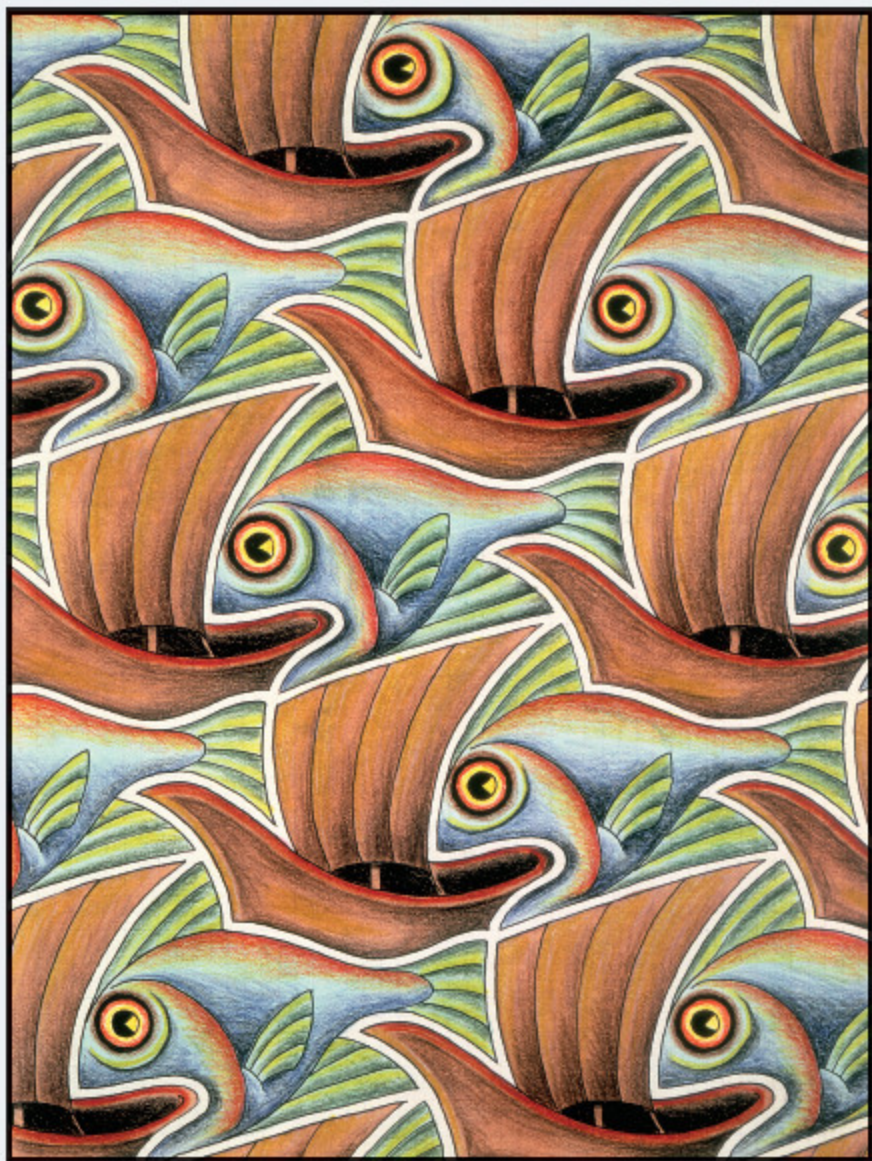


THE MIRAGE OF A SPACE BETWEEN NATURE AND NURTURE



EVELYN FOX KELLER

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INTRODUCTION

One of the most striking features of the nature-nurture debate is the frequency with which it leads to two apparently contradictory results: the claim that the debate has finally been resolved (i.e., we now know that the answer is neither nature nor nurture, but both), and the debate's refusal to die. As with the Lernean Hydra, each beheading seems merely to spur the growth of new heads. In the case of the Hydra, Hercules managed to definitively vanquish the beast. I do not pretend to the prowess of a Hercules; my aim is not even to crush the nature-nurture debate. Rather, it is to understand what it is about that debate that causes so much trouble, that so stubbornly resists resolution.

Part of the difficulty comes into view with the first question we must ask: what is the nature-nurture debate about? There is no single answer to this question, for a number of different questions take refuge under its umbrella. Some of the questions express legitimate and meaningful concerns that can in fact be addressed scientifically; others may be legitimate and meaningful, but perhaps not answerable; and still others simply make no sense. I will argue that a major reason we are unable to resolve the nature-nurture debate is that all these different questions are tangled together into an indissoluble knot, making it all but impossible for us to stay clearly focused on a single, well-defined and meaningful question. Furthermore, I will argue that they are so knitted together by chronic ambi-

guity, uncertainty, and slippage in the very language we use to talk about these issues. And finally, I will suggest that at least some of that ambiguity and uncertainty comes from the language of genetics itself.

For example, we often assume, and indeed often read, that the nature-nurture debate is about sorting out the contributions of nature from those of nurture, and trying to estimate their relative importance. But what exactly is meant by nature and nurture? Sometimes the distinction is between what is inborn and what is acquired after birth; more commonly, it is between genes and environment. Moreover, these terms are themselves ambiguous: what exactly *is* a gene, and what does it do? Even more troublesome is the ambiguity of the term *environment*. Do we mean it to refer to everything other than DNA, to the milieu in which the fertilized ovum develops, or to the factors beyond the organism that affect its development? Finally, there is also the question, contributions *to what*? This, alas, we almost never ask, either as readers or as writers. Yet here we can find what may be the most commonly encountered and the most recalcitrant source of trouble with the entire nature-nurture debate, for what is at issue — the subject of debate — depends critically on our tacit assumptions about how that question is to be answered.

By far the most common assumption — at least in the popular and semipopular literature — is that what is at issue is a comparison of the contributions of nature and nurture to the formation of individual traits. For example, this is the assumption that underlies much of the argument of Matt Ridley's widely read book, *Nature via Nurture* (2003). Ridley's central thesis is that modern genomics has shown us that the nature-nurture debate, as traditionally framed, is premised on a meaningless opposition. He writes:

The discovery of how genes actually influence human behavior, and how human behavior influences genes, is about to recast the debate entirely. No longer is it nature versus nurture, but nature via nurture. Genes are designed to take their cues from nurture. (2003, 5)

In other words, what matters for development is not so much what genes an organism has, but how and when these genes are expressed — and to be

expressed, they need to be activated by environmental stimuli. His take-home message: nature depends upon nurture to be realized.

But in a review of Ridley's book, the evolutionary geneticist H. Allen Orr argues that Ridley misses the main point of the nature-nurture debate. Orr's chief complaint is that Ridley "seems to have the right answer to the wrong question" (2003). What Orr refers to as the "traditional question" of this debate is altogether different from Ridley's concern with how genes respond to experience:

The first question is statistical. It asks about the percentage of variation in, say, IQ, that arises from inherited differences among individuals (do some parents pass on smart genes to their kids?) versus the percentage that arises from environmental differences (do some parents pass on books to their children?). The second question is mechanistic. It asks about how genes behave within individuals . . . The fact that genes respond to experience is certainly interesting and important . . . But it's the wrong *kind* of fact to settle the nature-nurture debate. (ibid.)

To Orr, the difference between the two questions seems clear, and we might ask (as in fact he does), how so sophisticated a science writer as Matt Ridley could make so elementary a mistake: "why does Ridley reach for the wrong level of analysis, confounding statistics and mechanisms?" Orr suggests that the explanation is as plain as the mistake: Ridley, he writes, "a self-styled champion of 'techno-optimism,' seems to have succumbed to genome hype" (ibid.).

I disagree. What Orr describes as Ridley's confusion between statistics and mechanism is simply too widespread, too difficult for both readers and authors to detect, and too resistant to clarification to be explained by excessive "techno-optimism." The conflation is everywhere, in popular and technical literature alike. It may well be that the distinction seems clear to Orr, but if so, if he himself never slides from one meaning to another, then he is truly an exception.

For another example of the same slippage, and to illustrate its ubiquity, consider the numerous arguments currently being made that invoke epi-