

never have concrete answers for. But, as teachers, we have an amazing opportunity to convey this message to our students, to get them excited about the process of gathering this information and learning new things. This book does a terrific job of sparking the reader's thinking about oceans and how we, as humans, have changed our world forever.



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EVOLUTION

Lowly Origin. By Jonathan Kingdon. 2003. Princeton University Press. (ISBN 0-691-05086-4). 396 pp. Hardback \$35.00.

With the title taken from the last two words of Darwin's *On the Origin of Species*, **Lowly Origin** is an evocative book that highlights one of the key factors that makes us human—our bipedality. When we evolved the ability to walk upright, our world changed. We developed the ability to forage more readily, see the world from a different vantage point, hunt more efficiently, manipulate tools, and develop a complex communication system that forever separated us from the other animal groups. Kingdon's writing is lucid and his illustrations are beautiful in showcasing just how this important component of human evolution took place.

From "Being a Primate" to "Becoming a Biped" to "Being a Manipulative Man-Ape" to "Uncertainties of Becoming Human" to "On Being a Self-Made

Human," the journey is enticing and captivating throughout **Lowly Origin**. Kingdon is especially curious as to why there were so many hominids and only one, *Homo sapiens*, survived. He looks at biogeography and its role throughout the process of evolution of bipedality as well as its impact on the success of *Homo sapiens*. He states:

"Each lineage may have shared bipedalism, manipulativity, and some technological aptitude; yet the permutations differed, each following its own trajectory within its own distinct ecological niche" (p. 257).

Kingdon uses findings from ecology, biogeography, and paleontology to demonstrate exactly how and why we went from being four-legged creatures to being bipeds. He suggests that the Millennium Ancestor (*Orrorin tugenensis*) found as recently as August 2000 seemed to be upright and bore teeth much like humans. Living in East Africa, this region was pivotal for human origins. Kingdon proposes that the eastern forests were the setting for hominin emergence almost 6 million years ago. The next group to emerge were the Lucies at 3.6 million years ago or earlier. The Lucies were clearly bipedal with their ape-size brains. The Nutcrackers evolved later than Lucy and diverged into several species that are called *Australopithecus* and have been found between 2.5 and 1 million years ago. Judging from the number of available fossils, it is thought that the Nutcrackers were a diverse, well-distributed group that had migrated great distances. From there until we alone emerged, over 18 species of hominids existed. Kingdon poses the following:

"To know that we are just one of many types of

humans or near-humans has many repercussions for the way we look at ourselves and at our relationship with the natural world. It also raises entirely new questions as to why we occupy such a lonely position after such a diverse history." (p. 346).

Kingdon suggests that it is necessary for us to understand the ecology of East Africa and the behavior of primates residing there if we are to better understand our species and our evolutionary history.

Within my inquiry course, I teach a learning cycle on what it means to be human with an emphasis on the evolution of bipedality. Kingdon's book will serve as a powerful resource for the explore phase of the learning cycle, and for enhancing the research portion of the activity. Students are fascinated by the notion that bipedality played such a critical role in our evolutionary history, and Kingdon's book will add to their repertoire of understanding and enrichment of the interdisciplinary interplay between ecology, biogeography, and paleontology.

Although sometimes Kingdon is a bit difficult to read, this book is a must read for all of us who teach evolution and need to be updated with the current findings in human evolution and how the theories of our origins are changing as the fossil collections grow and change with each dig that is uncovered.

A must read. A must have.



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