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The Third Chimpanzee: On Evolution and the Future of the Human People

Written by

Jared Diamond

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THE Third Chimpanzee

FOR YOUNG PEOPLE

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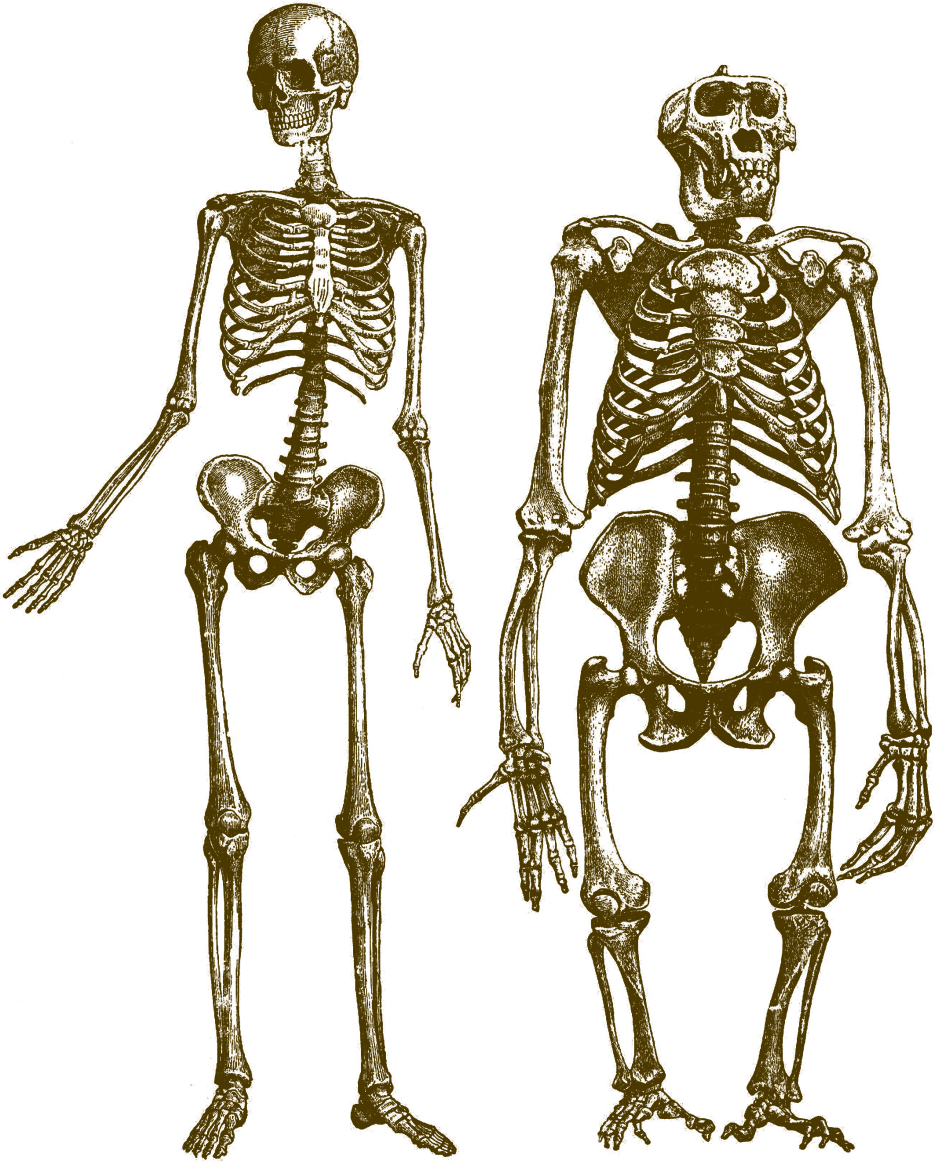
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'Wonderful.'
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THE Third Chimpanzee

FOR YOUNG PEOPLE

ON THE EVOLUTION AND FUTURE
OF THE HUMAN ANIMAL

JARED
DIAMOND

ADAPTED BY REBECCA STEFOFF



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Introduction

WHAT MAKES US HUMAN?

HUMANS ARE DIFFERENT FROM ALL ANIMALS. At the same time, humans *are* animals—a species of big mammal. This contradiction is our most fascinating feature. We still have a hard time understanding what it means and how it came to be.

On the one hand, between us and all other species lies a gulf that leads us to call them "animals" and to see them as separate from us. We think that centipedes, chimpanzees, and clams share some animal features that we don't have, or that we have human features that they don't share. Those human features include communicating through language, enjoying art, making complex tools, wearing clothes, and darker traits such as killing mass numbers of our own and other species.

On the other hand, we have the same body parts, molecules, and genes as other animals. It's even clear what type of animal we are. As long ago as the eighteenth century, scientists who

studied anatomy (the structure of the body) saw that humans are very similar to chimpanzees, animals that live in Africa. We recognize two species of chimpanzees: the common chimp and the bonobo, sometimes called the pygmy chimp. A scientist from outer space would immediately classify humans as a third species of chimpanzee. Scientists right here on Earth know that we share more than 98 percent of our genetic makeup with the other two chimps.

The difference between our genes and chimps' genes is small. Yet that small difference must have been responsible for the things that make humans unique. And all those changes happened fairly recently in our genetic history. Somehow, within a few tens of thousands of years, we started to show the features that make humans unique and fragile. This book takes a close look at how and why we developed those features, both good and bad—from language, art, and our life cycle to our ability to destroy our own and other species.

How This Book Came to Be

My own interests and background shaped this book. As a child, I wanted to be a doctor. By my

last year in college, that goal had gently changed, and I wanted to become a medical researcher. I trained in physiology, which is the study of how living systems function, from cells to animals. Afterward I went on to teach and do research at the University of California Medical School in Los Angeles.

But I had other interests as well. Birdwatching had attracted me since the age of seven, and I had also been lucky to attend a school that let me plunge into languages and history. I did not like the idea of spending the rest of my life on physiology alone. Then I had the chance to spend a summer in the highlands of New Guinea, a large tropical island north of Australia. The purpose of the trip was to measure how successfully birds were nesting. That project collapsed when I was unable to locate even a single bird's nest in the jungle, but the trip fed my thirst for adventure and birdwatching in one of the wildest remaining parts of the world.

After that first trip to New Guinea, I developed a second career, focused on birds, evolution, and biogeography. I've returned to New Guinea and the neighbouring Pacific

islands many times to pursue my bird research. As I saw human activity destroying the forests and birds I loved, I became involved in conservation, helping governments design national parks to protect ecosystems and plant and animal species.

Finally, it was hard to study the evolution and extinction of birds without wanting to understand the evolution and possible extinction of the most interesting species of all, the species that includes you, me, and everyone on Earth—*Homo sapiens*, the modern human. This book was the result. It begins with a look at our origins several million years ago. It ends with some thoughts about our future, and about ways we can learn from our past.

Building a Big Picture

The story of how we became human spans millions of years, and it pulls together information and ideas from many branches of science. In writing this book, I drew on my own experiences and the sciences I have studied, and also on the work of many scientists in other fields, from archaeology to

zoology. Pieces of the story come from fields as different as palaeopathology, the study of ancient diseases, and palaeobotany, the science of fossil plants.

As you've seen, my background started with anatomy and physiology, then moved on to the study of birds, especially their ecology—that is, the ways birds interact with other species around them and with their environment. As a biogeographer, I'm interested in the relationships between geography and living things. Biogeographers ask questions such as: Why are some species spread out across almost the entire world, while others live only in a single tree? As you'll see in this book, biogeography has played a big role in the history of our species.

I am also an evolutionary biologist. This means that I look at animals and plants in terms of evolution, the process of change in life on Earth over time, as new species develop and old ones become extinct. (In chapter 4, you'll read about how this happens.) In this book, I use the framework of evolutionary biology to examine human features and behaviour.

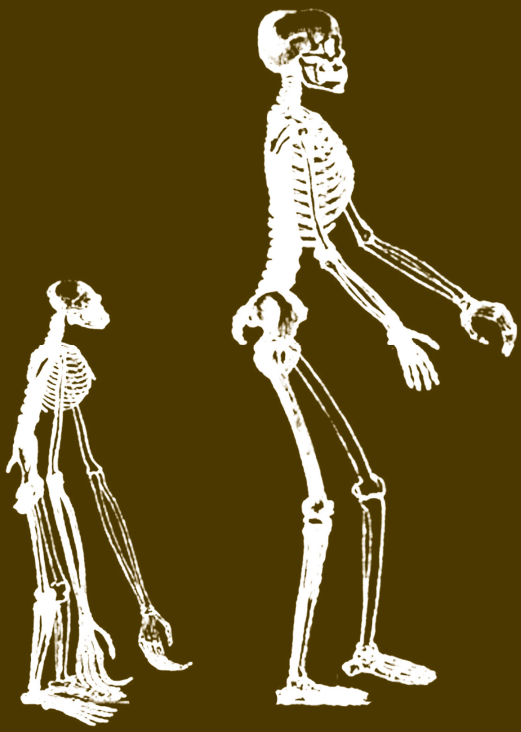
Seeing Ourselves in a New Way

From a scientist's point of view, things often look different from the way they look in everyday life. Take the question of how people are attracted to each other. What do you find attractive in another person? There are as many answers to that question as there are individuals in the world.

But to an evolutionary biologist, the question takes on another dimension. Because we see the human species as part of the natural world, we assume that people are shaped by the same forces that shape other species. By looking for patterns in the way birds and mice and apes choose their mates, as I do in chapter 3, we expect to learn something about our own behaviour.

In evolutionary terms, successful features and behaviours let parents produce the greatest number of children, who will eventually produce children of their own, passing the parents' genes on to new generations. This doesn't mean that evolutionary biology is the complete explanation, or the only explanation, for everything people do. It does mean that seeing ourselves as part of the evolutionary history of life enlarges our knowledge.

Looking at our own species in the same way we look at others can bring new understanding of human behaviour that may seem confusing or mysterious, or make us uncomfortable. It is a way of knowing ourselves better—and the quest for self-knowledge is a very human characteristic.



(*Left to right*: *Gibbon, Human, Chimpanzee, Gorilla, Orangutan.*) Five members of the primate family: *Homo sapiens* and four kinds of apes. The similar anatomy of human and ape skeletons had been recognized for centuries, but DNA studies confirmed that chimpanzees are our closest relatives, and we are theirs.

PART ONE

JUST ANOTHER BIG MAMMAL



WHEN, WHY, AND HOW DID WE STOP BEING JUST another species of big mammal? Clues come from three types of evidence, all explored in the next two chapters. Fossil bones and preserved tools are traditional evidence from archaeology, the study of the past through physical remains. A newer kind of evidence comes from the science of molecular biology, which examines our genetic heritage and traces our descent from an apelike ancestor.

One basic question concerns the differences between us and chimpanzees. Just looking at humans and chimps and counting visible differences doesn't help, because many genetic changes have effects that can't be seen, while other changes have very obvious effects. A Great Dane and a Chihuahua look much more different from each other than a chimp and a human being do. Yet all dogs belong to the same species, but chimps and humans are different species.

So how can we tell our genetic distance from chimps? The problem has been solved by molecular biologists. They have discovered that the gene difference between us and chimps is greater than the difference between any two living human populations or any two breeds of dogs. But the gene difference between us and chimps is

small compared with differences between many other pairs of related species. This means that only a small change in the chimpanzee genes led to enormous changes in humans' behaviour.

Next we'll consider what we can learn from the bones and tools left by creatures along the way between our apelike ancestor and modern humans. Fossil bones show the switch from our walking on all fours to walking upright, and our increase in brain size. Our large brain was surely necessary for the development of human language and inventiveness. In fact, we might expect the fossil record to show our tools getting better as our brains got bigger. But the greatest surprise and puzzle of human evolution is that stone tools remained very crude for hundreds of thousands of years after our brains had expanded almost to their present size.

Sixty thousand years ago, Neanderthals had brains even larger than those of modern humans, yet their tools show no signs of inventiveness or art. Neanderthals were still just another species of big mammal. Even for tens of thousands of years after some other human populations had evolved skeletons like those of modern people, their tools remained as boring as Neanderthals' tools.