#endnote-30) We are wired to be kind, and to expect kindness in return. The development of a conscience helped us to thrive. Our genes aren’t “selfish.”[[31]](#endnote-31) Those of us schooled in the old idea of evolution have had to rethink what we mean by Natural Selection.

If modern ethnographies of hunter-gatherer bands are anything to go by, we were never perfect. We bitched and moaned and gossiped. We shamed cheats and punished those who bullied or hexed others, sometimes by death. But we also loved, and laughed, and shared. We fought off predators together. We looked after one another. For tens of thousands of years, survival of the fittest for our species meant survival of the kindest.

1. According to the Pew Research Center Religious Landscape Survey, roughly 34% of Americans reject the Theory of Evolution, believing that humans and all other living creatures, including plants and vegetables, have existed in their present form since the beginning of time. [↑](#endnote-ref-1)
2. The familiarity with their mother’s voice has been used to aid the development of premature babies, see <https://www.cbsnews.com/news/special-pacifiers-equipped-with-moms-voice-can-aid-premature-babies-development/> [↑](#endnote-ref-2)
3. For evidence of pre-Sapiens hominin activity in Britain see (Prior 2004) pp 6-45 [↑](#endnote-ref-3)
4. Systematic butchering of large game animals during the lower Paleolithic in Qesem Cave, Israel. Avi Gopher, Ran Barkai (Tel Aviv University) and Mary Stiner (University of Arizona) 2009. For potential effects on egalitarian social selection see (Boehm 2012) pp 159 - 163 [↑](#endnote-ref-4)
5. Recent research by Holly M. Dunsworth suggests that the primary constraint on extended pregnancy in humans may be the burden placed on the mother’s metabolic rate, rather than pelvis size – see <https://blogs.scientificamerican.com/observations/why-humans-give-birth-to-helpless-babies/> [↑](#endnote-ref-5)
6. Mama’s Boys of Nature see (Bloom, Just Babies: The Origins of Good and Evil 2013) [↑](#endnote-ref-6)
7. For a summary of the work of Robert Trivers et al on kin and reciprocal altruism see (Trivers March, 1971) and (Dawkins 1989) [↑](#endnote-ref-7)
8. Investment in childcare by male sapiens, see (Diamond 1999). Earlier hominins such as Australopithicus may have been polygynous. Some scientists have speculated that changes to foraging practices, rather than male investment in child rearing, may have encouraged the shift to monogamy. See (Christakis 2019) [↑](#endnote-ref-8)
9. Sexual dimorphism, see (Diamond 1999) [↑](#endnote-ref-9)
10. For evolutionary pros and cons of monogamy see (Wright, The Moral Animal 1995) pp 89 - 102 [↑](#endnote-ref-10)
11. Boston study of recidivism quoted by (Pinker, The Better Angels of our Nature 2011) p 106 [↑](#endnote-ref-11)
12. About 90% of bird species and 9% of mammal species are monogamous. In most mammal species it seems that pair bonding between solitary animals evolved first, followed by increased paternal investment in childcare. This does not explain the rise of monogamy among humans. 29% of primate species are monogamous, but primates tend to be social rather than solitary. Some scientists speculate that pair bonding was a pre-adaptation that helped to ease the parenting burden on our ancestors as our brain size grew. See (Christakis 2019) [↑](#endnote-ref-12)
13. Some date the rise of Sapiens to 300,000 years ago, see (Christakis 2019) p132 [↑](#endnote-ref-13)
14. Rise of intelligent homo sapiens sapiens see (Sykes 2006) p 127 [↑](#endnote-ref-14)
15. Origins of life on earth. Evidence for life on earth appears in the fossil record around three and a half to four billion years ago, but only two hundred thousand years separate mitochondrial Eve from Neil Armstrong's giant leap for mankind. If the entire history of life on earth is represented by one 24-hour day, hominins would be around for roughly two minutes, and homo sapiens sapiens for less than five seconds. We started to live in large-scale settlements when we invented agriculture, with about a quarter of a second, or 12,000 years, left on the clock. See (Peter D. Ward 2004) p 57 [↑](#endnote-ref-15)
16. For data on the likely human population size 75,000 years ago, see (Zhivotovsky, Rosenberg and Feldman May, 2003) [↑](#endnote-ref-16)
17. Home range of 32 square miles see (Hamilton, Milne and Brown 2007) as well as Tim De Chant’s guest blog in Scientific American (August 16th 2011) [↑](#endnote-ref-17)
18. For the benefits of reciprocal altruism, see (Trivers March, 1971) [↑](#endnote-ref-18)
19. For benefits of living in bands of 100 people, see (Hamilton, Milne and Brown 2007) [↑](#endnote-ref-19)
20. Something that Nicholas Christakis, the head of the Human Nature Lab at Yale, says is “exceedingly rare in the animal kingdom.” He lists 8 features in our “social suite”, including the capabity to recognize individual identity, love for our partners and children, friendship, social networks, cooperation, in-group bias, higher status for those who can teach us or introduce us to others, and social learning. See (Christakis 2019) p 13 [↑](#endnote-ref-20)
21. For evidence of hard-wired language ability see (Pinker, The Blank Slate 2002) as well as his earlier book The Language Instinct, and the work of Noam Chomsky [↑](#endnote-ref-21)
22. See (Haidt 2012) p207 [↑](#endnote-ref-22)
23. One of the leading exponents for the argument that war was widespread among “primitive” societies, Lawrence H. Keeley, concedes that when a hunter-gatherer band can easily avoid conflict by moving to another fertile area, the most that they risk is their “composure”, see (Keeley 1996) [↑](#endnote-ref-23)
24. Studies of the Hadza and other non-segmented hunter-gatherer bands show that nuclear families move freely between them – humans lived in bands where most of our neighbors were not close kin. See (Christakis 2019) [↑](#endnote-ref-24)
25. For arrival in Australia see (Clarkson, et al. 2017). For arrival in Siberia see (Pitulko, et al. 2004). For arrival in the Americas see (Bonatto and Salzano 1997) [↑](#endnote-ref-25)
26. For arrival in Europe, and the impact of subsequent migrations, see (Gibbons 2014) [↑](#endnote-ref-26)
27. For evidence of early migration to the near east see (Armitage, et al. 2011) and (Balter 2011). For evidence of sapiens in China see (Xing, et al. 2015) [↑](#endnote-ref-27)
28. For the inheritance of Neanderthal DNA by Sapiens see the work of Erik Trinkaus (Washington University, St. Louis), David Reich (Harvard Medical School) and Svante Paabo (Max Plaank Institute for Evolutionary Anthropology, Leipzig), also (Mooallem 2017) and <https://www.irishtimes.com/news/science/the-cavemen-within-did-love-not-war-bring-an-end-to-neanderthals-1.4170477> [↑](#endnote-ref-28)
29. For evidence of rudimentary morality see (Bloom, Just Babies: The Origins of Good and Evil 2013) [↑](#endnote-ref-29)
30. Evolutionary biologists define altruism as reducing your own reproductive fitness to help another organism. Helping another organism in a way that does not reduce your reproductive fitness is not deemed altruistic, although confusingly biologists use the terms kin altruism and reciprocal altruism where collaboration with family or other organisms *increases* the reproductive fitness of our genes. [↑](#endnote-ref-30)
31. There is a temptation to ascribe goal-seeking behavior to genes that have the self-awareness of a photocopier, or a “blind replicator.” Instead of anthropomorphizing genes, we can define genetic “success” as the ability to make copies, whether through collaborative, predatory or parasitic strategies. See (Dawkins 1989) [↑](#endnote-ref-31)