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Time to Retire The Simplicity of Nature vs. Nurture

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Are we moral by nature or as a result of learning and culture? Are men and women "hard-wired" to think differently? Do our genes or our schools make us intelligent? These all seem like important questions, but maybe they have no good scientific answer.

Once, after all, it seemed equally important to ask whether light was a wave or a particle, or just what arcane force made living things different from rocks. Science didn't answer these questions—it told us they were the wrong questions to ask. Light can be described either way; there is no single cause of life.

Every year on [the Edge website](#) the intellectual impresario and literary agent John Brockman asks a large group of thinkers to answer a single question. (Full disclosure: Brockman Inc. is my agency.) This year, the question is about which scientific ideas should be retired.

Surprisingly, many of the writers gave a similar answer: They think that the familiar distinction

between nature and nurture has outlived its usefulness.

Scientists who focus on the "nature" side of the debate said that it no longer makes sense to study "culture" as an independent factor in human development. Scientists who focus on learning, including me, argued that "innateness" (often a synonym for nature) should go. But if you read these seemingly opposed answers more closely, you can see a remarkable degree of convergence.

Scientists have always believed that the human mind must be the result of some mix of genes and environment, innate structure and learning, evolution and culture. But it still seemed that these were different causal forces that combined to shape the human mind, and we could assess the contribution of each one separately. After all, you can't have water without both hydrogen and oxygen, but it's straightforward to say how the two elements are combined.

As many of the writers in the Edge symposium point out, however, recent scientific advances have made the very idea of these distinctions more dubious.

One is the explosion of work in the field of epigenetics. It turns out that there is a long and circuitous route, with many feedback loops, from a particular set of genes to a feature of the adult organism. Epigenetics explores the way that different environments shape this complex process, including whether a gene is expressed at all.

A famous epigenetic study looked at two different strains of mice. The mice in each strain were genetically identical to each other. Normally, one strain is much smarter than the other. But then the experimenters had the mothers of the smart strain raise the babies of the dumb strain. The babies not only got much smarter, they passed this advantage on to the next generation.

So were the mice's abilities innate or learned? The result of nature or nurture? Genes or environment? The question just doesn't make sense.

New theories of human evolution and culture have also undermined these distinctions. The old evolutionary psychology suggested that we had evolved with very specific "modules"—finely calibrated to a particular Stone Age environment.

But new research has led biologists to a different view. We didn't adapt to a particular Stone Age environment. We adapted to a newly unpredictable and variable world. And we did it by developing new abilities for cultural transmission and change. Each generation could learn new skills for coping with new environments and could pass those skills on to the next generation.

As the anthropologist Pascal Boyer points out in his answer, it's tempting to talk about "the culture" of a group as if this is some mysterious force outside the biological individual or independent of evolution. But culture is a biological phenomenon. It's a set of abilities and practices that allow members of one generation to learn and change and to pass the results of that learning on to the next generation. Culture is our nature, and the ability to learn and change is our most important and fundamental instinct.

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