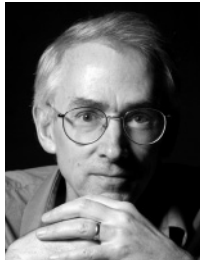


Does evolution explain human nature?



David Sloan Wilson

Yes and no.

When we say that a species has a “nature,” we are referring to its evolved properties. For a lactose-digesting bacteria, digesting lactose is part of its “nature.” If we turn it into a new genetic strain unable to digest lactose, we will have changed its “nature.” Similarly, domesticated animals have different “natures” from their wild ancestors.

My simple formula equating “nature” with evolved properties might seem boring at first, until we realize that there is more to evolution than *genetic* evolution. Genes are only one mechanism of inheritance. Some immunological, psychological, and cultural processes also count as evolutionary. They too rely on the open-ended variation and selective retention of traits, but they are based on non-genetic inheritance mechanisms.

People and cultures shaped by these fast-paced evolutionary processes no longer have the same “nature,” any more than two bacterial strains that have diverged by genetic evolution. In this fashion, my simple and seemingly boring formula can be understood to say that humanity as a whole does not have a single “nature.” Instead, each and every person and culture has its own “nature.”

This is not just idle word play. We are only beginning to appreciate the fact that human cultural diversity is fundamentally like biological diversity. Humanity is more like a multi-species ecosystem than a single biological species. A culture, like a species, has a historical phylogeny (that is, a sequence of events in its evolutionary trajectory) and is adapted to its local environment. The body of knowledge that members of Arctic cultures must learn and transmit to survive in their harsh environment is mind-boggling when understood in detail — and very different from the equally extensive body of knowledge

that members of desert cultures must master. In what sense do they have the same “nature,” any more than a polar bear and a camel?

This is equally true of modern cultural diversity. Only a few decades ago, American psychologists confidently assumed that their studies of college students revealed a universal human nature. Economists treated individual utility maximization as a grand explanatory principle. Moral philosophers assumed that their own intuition was representative of everyone’s intuition. The failure of these grand generalizations has been a humbling experience. As the social psychologist Richard Nisbett put it, “Psychologists who choose not to do cross-cultural psychology may have chosen to be ethnographers instead.” Or, in the immortal words of George Bernard Shaw, “Forgive him, for he is a savage and believes that the customs of his tribe are the laws of nature.”

But this is not the whole story. Only *some* immunological, psychological, and cultural processes qualify as evolutionary in their own right. Immunologists distinguish between the “innate” and “adaptive” components of the immune system. The innate component consists of fixed responses to invading organisms, such as the ability of macrophages to recognize and engulf bacteria based on their surface properties, recruit other macrophages to wound sites, and so on. These highly sophisticated responses developed through genetic evolution, but they are not open-ended evolutionary processes. They are species-typical, in contrast to the unique suite of antibodies that evolves in every individual, thanks to the adaptive (that is, open-ended evolutionary) component of the immune system.

In addition, the adaptive component of the immune system requires an elaborate architecture that is genetically innate and therefore part of the “nature” of our species. Species-typical mechanisms create the diversity of antibodies, distribute them throughout the body, cause those that successfully bind to antigens to reproduce, keep them around for a long period of time as a

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“memory,” and so on. The neurobiologist and evolutionist William H. Calvin coined the term “Darwin machine” to describe any fast-paced process of evolution built by the slow-paced process of genetic evolution. Darwin machines must include a genetically evolved architecture (the “machine”) if open-ended evolutionary processes are to achieve biologically adaptive outcomes.

What holds for the immune system also holds for psychological and cultural processes. For example, immediate threats to a person result in automatic psychological defense responses analogous to macrophages rushing to a wound site. These responses are highly adaptive products of genetic evolution, but they are not open-ended evolutionary processes in their own right. Calling them part of our “nature” should be uncontroversial. In addition, our open-ended behavioral flexibility, as individuals and as cultures, requires a genetically evolved architecture no less than the immune system. A more poetic metaphor than a “Darwin machine” is a musical instrument. It can produce an infinite number of songs but also has a single “nature.”

Why do we ask questions about human nature in the first place? Many people are interested primarily in human *potential*, our capacity as individuals and societies to change for the better. For some, saying that we have a nature

is threatening because it seems to deny our capacity for change, raising the specter of genetic determinism. For others, saying that we have a nature is enticing because it promises the same kind of understanding for humanity that evolutionary theory currently offers for the rest of life.

Answering “yes and no” to the question offers the best of both worlds. We do not have a single nature as a species because we are actively evolving, thanks to the rapid processes of evolution that employ non-genetic inheritance mechanisms. Yet, a sophisticated knowledge of evolution is required to understand both our genetically evolved nature and our capacity for change. Indeed, just because we have a capacity for change does not mean that we will necessarily change for the *better*. Evolution frequently results in outcomes that are highly undesirable for long-term human welfare. If we want to change for the better as individuals and societies, we must learn how to manage fast-paced evolutionary processes to take us where we want to go. Might this be possible in the foreseeable future? The answer to that question is “yes.”

David Sloan Wilson directs EvoS, Binghamton University's evolutionary studies program and the hub of a nationwide consortium. His latest book is Evolution for Everyone: How Darwin's Theory Can Change the Way We Think About Our Lives.

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