

# Nature via Nurture

Matt Ridley

(2003) *London/New York: Fourth Estate / Harper Collins, 328 pp.*

In his new book Matt Ridley explores the relationship of genes and environment from a perspective that focuses on the question of how genes are turned on and what triggers them to be expressed in space and time. The title of the book *Nature via Nurture* was first coined by David Lykken and should replace the “Nature versus Nurture” dichotomy. In the prologue to the book Ridley advocates that both nature and nurture are needed to explain human behavior, but this declaration does not lead to an “everything is interaction” viewpoint. Instead, Ridley explores how behavior, environment and nurture trigger genes to be switched on and off in different cells and across time. This leads to one of the main themes of the book: evolution happens through changes in gene promoters rather than genes themselves. Differences between species thus are seen as differences of degree and not of kind. This reinforces the hypothesis put forward in 1975 by King and Wilson (*Science, 188*, pp. 107–16) that evolution might depend more strongly on variation in gene expression than on variation in protein forms.

The Human Genome Project revealed that the three billion nucleotides that make up the human genome include “only” around 30,000 genes. Ridley discusses at least seven different definitions of what a gene is, including the historical concept of De Vries of an interchangeable part (like an atom) and the more statistical concept of Fisher of the gene as a “victim of selection”. Ridley also points out that equating more genes with the absence of free will — or fewer genes with

more free will — would make fruit flies freer than people. More importantly, he explains alternative splicing of the same gene, transcription factors and the gene as a switch of development when talking about diversity.

Ridley’s last book before this one, “Genome”, discussed in its 23 chapters the details of one or a few genes on each of the human chromosomes. The new “Nature via Nurture” again has much to offer on the details of recent gene discoveries, such as the ASPM gene for brain size, or the MAOA gene and its interaction with childhood abuse as a risk factor for violence and externalizing behavioral problems. In relation to this last finding, Ridley quotes an interesting point, made by Judith Harris — whose work on the importance of peer influence and the absence of parental influence on personality development is also mentioned in some detail. Harris notes that the association of abuse by parents and the anti-social behavior in their offspring need not be causal: it may be that a yet undiscovered gene affects both.

Compared to the (very well received) last book, *Nature via Nurture* offers more of an historical perspective. The work of “12 hairy men” (e.g., Galton, Darwin, Lorenz, Freud, Boaz, and Piaget) is reviewed throughout and the book includes a great photograph taken at a conference meeting in Biarritz where they all met (taken on April 1, 1903).

There are many examples from the latest results on the genetics of behavior. Nearly all of Chapter 3 (“A convenient jingle”) is devoted to results from twin studies. The absence of an effect of shared family

environment found for many (behavioral) traits is compared to the effects of vitamin C: you need it, or you will become ill, but once you have it, consuming extra does not make you healthier. I wonder, however, how the misunderstanding can have occurred that makes Ridley state that personality differences are even more heritable than differences in intelligence. Although intelligence in early childhood is one of the few traits to show significant influences of shared family environment, once children move into adolescence and adulthood, differences in intelligence are to a very large extent heritable. In most studies the heritability of personality differences is between 40 and 50%, whereas for intelligence differences heritability in adults is between 50 and 80%.

In addition to lots of examples on the genetics of behavior and behavioral abnormalities, the book also contains lots of examples from molecular biology: How did the brain get built and how are axons guided? (they need to suppress their sensitivity to “Slit”). Learning and conditioning have their own chapter, as do development and culture.

Ridley, who has a doctoral degree in zoology, is a British journalist. It shows. He writes extremely well and his latest work offers superb reading, not only for twin researchers but also for their relatives and friends who may be interested in what (behavior) genetics is all about.

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