LIFE ESSAY

How has Darwin's theory of natural selection transformed our view of humanity's place in the universe?

- by Daniel Dennett -

For as long as our ancestors have been making tools, it has no doubt seemed obvious that an excellent artifact can be created only by something even more excellent: a clever artificer. You never see a shoe creating a cobbler; you never see a house making a carpenter. Darwin overthrew that received wisdom. One of Darwin's earliest critics, Robert Beverley MacKenzie, could not contain his outrage:

> In the theory with which we have to deal, Absolute Ignorance is the artificer; so that we may enunciate as the fundamental principle of the whole system, that, IN ORDER TO MAKE A PERFECT AND BEAUTIFUL MACHINE, IT IS NOT REQUISITE TO KNOW HOW TO MAKE IT. This proposition will be found … to express in a few words all Mr. Darwin's meaning; who, by a strange inversion of reasoning, seems to think Absolute Ignorance fully qualified to take the place of Absolute Wisdom in all the achievements of creative skill.

This is indeed a "strange inversion of reasoning," but once the topsy-turvy perspective it implies has been accepted, most of what we have believed about who we are survives intact. We can still be in awe of the "Wisdom in all the achievements of creative skill" while attributing this wisdom not to a single Creator, but distributing it over billions of years in trillions of lineages of replicators, trying their luck in the great tournament of life, mindlessly discovering and rediscovering the brilliant design principles that constitute the diversity of life. Tradition honors the trickle-down theory of value: what we do and think can be valuable only if it derives its value from something even more valuable—only if we are the servants, in effect, of a greater master. Darwin's "strange inversion" obliges us to rethink what could make something valuable, and then we notice that a bubble-up theory has much to recommend it. There was a time when there was no morality on this planet, and now it has evolved. Just as the air we breathe was created as a by-product of the activities of billions of years of simpler life forms, the very meaning of life on this planet has emerged from the efforts of the life forms that the atmosphere enabled.

We are animals. Are we *just* animals? The ideological tug-of-war over "human exceptionalism" can be damped, if not stopped outright, by emphasizing a few uncontroversial facts. Sight, the capacity to extract huge amounts of relevant information from a relatively safe distance, was an innovation that multiplied the opportunities of intelligent behavior: locomotion, predation, evasion, migration, and so on. Sight and flight have each evolved numerous times, but language has evolved just once, so far as we know—in our genus. (Neanderthals may have been a second talking species for a while.) Language is the key to our huge advantage in knowledge and technology. Other animal species transmit significant amounts of know-how nongenetically from parent to offspring, but without language, the lessons to be learned are rather simple preferences and prohibitions, not elaborate systems of hard-won technique and patiently gathered data.

Daniel Dennett is University Professor and Director of the Center for Cognitive Studies at Tufts University, Medford, Massachusetts. He is the author of many books and articles, among them *Consciousness Explained* (1991), *Darwin's Dangerous Idea* (1995), and *Freedom Evolves* (2003).

It has taken our species thousands of years of communication and investigation to begin to find the keys to our own identities. Our newfound capacity for long-distance knowledge gives us powers that dwarf those of all the rest of the life on Earth. It has been estimated that ten thousand years ago, the human population comprised a small fraction of 1 percent of the mass of vertebrate life on land; today, we, together with our livestock and pets, make up about 98 percent of that total. We exploit an ever increasing share of the planet's resources, but we do offer something in return. Now, for the first time in its billions of years of history, our planet is protected by far-seeing sentinels, able to anticipate danger from the distant future—an asteroid on a collision course, or global warming—and devise schemes for doing something about it. The planet has finally grown its own nervous system: us. We are responsible for the future of life on the planet, in a way no other species could ever be.

Discussion Questions

1. What developments would make it possible or likely for language to evolve again, in another species?
2. Are there any good reasons, aside from tradition, for favoring a trickle-down theory of value over a bubble-up theory of value?
3. Beavers build elaborate dams; so do civil engineers. What role does language play in determining the kinds of artifacts a species can make?
4. How would you defend the hypothesis that our ancestors learned to control fire before they mastered language?

Web Links

Center for Cognitive Studies at Tufts University: ase.tufts.edu/cogstud/

Darwin Day, University of Tennessee at Knoxville: fp.bio.utk.edu/darwin/

The C. Warren Irvin, Jr., Collection of Darwiniana: www.sc.edu/library/spcoll/nathist/darwin/darwin.html