

**BOOK II:**  
**THE HUMAN WORLD**

## **INTRODUCTION TO BOOK II**

### **THE HYBRID APE: COMBINING BIOLOGY AND CULTURE**

Drawing a Line

Culture: The Basic Mechanisms

Comparing Cultural and Biological Evolution

New Worlds

## DRAWING A LINE

In many religions, people are a wholly different sort of being from animals. We take center stage as a special creation, often in God's image. This is one reason Darwin's discovery of the mechanism of evolution was so shocking for many people—it suggested that we *are* animals; having evolved just like the rest of them. Since then a great deal of ink has been spilled trying to identify what makes us different, often focusing on the *one thing* that allows us to draw a line. There have been many candidates for that one thing, including self-awareness, consciousness, opposable thumbs, bigger brains, language, reason, culture, the divine spark, and many others. Each has been invoked as that magical, reassuring wall that seals us off as a new category of being. Some people seem to need this wall, to assure themselves that they really are a superior being to those *animals*. I think that this attitude is flawed for two reasons. First, it isn't so bad to be a part of the natural world. Seeing ourselves as a part of nature gives us a whole additional heritage, beyond the history book notion that our past begins with some ancient state along the Tigris or Yangtze. Ours is a far grander history than that, and the farther back we look, the wider the community we share it with.

Of course, we shouldn't deny our uniqueness, in cases where we are in fact unique. And we clearly do stand out in several ways. That is an empirical fact, not just a prideful distortion. What we need to do, then, is to clarify the ways that we are different, and the ways that we are not. That brings us to the second mistake I think the hard-and-fast dividers make—looking for a single characteristic that differentiates us from the rest of the animals. There are several features that make us unique. Some are a matter of degree, and some are more discrete. What sets us apart is a whole set of factors that have combined and reinforced each other to set us on a new trajectory. But they haven't set us apart; not entirely. We are one of the animals, but we are also much more

## CULTURE: THE BASIC MECHANISMS

Humanity goes beyond biology, because we have initiated a whole new kind of evolution: cultural evolution. Humans have woven a whole new world of culture on top of the biological

world. We live in a world of artifacts, machines, symbols, ideologies, and fashions. Of course, this world occurs within nature's widest boundaries; its basic physical laws. As always, in the widest sense, the world of human culture is an elaboration, not an exception. In the smaller worlds, such as those of biology, it can be an exception. A monk's biology, for example, may say find a mate and reproduce, but the monk's culturally influenced conscience says otherwise. Culture is so pervasive that in some places, such as cities, it may seem as though it has entirely displaced the biological world. And it has, but not entirely. Walk down the street, and you will see biology draped in the elaborated trappings of culture—the restaurants all cater to our basic biological need for food, but the foods they offer—tamales, samosas, Hogies—depend on culture.

As this book has progressed, we have traced the unfolding of various streams of the natural world—the physical world, the biological world, the wider mental world of animals. Now we have an additional stream to trace; a cultural one. This is the stream that truly sets humans on a different course from the rest of nature. The first order of business, then, is to define culture, and discuss the basic mechanisms by which it has woven its elaborate forms. Let's start with a definition: culture can be defined loosely as any behavior, knowledge, or artifact that can be transmitted from individual to individual, or generation to generation. Like biological evolution, culture is cumulative, building up sophisticated forms over time. But culture is much faster and more flexible.

The basic mechanism is yet another elaboration of the process of variation and selective retention. First, there is **innovation**—this is the emergence of a new cultural form. This could be a new tool, fashion, joke, skill, or any other object or behavior that others can duplicate. This is the variation stage. Indeed, most new cultural forms are variations or recombinations of older ones. Next comes the selective retention phase. If the innovation is useful, it is retained. Otherwise, it is dropped. Really useful innovations don't just remain. They spread, in a process called **diffusion**. More and more people decide they like it, and adopt it themselves. Something that people find really useful, like a better plow or a good joke, will spread across the countryside in no time. As it spreads, it will get refined further, as people tinker with it. Jokes get funnier, tools get better. As these more refined variants arise, they spread and overtake the older ones. Copper axes replace stone ones, and bronze axes replace copper ones. Cassettes replace eight-tracks, only to be replaced by CD's. Over time, a whole system of cultural forms builds up, each

of which has been tested, and found viable<sup>1</sup>.

Diffusion is one way that cultural forms spread across regions, by passing from person to person. **Migration**, on the other hand, spreads culture by the actual movement of people. The spread of cultures across the Atlantic ocean after the European discovery of the new world illustrates the difference. Cultural forms that went from the New World to the Old, such as corn and potato farming, or tobacco smoking, were carried by diffusion, because very few native Americans migrated to the old world. Many cultural forms that went the other direction, however, such as the wheel, guns, wheat and rice farming, European languages, and horse riding, were carried by migration—by Europeans colonizing the Americas. Later, most of these things diffused to Native Americans. As this example shows, migration can be a potent process, capable of transforming the cultural landscape of a region. Again and again in history, migrating peoples from more sophisticated or powerful cultures have colonized other regions. Sometimes this has resulted in a mixing of the cultures of the two peoples, with cultural diffusion in both directions. More often, the diffusion is more one sided, with the invaded peoples adopting many of the cultural forms of the invaders. This can be seen throughout much of Latin America, where many native peoples now speak European languages and have lifestyles that are predominantly of European origin. In some cases—too many cases—the invading peoples displace the natives almost entirely, as happened in the colonization of the United States, where native peoples are now a tiny minority.

As we will see, some of the biggest controversies in history and archaeology concern which process resulted in the appearance of cultural innovations across widely spaced regions. Was it independent innovation in each area, diffusion from one area to another, or migration? A good example of such controversies is the emergence of agriculture in Europe. Agriculture began in Southeastern Europe around 6000 BC, and then spread north and west until it was practiced across Europe by about 3,500 BC. Some people argue that many agricultural practices were independently invented in Europe. Others argue that agriculture diffused from Turkey and the Middle East, where it was already being practiced, and then spread across Europe, as native

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<sup>1</sup>I use the word *viable* because it doesn't have any connotations about value. New cultural forms spread for many reasons, not always because they are good. Drugs spread because they are addictive, not because they make our lives better.

Europeans learned the new techniques. Still others argue that agricultural peoples, with their expanding populations, migrated and expanded into Europe. Native peoples, according to this argument, were either displaced or adopted the invading culture, often intermarrying with the invaders. This theory is supported mostly by linguistic and genetic evidence, so it is popular among specialists in those fields. Archaeologists, on the other hand, tend to dislike migration and displacement theories, favoring either the independent innovation or diffusion theories. As we will see later, the truth is complex, and often involves a combination of all three.

## **COMPARING CULTURAL AND BIOLOGICAL EVOLUTION**

Cultural evolution resembles biological evolution in that it builds up subtle and interconnected forms by a process of variation and selective retention. But there are big differences, too. First of all, cultural evolution is not completely blind like biological evolution is. This means that people can consciously shape innovations to suit their purposes, without having to wait for useful variants to come along by chance. If we need a bigger hammer, we just make one. We don't have to wait for a random mutation. The more directed nature of culture also means that people can spot and combine useful features, marrying things from different realms much more efficiently than biology can. As useful as it would be, an otter can't mate with a fish and have babies with gills. But Chinese movable type can be combined with an Italian winepress to make a printing press.

The biggest difference between biology and culture is that culture changes so much faster. Culture spreads as fast as people can invent and adopt new variations. So, while human biological evolution has been negligible over the last few thousand years, cultural innovations have exploded. And, not only is culture faster than biological evolution, it tends to accelerate. Cultural change gets faster as the population grows and people become more connected. The more people there are, the more innovations will arise. The faster the lines of communication, the faster the innovations will spread. And the more connected people are, the more ideas they will be exposed to, which they can combine into new innovations. Culture is like an avalanche, moving faster and growing larger the farther it goes.

Culture, then, is a self-reinforcing process full of positive feedbacks. In fact, this is

probably what has made humans unique more than anything else—a self-reinforcing web of biology and culture. Hands make us good at making tools, and tools help us survive. Big brains are selected biologically, because they are better at coming up with tools and other forms of culture. Explicit thought gets more powerful, and culture accelerates. Language comes along and culture accelerates further. Natural selection reinforces culture, and culture reinforces natural selection.

## NEW WORLDS

So, culture is at the center of a web of features that distinguishes us from other animals. What makes us different is that we live in an additional world. We have added a world of culture to the worlds of physics and biology that animals inhabit. We are no longer strictly biological beings. We are hybrids of culture and biology. One place where this is clear is the human mind, a biological design transformed by culture. Culture has modified and expanded our minds in many ways. Consider, for example, how culture might influence thinking. If explicit thought is the manipulation of models and symbols in a mental workspace, then culture provides us with new models to work with. Someone who learns a new concept from their culture, such as the idea of conservation of energy, the equations of calculus, or even the idea of culture itself, installs a new tool for thinking. Culture is about mental tools as much as physical ones. In a way, culture installs new software on the neural hardware of our brains, furnishing our minds with ideas built up over millennia.

But culture influences more than just higher-order thinking. It also modulates more primal features of human behavior. Disgust, for example, is a basic biological response, shared by all humans, and accompanied by a universal facial expression. But different people around the world are disgusted by different things, depending on culture. Frog legs, crawfish, roasted dog, and bleu cheese invoke nausea in some parts of the world, and salivation in others. Culture modulates human behavior at all levels, from the most basic responses to the most abstract thinking.

We have seen that the mind has many levels. Now we can add a new level, as in Figure . In addition to unconscious brain processes, implicit knowledge, and explicit thought, now we have culturally transmitted practices, values, and ideas, which reach back downward, influencing all the lower levels. Indeed, all of the levels of the mind are just a part of the many levels of

human nature. Biology was built upon physics, and our minds were built by biology. Culture was built by the human mind (actually billions of human minds), then turned around and transformed that mind. We are shaped from below by biology and from above by culture. We are hybrids, not just straddling two worlds, but weaving them tightly together—and not just into a new world, but into many new worlds.

This is why I think the nature vs. nurture debate is based on a false dichotomy. Both are important, but neither is exclusive. When biologists and evolutionary psychologists claim that there is a universal human nature, predisposing us to learn language, make friends, have and care for children, and seek food and sex, they are right. When cultural anthropologists and others claim that culture shapes our minds, behaviors and values, they are right. When either camp argues that one or the other determines our behavior absolutely, they are wrong. The pull of each is strong, strong enough at times to get the better of us. But it is not irresistible.