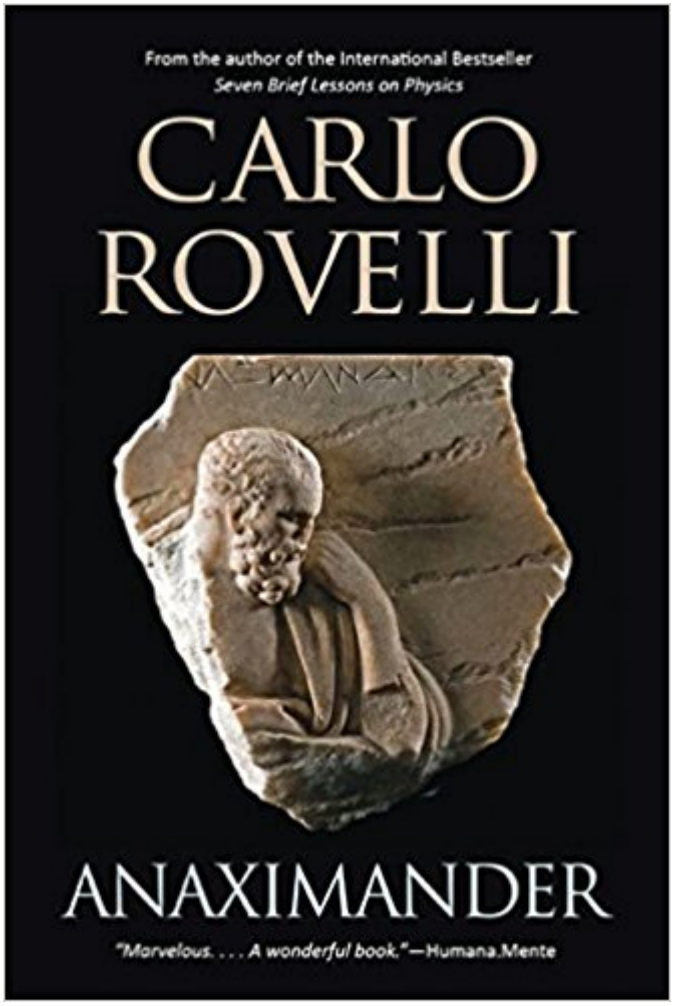
Anaximander



Synopsis

Ã¢â ¬Å“Marvelous. . . . A wonderful book.Ã¢â ¬Â•Ã¢â ¬â •Humana.MenteÃ¢â ¬Å“Rovelli is the dream author to conduct us on this journey.Ã¢â ¬Â•Ã¢â ¬â •Nonfiction.frÃ¢â ¬Å“At this point in time, when the prestige of science is at a low and even simple issues like climate change are mired in controversy, Carlo Rovelli gives us a necessary reflection on what science is, and where it comes from. Rovelli is a deeply original thinker, so it is not surprising that he has novel views on the important questions of the nature and origin of science.Ã¢â ¬Â•Ã¢â ¬â •Lee Smolin, founding member and researcher at the Perimeter Institute for Theoretical Physics and author of The Trouble with Physics Winner of the Prix du Livre Haute Maurienne de lÃ¢â ¬â„¢AstronomieCarlo Rovelli, a leading theoretical physicist, uses the figure of Anaximander as the starting point for an examination of scientific thinking itself: its limits, its strengths, its benefits to humankind, and its controversial relationship with religion. Anaximander, the sixth-century BC Greek philosopher, is often called the first scientist because he was the first to suggest that order in the world was due to natural forces, not supernatural ones. He is the first person known to understand that the Earth floats in space; to believe that the sun, the moon, and the stars rotate around itÃ¢â ¬â •seven centuries before Ptolemy; to argue that all animals came from the sea and evolved; and to posit that universal laws control all change in the world. Anaximander taught Pythagoras, who would build on AnaximanderÃ¢â ¬â„¢s scientific theories by applying mathematical laws to natural phenomena.In the award-winning The First Scientist: Anaximander and His Legacy, translated here for the first time in English, Rovelli restores Anaximander to his place in the history of science by carefully reconstructing his theories from what is known to us and examining them in their historical and philosophical contexts. Rovelli demonstrates that AnaximanderÃ¢â ¬â„¢s discoveries and theories were decisive influences, putting Western culture on its path toward a scientific revolution. Developing this connection, Rovelli redefines science as a continuous redrawing of our conceptual image of the world. He concludes that scientific thinkingÃ¢â ¬â •the legacy of AnaximanderÃ¢â ¬â •is only reliable when it constantly tests the limits of our current knowledge.

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Customer Reviews

Carlo Rovelli received his Ph.D. in physics at the University of Padua. He has conducted research at Imperial College, Yale University, the University of Rome, and the University of Pittsburgh and currently directs the quantum gravity group of the Center for Theoretical Physics at Aix-Marseille University. He is author of Quantum Gravity and What Is Time? What Is Space?, as well as many scholarly articles. His most recent book, Seven Brief Lessons on Physics, translated into thirty-four languages, is an international bestseller.

This is a very cool "read" about a real pioneer in the fields of philosophy and science. The prose style is very good and the information is excellent.

ItÃƒÂ¢Ã â ¬Ã â„¢s hard to make an assessment of this book. On its face, it seems to be a historical study of the place of Anaximander in the development of modern science. And, for the first half of the book, it really is that. But from there, Rovelli takes off into a much more loosely bound discussion of truth, reality, relativism, religion, language, and the fate of the world.IÃƒÂ¢Ã â ¬Ã â„¢ll start with Anaximander. ItÃƒÂ¢Ã â ¬Ã â„¢s a cliche that history is told by the winners. But if science is a ÃƒÂ¢Ã â ¬Ã Å“winnerÃƒÂ¢Ã â ¬Ã Â•, then Rovelli is telling the winnerÃƒÂ¢Ã â ¬Ã â„¢s history of science. His claim, at the highest level, is that Anaximander produced the first ÃƒÂ¢Ã â ¬Ã Å“scientific revolutionÃƒÂ¢Ã â ¬Ã Â•, the beginnings of science itself.What Anaximander does is remarkable. But IÃƒÂ¢Ã â ¬Ã â„¢m not convinced by Rovelli that AnaximanderÃƒÂ¢Ã â ¬Ã â„¢s thought traces the beginning of a solid line toward modern science.HereÃƒÂ¢Ã â ¬Ã â„¢s are some key aspects Rovelli calls out in AnaximanderÃƒÂ¢Ã â ¬Ã â„¢s thought as a progenitor of science:- that the world may be different than it appears to us- knowledge as a progression of dialogue and debate based on questioning what has previously been thought- a new model of the shape and position of earth (not flat, resting on a foundation of some sort, but a cylinder freely floating in the universe)Certainly, in the terms of

AnaximanderÃƒÂ¢Ã â ¬Ã â„¢s thinking, and in the absence of any explicitly mythological elements, there is a strain that we could call ÃƒÂ¢Ã â ¬Ã Å“naturalistic.ÃƒÂ¢Ã â ¬Ã Â•But I think heÃƒÂ¢Ã â ¬Ã â„¢s actually more interesting and puzzling than that. In what we have of AnaximanderÃƒÂ¢Ã â ¬Ã â„¢s actual writings, there are two concepts that seem difficult, in our own time and terms, to reconcile.One concerns change and multiplicity ÃƒÂ¢Ã â ¬Ã â • that ÃƒÂ¢Ã â ¬Ã Å“all things originate from one another, and vanish into one another.ÃƒÂ¢Ã â ¬Ã Â• Anaximander is traditionally interpreted in naturalistic terms, although his claim is not unambiguously naturalistic, at least not in modern terms. What he means by ÃƒÂ¢Ã â ¬Ã Å“originateÃƒÂ¢Ã â ¬Ã Â• could as well be given a logical or purely conceptual interpretation as a naturalistic one. And in fact, the cosmologies of ancient Greece commonly told of such things as order and difference as developing from prior unities or chaos.The second concept is the ÃƒÂ¢Ã â ¬Ã Å“apeironÃƒÂ¢Ã â ¬Ã Â• as the origin or principle (ÃƒÂ¢Ã â ¬Ã Å“archeÃƒÂ¢Ã â ¬Ã Â•) of all things. ÃƒÂ¢Ã â ¬Ã Å“ApeironÃƒÂ¢Ã â ¬Ã Â• is sometimes translated as ÃƒÂ¢Ã â ¬Ã Å“the infiniteÃƒÂ¢Ã â ¬Ã Â• or ÃƒÂ¢Ã â ¬Ã Å“the indefiniteÃƒÂ¢Ã â ¬Ã Â• or ÃƒÂ¢Ã â ¬Ã Å“the undifferentiated.ÃƒÂ¢Ã â ¬Ã Â• I think it a stretch to give an unambiguously naturalistic interpretation of ÃƒÂ¢Ã â ¬Ã Å“apeironÃƒÂ¢Ã â ¬Ã Â•. In a naturalistic interpretation, you could read it as a truly empirical ÃƒÂ¢Ã â ¬Ã Å“thingÃƒÂ¢Ã â ¬Ã Â• ÃƒÂ¢Ã â ¬Ã â • an undifferentiated substance out of which all the multiplicity of things we are familiar with originate. Or you could see it as a logical concept, as the origin of multiplicity in undifferentiated unity. In fact, I think the distinction between a naturalistic interpretation and a logical one is something we lay over AnaxminderÃƒÂ¢Ã â ¬Ã â„¢s thought ÃƒÂ¢Ã â ¬Ã â • it simply wasnÃƒÂ¢Ã â ¬Ã â„¢t a mature distinction at the time.Correspondingly, what comes after Anaximander is neither pure naturalistic science nor pure rationalism. The themes that Rovelli pulls from AnaximanderÃƒÂ¢Ã â ¬Ã â„¢s thought and times are important for the future history of knowledge, but in various guises besides anything we would call ÃƒÂ¢Ã â ¬Ã Å“scienceÃƒÂ¢Ã â ¬Ã Â• in a modern sense. For example, Parmenides, certainly not a ÃƒÂ¢Ã â ¬Ã Å“scientistÃƒÂ¢Ã â ¬Ã Â•, explicitly separated the world as it appears to us (the world of ÃƒÂ¢Ã â ¬Ã Å“seemingÃƒÂ¢Ã â ¬Ã Â•) from the world as it really is (the world of ÃƒÂ¢Ã â ¬Ã Å“truthÃƒÂ¢Ã â ¬Ã Â•). Aristotle refined a method of presenting the thoughts of earlier philosophers as a basis for his own arguments and positions, providing an explicit structure for progress in thought, but not a method of science per se.Likewise, PlatoÃƒÂ¢Ã â ¬Ã â„¢s rationalist dialectic has roots in dialogue and debate of a conceptual sort, and is embedded in his idealist metaphysic of ÃƒÂ¢Ã â ¬Ã Å“formsÃƒÂ¢Ã â ¬Ã Â•, at best a distant kin to modern

science.All of this is criticism of RovelliÃƒÂ¢Ã â ¬Ã â„¢s history based on a popular conception of what is meant by ÃƒÂ¢Ã â ¬Ã Å“scienceÃƒÂ¢Ã â ¬Ã Â•. And were Rovelli an adherent of that popular conception, one that revolves around strict adherence to observation, hypothesis, experiment, and ÃƒÂ¢Ã â ¬Ã Å“methodÃƒÂ¢Ã â ¬Ã Â•, then he would be a scientistic teller of fables about the emergence of science from the darkness of superstition and myth.But he wants to construct a different understanding of what science is, one he refers to at one point as ÃƒÂ¢Ã â ¬Ã Å“science as a cognitive activityÃƒÂ¢Ã â ¬Ã Â• (p. 111). He gives at least one explicit definition:[Science] means building and developing an image of the world, which is to say a conceptual structure for thinking about the world, effective and consistent with what we know and learn about the world itself.ThereÃƒÂ¢Ã â ¬Ã â„¢s a lot packed into that sentence.He says also, ÃƒÂ¢Ã â ¬Ã Å“It [i.e., science] is, above all, an ongoing exploration of new ways of thinking.ÃƒÂ¢Ã â ¬Ã Â•Rovelli is doing at least two things at once in this part of the book. He is telling a story about the history of science, finding its origins in AnaximanderÃƒÂ¢Ã â ¬Ã â„¢s thought (or more broadly, that of the Milesian philosophers), but he is also, in doing so, recommending that we think a little bit differently about what science is, that we crack away some of the rigid, technical structures weÃƒÂ¢Ã â ¬Ã â„¢ve built around the enterprise of science and get back to something that may have been more fitting to AnaximanderÃƒÂ¢Ã â ¬Ã â„¢s time, a less tightly bound search for the terms in which to understand the world.In doing so, he steps into the territory of modern philosophy of science. In his chapter on ÃƒÂ¢Ã â ¬Ã Å“What is Science?ÃƒÂ¢Ã â ¬Ã Â• he attempts to find his footing within that debate, with Kuhn, Feyerabend, Lakatos, and others. The discussion is very short, and his criticisms of those thinkers abrupt and controversial. But in a way, that doesnÃƒÂ¢Ã â ¬Ã â„¢t matter ÃƒÂ¢Ã â ¬Ã â • itÃƒÂ¢Ã â ¬Ã â„¢s not the point of this part of the book. The point, I think, is to, with the help of AnaximanderÃƒÂ¢Ã â ¬Ã â„¢s thought, turn our understanding of science in a more conceptual direction ÃƒÂ¢Ã â ¬Ã â • into an explicit focus not only on facts and observation per se, but on the terms in which we think about and organize the facts and observations of science. Rovelli thinks that, in fact, this is what great scientists do.The second (roughly) half of the book takes off into a broad discussion coming to rest eventually in a discussion of science and religion. While Rovelli is not so strident a proponent of science over religion as some of his contemporaries, you will find familiar themes here ÃƒÂ¢Ã â ¬Ã â • in particular an attack on ÃƒÂ¢Ã â ¬Ã Å“absolutismÃƒÂ¢Ã â ¬Ã Â• as a defining characteristic of religion.Discussions of religion vs. science tend to be one-sided, and RovelliÃƒÂ¢Ã â ¬Ã â„¢s is no exception. I found particularly presumptuous this characterization of science as acceptance of uncertainty and religion

as assertion of absolutism. In practice, the difference doesnÃƒÂ¢Ã â ¬Ã â„¢t seem so stark. Scientists often assert absolute postitions. Sometimes itÃƒÂ¢Ã â ¬Ã â„¢s the truth of theories, and other times, equally forceful, the absolutism of method. And religion is often a dynamic of faith and doubt, and sometimes acceptance of mystery. Broad strokes donÃƒÂ¢Ã â ¬Ã â„¢t do either side justice.All in all, Rovelli has made me think more deeply about Anaximander, and about what ÃƒÂ¢Ã â ¬Ã Å“knowingÃƒÂ¢Ã â ¬Ã Â• really is, in the time of the pre-Socratics. Maybe fittingly, I donÃƒÂ¢Ã â ¬Ã â„¢t find his account to be ÃƒÂ¢Ã â ¬Ã Å“trueÃƒÂ¢Ã â ¬Ã Â•, but enlightening.

Interesting if your are interested in ancient Mediterranean history. I found it a little repetitive.

Wonderful view of past, present, and future

This stimulating and entertaining book opened up for me the remarkably advanced science of the Ionian Greeks and the life in their independent cities that first birthed and nourished the scientific spirit. Along with so much else.Besides being enjoyable to read the book is profoundly thoughtful: reflecting on what is essential in the rational/empirical tradition and the community that follows it, as well as on what was unique in Anaximander's revolutionary contributions. Rovelli has firsthand insight--he's one of today's most creative theoretical physicists. You get the feeling that he has been where Anaximander was.==========update==========There's an online essay by Rovelli at the Scientific American website that can serve readers as additional background or introduction to the book. It lets you know where this book about Anaximander and the beginnings of science is coming from. The essay is titled "Science as perpetual revolution, from its earliest beginnings to quantum gravity". To get it just google "sciam rovelli". Today's quantum gravity researchers, as they rethink time, space and the workings of a (now quantum) universe do have something in common with those 6th Century BC Ionians who began our geometric explanation of the heavens' motions. There is a clear lineage joining them and I think Rovelli is right to examine the parallels. Much is to be learned as well about the scientific enterprise as a whole by exploring this key period of history.

This book was disappointing on a number of levels.First science requires more than conceiving a new concept- it requires that measurements be made to prove the validity or usefulness of the concept. Thought alone without proof by measurement is not enough.Second the earth was measured long before Anaximander was born and measurement standards adjusted to fit this new knowledge.The greek stadia which can be traced to Babylonian and Sumerian standards was

almost exactly 1/10 nautical mile or arc minute on the polar circumference of the earth. The Perimeter of the great pyramid at giza is almost as exactly 1/2 nautical mile or arc minute on the polar circumference of the earth. During the New Kingdom the Egyptians commisioned the Phonecians to circumnavigate africa. Their report included the discouvery that "the sun was on the wrong side of the ship as they sailed around the horn" they were below the equaror and did not fall off the earth.These Greek scientists in the early common era did not seem to recognize that the polar circumference of the earth was almost exactly 27000 Roman Miles.This level of accuracy required measurement of the position of the stars not the crude meaurement of the sun's shadow depicted in this book.The science of metrology is not well served by Dr Rovelli

What is one of the leading theorists of loop quantum gravity doing in the classical world? Well, on the basis of an education I envy him, he's showing us that the Platonic theory of science we virtually assume to be the dominant theory of the classical age has to share space in our understanding with what you might call a theory of scientific practice -- embodied in Anaximander. His story of the Anaximander strand in the classical world is beautifully told. (I'm not equipped to evaluate it authoritatively.) But the pay-off is that the table is set for a re-evaluation of the scientific practice of the current scene in novel terms. Alimento squisito for those with open minds about matters cosmological.

Anaximander The First Scientist: Anaximander and His Legacy