

Booklist

Advanced Review – Uncorrected Proof

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★ **Knocking on Heaven's Door: How Physics and Scientific Thinking Illuminate the Universe and the Modern World.**

Randall, Lisa (Author)

Sep 2011. 464 p. Ecco, hardcover, \$29.99. (9780061723728). 500.

To explain how science works, Randall analyzes the way two researchers at Bell lab turned the annoying static coming through their radio telescope into a cosmic breakthrough. For in this piquant episode—and others that Randall examines—science advances by testing theoretical ingenuity against technologically acquired data. Readers gain some historical perspective on this process by revisiting Galileo, who used the telescope to verify Copernican thinking about the heavens and devised an early microscope to assess new ideas about the structural variation of bones. Randall indeed credits Galileo with having recognized the critical importance of scale in shaping fruitful scientific inquiries. And she anticipates acute challenges for twenty-first-century scientists pursuing science at scales both astonishingly large and incomprehensibly small. For data coming from the new Planck and Herschel satellites and from Europe's powerful new Large Hadron Collider will soon compel scientists to look anew at theoretical conjectures about the atom and the universe (or multiverse). As someone who helped forge some of these conjectures, Randall offers an insider's perspective into this cutting-edge science. Yet she illuminates that science with lucid language, laced with references to popular culture, political controversy, and even comic-strip art. The general reader's indispensable passport to the frontiers of science.

— *Bryce Christensen*