

Why is the opposition between nature and nurture so difficult to lay to rest? It continues to cause scientific and social mischief even though it has repeatedly been pronounced dead by scholars. Each time it is declared to be meaningless, however, it reappears in a new guise.

In *The Ontogeny of Information*, Susan Oyama draws on psychology, biology, and anthropology, as well as philosophy and history, to explore the many facets of the nature-nurture complex and the reasons it continues to have such a powerful influence on research, theory, and interpretation.

She discusses the shortcomings of recent notions of encoded genetic potential, preprogrammed learning, and interaction between biology and culture. Ontogenetic "information," whether about body or behavior, does not exist in the genes or in the environment but is constructed in a given developmental context. Although it is often assumed that some version of the nature-nurture dichotomy is necessary for an evolutionary treatment, she shows how evolution requires, not inherited as opposed to acquired characters (or even mostly inherited as opposed to mostly acquired ones) but integrated developmental systems. These systems include the genes and developmentally relevant aspects of the environment. The constructivist view presented here is consistent with many contemporary trends in the biological and social sciences but resolves the contradictions that arise when it is incompletely assimilated. At the same time it shows how to eliminate the innate-acquired distinction while retaining an evolutionary perspective.

Our deepest beliefs about what is natural, inevitable, and unchangeable, what is normal and good, are affected by our concept of biological nature. Because the nonacademic world also continues to frame important questions in terms of genetic necessity and cultural overlay, this distinction between nature and culture has serious implications for the conduct of private lives and for the making of public policy.

"Few of those who have worked on the origins and development of behaviour should feel unscathed by the message of this penetrating and clear book. It is an outstanding contribution to clear thinking in an area riddled with confusion. I very much hope all those that are interested in development will read it."

Patrick Bateson, *Professor of Ethology, University of Cambridge*

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