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Review of Evelyn Fox Keller's *The Mirage of a Space Between Nature and Nurture*

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Evelyn Fox Keller

The Mirage of a Space Between Nature and Nurture.

Durham, NC: Duke University Press 2010.

120 pages

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In this short study of the nature-nurture debate, Evelyn Fox Keller explores the persistent argument about the degree to which phenotypic characteristics of organisms are due to genetic causes and to environmental causes. Although questions about organisms' in-born features and how those features may (or may not) change over time go back at least to Aristotle's proposed teleological view of the epigenesis of organisms, Keller—given her interest in the language of the debate—naturally looks to the earliest use of the specific terminology (Nature versus Nurture) and the specific sense of 'separability and oppositionality' (19); she identifies Francis Galton as the first to create the 'explicit conjunction' (17) of the terms. It was Galton who first began the quest to assign a quantitative value to the weight of nature and of nurture in the development of traits; it was Galton who created the 'mirage of a space between nature and nurture'.

And indeed, it is a mirage. Keller analogizes Galton's view of the origin of traits to the filling of a bucket: If two people are to fill a bucket with water, one may bring 40 percent of the water, the other 60 percent. We can assign to each a specific quantitative contribution to the filling of the bucket. But, Keller points out, the development of traits is more accurately modeled by a different way of filling the bucket: If one person turns on the faucet, and the other holds the hose over the bucket, then it is impossible to assign quantitative value to the relative contributions of the two bucket-fillers. Or, in another of Keller's persistent analogies, if we hear the sound of a drum, we cannot assign a certain percentage of the cause of the sound to the drummer, and another percentage to the drum. Likewise, each organism has the form that it does because its particular developmental path took place in a particular environment. Change the nurture or change the nature and the final form would change qualitatively.

Virtually any recent scholar who has seriously thought about these issues acknowledges this fact: nature and nurture cannot be separated. However, the notion of nature and nurture as separable and opposing concepts persists in the popular imagination. And, Keller contends (rightly, I believe), even among scholars who are aware that this is an erroneous way to think about development there is a tendency for slippage into talking about nature and nurture as separable ends of a dichotomy. The reasons for this continuing confusion, according to Keller, are that the meanings of the concepts involved have changed over time, and are even now polysemous.

In the beginning—that is, before Galton and Darwin—philosophers could write of natural traits being acquired through experience. J. S. Mill in particular wrote of traits such as human speech being natural, but acquired. For Mill, the dividing line for innate

and acquired traits was birth. After Galton and those who followed his ideas, the division shifted to internal versus external (and, along the way, to immutable versus changeable).

Part of this shift involved the introduction of the term ‘heredity’ into English (which Keller attributes to Darwin and Herbert Spencer). This term moved our inheritance into our bodies and it created ‘a new ontological commitment to the material concreteness of whatever it was that lay behind hereditary processes’ (21). In other words, those aspects of our traits that we got from our ancestors were now seen as internally generated by what would eventually be called ‘genes’. This move led hereditary traits to become aligned with the concept of something being ‘inborn’ or ‘innate’, in contrast to being ‘acquired.’ This ‘displace[s] Mill’s differentiation between innate and acquired—understood as a distinction marked by an event in time (birth)—by a distinction that cuts along a different axis, a division between internal and external’ (22).

In another important shift, scholars moved away from viewing the nature-nurture debate as being about how much nature and nurture each contribute to the development of a trait. Now we were looking to determine how much variability in a trait (within a specific population) is associated with variability in nature and how much is associated with variability in nurture. This subtle transition—marked by use of the term ‘heritability,’ which is an estimate of the phenotypic variability associated with genetic variability—truly changes the question that empirical researchers are answering.

Moreover, it is a seemingly answerable question. In fact, it forms the basis of quantitative genetics. However, the answers arrived at have several important limitations (concerning, e.g., limits of specific populations, difficulties in dealing with gene-environment interaction), which make them unsuited to address the previous question about the relative weight of genes and environment as causal forces in the development of traits.

However, it is this latter question which seems to really be of interest to most people. Because of this, conclusions about the heritability of a trait (i.e., how much variability in a trait seems to be associated with variability in genetic makeup) frequently slip into conclusions about how much a trait is caused by one’s genes (and, by extension, how much the trait is innate and immutable). ‘I suggest more generally that much of our interest in heritability—as well as many of the arguments put forth on behalf of the importance of measuring such a quantity—rests deeply and inextricably on the unspoken ambiguity of the terms, and on the slippage that ambiguity invites’ (71).

There is no doubt that the intensity of interest in these kinds of questions—both among scholars and among the general public—rests largely on the slippage to a question of how much genes contribute to the development of a trait. But interest in this latter question stems from specific real-world concerns. This is not just knowledge for knowledge’s sake. Few people on the street would be interested in the question of whether homosexuality is more likely to be shared by identical twins than by fraternal twins, unless they thought that it said something about the moral status of homosexuality.

Few would be interested in the heritability of diseases, unless they thought it could tell us something about the route to take to search for treatment or cure. And few would be interested in partialling out the variability in intelligence between genes and environment, unless it informed debates about political and social action.

Unfortunately, Keller gives little attention to these important motivating factors behind the linguistic slippage that she identifies. She also fails to address at all the psychological factors that keep the nature-nurture debate from fading away (as she would prefer, 73). Anyone who has ever tried to explain statistical interactions to students knows that human minds seem poorly suited to this kind of understanding. It seems inevitable that most people will seek to simplify the complex interactions that underlie the development of biological and psychological traits. The mind seems drawn to dichotomies, and as such, nature-nurture seems destined to persist.

Keller certainly had room to expand on these themes. It is not clear that the information included here—as useful as it is—needed a book-length treatment. Editing of some of the more repetitious parts of the text could have yielded a longish journal article, rather than this short book (107 pages, including the notes, references, and index).

Keller ends her book with compelling arguments to reframe discussions of the origins of traits to discuss phenotypic plasticity and to incorporate modern understandings of molecular genetics and developmental biology. She reminds us that the moment of birth is an arbitrary dividing point between a period when traits can be changed or not, between traits that are somehow natural and traits that are somehow a product of nurture. And of course, she's right; but without addressing the fundamental psychological, political, and moral needs and abilities that undergird the nature-nurture debate, I fear little change will come from adopting her solutions.

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