Evolutionary Perspectives on Pregnancy by John C. Avise and Trudy Nicholson
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This cognitive flexibility is what allowed anatomically modern humans to outpace Neanderthals for resources, populations to evolve languages, and people to adopt fashions—so contends Philip Lieberman in his new book, *The Unpredictable Species*.

The author draws from the cognitive sciences, neuroanatomy, paleoanthropology, and archeology to give credence to his claim that we are a unique species—unique in our capacity for creativity. Through 200 pages of a well-constructed text, Lieberman presents and interprets over 40 years of scientific evidence that shows how modern humans are a product of evolutionary processes. In chapters that cover everything from neural anatomy (where surprisingly and refreshingly the focus is on the cortical-basal ganglia circuitry instead of the eminent prefrontal cortex) to controversies surrounding the role of individual genes (FOXP2 makes a prevalent appearance) and archeological evidence, Lieberman constructs a compelling argument for understanding the brain as a complex network of semi-autonomous but highly integrated circuits. And it is this feature of the brain that enables our uniqueness. This framework stands in stark contrast to the modularity theory of the brain that has existed in some form since phrenology arose in the 19th century, and which underlies a great deal of the field of evolutionary psychology.

In a shift from his previous books on the uniqueness of the human brain and the evolution of language—see especially *Uniquely Human: The Evolution of Speech, Thought, and Selfless Behavior* (1991. Cambridge (MA): Harvard University Press)—Lieberman directs the full force of his arguments and years of experience toward dismantling the tenants of evolutionary psychology and the theories of language embraced by Noam Chomsky, Steven Pinker, and Sam Harris. By carefully and clearly explaining the science underlying (and in many instances subverting) the claims of universal grammar and evolutionary psychology, the author brings a breath of well-reasoned fresh air to the discussion about what theoretical framework best fits the evidence we have of the human brain as a complex system of semi-autonomous but highly integrated circuits. And it is this feature of the brain that enables our uniqueness. This framework stands in stark contrast to the modularity theory of the brain that has existed in some form since phrenology arose in the 19th century, and which underlies a great deal of the field of evolutionary psychology.

This book should be considered as an excellent introduction for anyone who wants to delve into mysteries of the evolution of our unique brain.

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**EVOLUTIONARY PERSPECTIVES ON PREGNANCY.**

*By John C. Avise; animal drawings by Trudy Nicholson.*


This book offers a variety of insights into the pregnancies of many different species. If you thought of pregnancy as a mostly mammalian way of making babies, this volume will guide you through much more, from the evolution of the sexes to the classic dilemma of the chicken and the egg, while also paying due attention to the evolutionary conflicts that may complicate pregnancies.

The first part, Distribution and Diversity of Pregnancy, covers how reproduction has evolved and the many gradations of gestation that occur in vertebrates and invertebrates after external or internal fertilization, and before the outcome of ovip-, vivi-, or ooviparity. There is even a short paragraph on plant pregnancies and charming accounts of other unusual pregnancies, such as male frogs nursing embryos in their vocal sacs. The last chapter in this part is dedicated to human pregnancies spiced with anecdotes from religion and Greek mythology. These fictional examples are intriguing, but the chapter would probably have been more broadly useful if it had kept the high factual standard of the rest of the book.

The second part, Evolutionary Ramifications of Pregnancy, begins by discussing how evolutionary forces have shaped the developmental origins of pregnancies in mammals and, in Chapter Seven, some fish. In Chapter Six, on mammals, we are introduced to natural and sexual selection, parent-offspring conflict, and imprinted genes to set the scene for the detailed overview to follow. The uneasy paternal-maternal-fetal interactions in utero lead on to hypotheses by Trivers, Haig, and Crespi that aim to explain pregnancy complications such as miscarriage, preeclampsia, and Angelman syndrome. Similar logic is also used to review pregnancy conflicts in other mammals such as embryonic diapause, multiparous litters, and sibling rivalry. The concluding chapter is particularly interesting as it recapitulates the essence of the previous chapters and puts them into a comparative and more in-depth evolutionary perspective.

All of the chapters are illustrated with accessible figures and Trudy Nicholson’s intricate drawings of the many species whose pregnancies are featured. The small factoid boxes that appear throughout the
book are entertaining and convey the take-home messages in ways that can be related to nonspecialists over lunch in the laboratory or dinner at home.

In summary, this volume succeeds in offering both a general overview and deeper coverage for many of the most fascinating topics. It will be interesting reading for graduate students as well as instructors. Even educated general readers with an interest in the evolutionary aspects of cooperation and conflict that play out in wombs will not be disappointed.

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This volume begins with an analogy that likens traditional approaches to teaching evolution to planning a road trip with many detailed local maps of each destination (specific topics within evolutionary biology), but no large-scale map enabling navigation between destinations. This analogy will resonate with many who have learned or taught evolution using traditional textbooks. Morris and Lundberg’s goal is to focus not on the details of the subdisciplines but rather on fundamental evolutionary concepts (the pillars) to gain an overview of the process of adaptation. The authors’ five pillars include mechanics, function, structure, scale, and dynamics, and the role of the five pillars is to support the “capstone” of adaptation. Adaptation is the central theme, and the book will appeal most to readers who share the authors’ adaptationist worldview. It will be most useful for graduate students who are already familiar with the traditional subdisciplines or “local maps of evolution” and are interested in exploring possible frameworks for integration.

One of the most unique and compelling aspects of Pillars is its emphasis not on genes or even traits, but rather on function. The authors explore links between environments, genes, traits, function, and fitness and ultimately conclude that the critical (and often least explored) link in this chain is function. Indeed, it is organismal function that underlies differences in individual fitness, and thus drives the process of adaptation. Genes and traits are involved in fitness only insofar as they influence, either directly or indirectly, organismal function. In this volume, the environment plays the dual role of shaping trait expression (e.g., due to phenotypic plasticity) and setting fitness landscapes. But it is this large “extrinsic” view of the environment that may surprise those attracted to the book by its subtitle, which