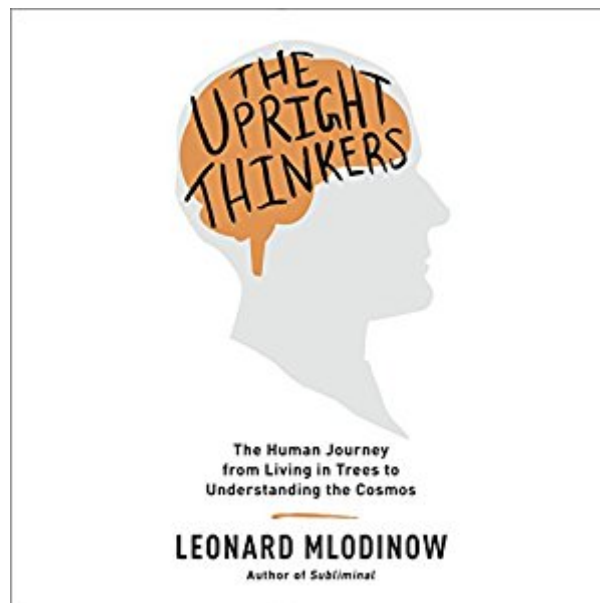




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# The Upright Thinkers: The Human Journey From Living In Trees To Understanding The Cosmos



## Synopsis

From the best-selling author of *The Drunkard's Walk* and *Subliminal*, and coauthor of *The Grand Design* (with Stephen Hawking): an account of scientific discovery from the invention of stone tools to theories of quantum physics - a history at once inspiring and entertaining. In this fascinating and illuminating work, Leonard Mlodinow guides us through the critical eras and events in the development of science, all of which, he demonstrates, were propelled forward by humankind's collective struggle to know. From the birth of reasoning and culture to the formation of the studies of physics, chemistry, biology, and modern-day quantum physics, we come to see that much of our progress can be attributed to simple questions - why? how? - bravely asked. Mlodinow profiles some of the great philosophers, scientists, and thinkers who explored these questions - Aristotle, Galileo, Newton, Darwin, Einstein, and Lavoisier among them - and makes clear that just as science has played a key role in shaping the patterns of human thought, human subjectivity has played a key role in the evolution of science. At once authoritative and accessible, and infused with the author's trademark wit, this deeply insightful audiobook is a stunning tribute to humanity's intellectual curiosity.

## Book Information

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## Customer Reviews

**The Upright Thinkers: The Human Journey from Living in Trees to Understanding the Cosmos** by Leonard Mlodinow  
"The Upright Thinkers" is an enjoyable tour through the history of science. Best-selling author and a physicist, Leonard Mlodinow takes the reader on a fun journey

that begins with the evolution of the human brain and ends with our excursion into quantum mechanics. This excellent 352-page book is divided into the following three major parts: I. The Upright Thinkers, II. The Sciences, and III. Beyond the Human Senses.

Positives:

1. A well-written, high-quality effort.
2. Enjoyable and accessible book for the masses. Mlodinow's engaging style is warm and inviting.
3. An excellent topic, a journey through science history.

"This book is an effort to describe the development of science in that spirit—as an intellectual as well as a culturally determined enterprise, whose ideas can best be understood by an examination of the personal, psychological, historical, and social situations that molded them."

4. Good format, the book is broken out into three time periods: millions of years ago with the evolution of our brains, centuries ago to the hard sciences, and finally decades ago to the new realm of existence known as quantum physics.
5. The fascinating look at the evolution of our brains. "No one knows exactly how our ancestors' brains were organized into functional components, but even in the modern human brain, far more than half the neurons are devoted to motor control and the five senses. That part of our brain that sets us apart from 'lower' animals, on the other hand, is relatively small, and was late in coming."
6. A tour of major discoveries. "And so it happened that roughly two million years ago, a Homo habilis Einstein, or a Madame Curie, or perhaps more likely several ancient geniuses working independently of one another, made humankind's first momentous discovery: if you smash one stone into another at an oblique angle, you can flake off a sharp, knife-edged shard of rock."
7. Fun facts spruced throughout the book. "Brains, which account for only about 2 percent of our body weight, consume about 20 percent of our calorie intake."
8. A look at culture and related topics. "Culture is defined as behavior, knowledge, ideas, and values that you acquire from those who live around you, and it is different in different places."
9. The first cities of our species. "Perhaps the most prominent of those cities, and an important force in the trend toward urbanization, was the great walled city of Uruk, in what is today southeastern Iraq, near the city of Basra."
10. The interaction between religion and state. "Mesopotamians did not make the distinction we do between church and state—in Mesopotamia, they were inseparable. "And so religion became not just the belief system that held society together, but the executive power that enforced rules. What's more, due to the fear of the gods, religion was a useful tool in motivating obedience."

Find out when and where the first written word occurred. The evolution of language and mathematics.<sup>12</sup> A look at the origins of law. *“That set of human civil and criminal laws is called the Code of Hammurabi. It is named for the reigning Babylonian king, whom the great god Marduk commanded to bring about the rule of righteousness in the land, to destroy the wicked and evildoers.”* The Code of Hammurabi was issued about a year before Hammurabi’s death, in 1750 B.C.

<sup>13</sup> A look at a new rational approach to knowledge. *“But the greatest aspect of the Greek culture that Alexander brought with him had nothing to do with arts or administration. It was what he had learned firsthand from Aristotle: a new, rational approach to the struggle to know our world, a magnificent turning point in the history of human ideas. And Aristotle himself was building on the ideas of several generations worth of scientists and philosophers who had begun to challenge the old verities about the universe.”*

<sup>14</sup> The great Isaac Newton, *“In fact, one might say that Isaac Newton’s central contribution in creating physics as we know it today was his invention of a unified mathematical approach that could be used to describe all change, whatever its nature.”*

<sup>15</sup> Scientific progress. *“That characteristic of Aristotle’s analysis—his search for purpose—had a huge influence on later human thought. It would endear him to many Christian philosophers through the ages, but it impeded scientific progress for nearly two thousand years, for it was completely incompatible with the powerful principles of science that guide our research today. When two billiard balls collide, the laws that were first set forth by Newton—not a grand underlying purpose—determine what happens next.”*

<sup>16</sup> The Renaissance. *“It was the inventors and engineers who transformed European society and culture in late medieval Europe, a period concurrent with the first stirrings of the Renaissance, which spanned roughly from the fourteenth to the seventeenth centuries.”*

<sup>17</sup> The industrial revolution. *“The direct results of the collaborations of science and industry include the steam engine, advances in the harnessing of water power for use in factories, the development of machine tools, and, later, the appearance of railroads, the telegraph and the telephone, electricity, and the lightbulb.”*

<sup>18</sup> A look at the development and discovery of scientific laws. *“Lavoisier later turned his observations into one of the most famous laws in science, the law of conservation of mass: the total mass of products produced in a chemical reaction must be the same as the mass of the initial reactants. This was perhaps the greatest milestone in the journey from alchemy to modern chemistry: the identification of chemical change as*

the combining and recombining of elements. 19. Scientific pioneers and much more. 20. The quantum world. 21. Notes included. Negatives: 1. One of the most difficult challenges of writing such an ambitious book is keeping an even flow. The book is a bit uneven, spending much more time in some areas while less in others. 2. Limited number of illustrations and diagrams that would have complemented the excellent narrative. 3. Surprisingly, very little on the cosmos. 4. Some good scientific tidbits but not as much as expected. 5. No formal bibliography. 6. I'm a big fan of Mlodinow but let's face it this very good book does not live up to his superior Subliminal. In summary, I enjoyed this book. Mlodinow is a great author that brings complex scientific topics to the masses. He succeeds in providing the public with a fun journey of the history of science. I look forward to more books like this. I recommend it! Further recommendations: "The Grand Design" and "War of the Worldviews: Science Vs. Spirituality" coauthored by this same author were excellent, "Farewell to Reality: How Modern Physics Has Betrayed the Search for Scientific Truth" by Jim Baggott, "Spectrums" by David Blatner, "The Elegant Universe" and "Hidden Reality" by Brian Greene, "A Universe From Nothing" by Lawrence M. Krauss, "About Time" by Adam Frank, "Higgs Discovery" and "Warped Passages" by Lisa Randall, "The Quantum Universe" by Brian Cox, "The Blind Spot" by William Byers, and "The Fallacy of Fine-Tuning" and "God and the Atom" by Victor Stenger.

I gave this book 3 Stars because I honestly don't know who the intended audience is. I also believe that many readers will give it 1 or 2 Stars and equal number of readers, ones who enjoyed reading it, will give it 4 or 5 Stars. In my opinion, the best way for a prospective buyer to know if this book is for her is to quote a few sentences from p. 230. "In particular, Planck discovered that a quantum of light energy is equal to the frequency multiplied by a proportionality factor, which Planck called "b", and which today is known as Planck's constant. Had Planck taken Boltzmann's last step, in essence setting "b" equal to zero, then energy would have been posited as endlessly divisible. By not doing that, and instead fixing "b" by comparing his formula with experimental data, Planck was that-at least as far as blackbody radiation is concerned-energy comes in tiny, fundamental packages and cannot take on just any value." If physics related information is interesting to you and you can grasp

concepts like those I quoted, then this book is for you. About 2/3 of the book is about the advancement of physics. There is a chapter on chemistry and there is a section on Darwin that I found interesting.

This book was fun to read, for someone like me who has an interest in the evolution of how we got to be who we are. I appreciate that it is written not in "professor-ese" but in accessible every day English. The author connects the dots, from the earliest ideas humans had about our existence, to modern day quantum theory, and explains how each "break through" thinker (like Aristotle or Newton or Einstein) built off the work of other people and previous work. Also how break throughs in thinking many times included debunking what was previously thought of as empirical truth. All very interesting.

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