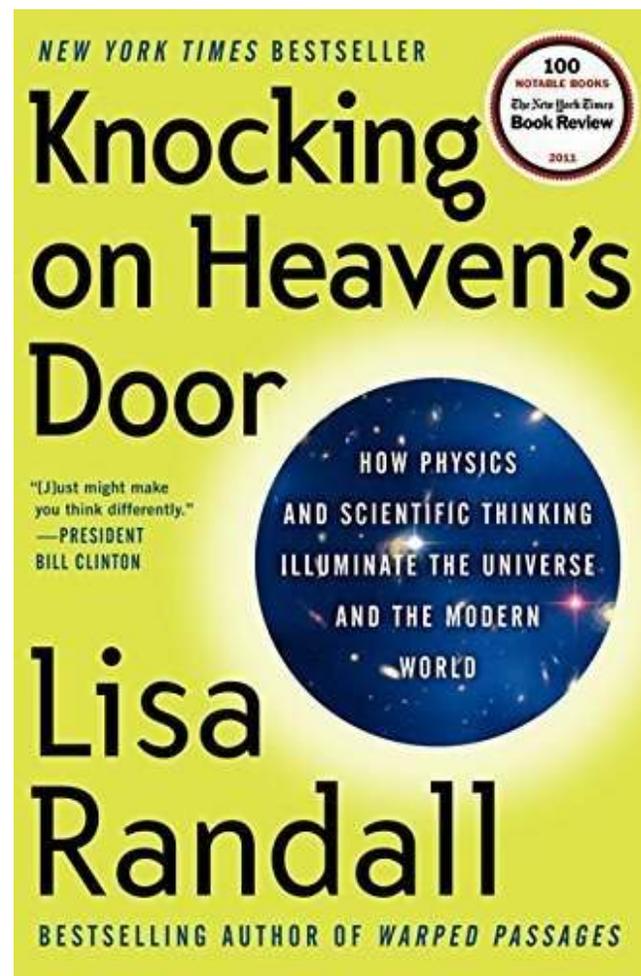


# Physicist Lisa Randall on the Sublime and the Crucial Differences Between How Art, Science, and Religion Explain the Universe

*Maria Popova*



“To lose the appetite for meaning we call thinking and cease to ask unanswerable questions,” Hannah Arendt asserted in her [spectacular meditation on the life of the mind](#), would be to “lose not only the ability to produce those thought-things that we call works of art but also the capacity to ask all the answerable questions upon which every civilization is founded.” Indeed, that gap between what we yearn to know and what we might never know is filled with the creative restlessness responsible for almost all human achievement — our art and our science and our philosophy, those myriad tentacles by which we reach for the unknown knowing full well it might be unknowable, but reaching nonetheless.

That perennial human impulse is what Harvard particle physicist and cosmologist [Lisa Randall](#) explores in the enormously stimulating [Knocking on Heaven's Door: How Physics and Scientific Thinking Illuminate the Universe and the Modern World](#) ([public library](#)).



Lisa Randall (Photograph: Phil Knott)

Our sensemaking pursuits have such abiding allure because the universe beckons out to us not merely with its beauty, but with its sublimity — that sharp edge of truth and beauty, where terror and transcendence converge to tantalize us by the same psychological machinery that makes for [the paradox of why frustration is essential for satisfaction](#). Randall considers the singular seduction of the sublime:

— The word precisely captures what makes the universe so wonderful and so frustrating at the

same time. A great deal seems beyond our reach and our comprehension, while still appearing to be close enough to tantalize us — to dare us to enter and understand. The challenge for all approaches to knowledge is to make those less accessible aspects of the universe more immediate, more understandable, and ultimately less foreign. People want to learn to read and understand the book of nature and accommodate those lessons into the comprehensible world.

[...]

The sublime proffers scales and poses questions that just might lie beyond our intellectual reach. It is for these reasons both terrifying and compelling. The range of the sublime changes over time as the scales we are comfortable with cover an increasingly large domain. But at any given moment, we still want to gain insights about behavior or events at scales far too small or far too large for us to readily comprehend.



A 1573 painting by Portuguese artist, historian, and philosopher Francisco de

Holanda, a student of Michelangelo's, found in [Cosmographics](#) by Michael Benson

Although our quest to unravel the mystery of the universe springs from a common source, Randall points to the decided differences between sensemaking mechanisms like art, science, and religion — differences muddling which is to our great civilizational detriment:

Our universe is in many respects sublime. It prompts wonder but can be daunting — even frightening — in its complexity. Nonetheless, the components fit together in marvelous ways. Art, science, and religion all aim to channel people's curiosity and enlighten us by pushing the frontiers of our understanding. They promise, in their different ways, to help transcend the narrow confines of individual experience and allow us to enter into — and comprehend — the realm of the sublime.

Half a century earlier, Saul Bellow asserted in [his Nobel Prize acceptance speech](#) that “only art penetrates ... the seeming realities of this world.” But however beautiful his sentiment, the reality he meant was “reality” in [David Bohm's sense of human-constructed belief systems](#) — a distinction Randall delineates elegantly:

Art allows us to explore the universe through a filter of human perceptions and emotions. It examines how our senses access the world and what we can learn from this interaction — highlighting how people participate in and observe the universe around us. Art is very much a function of human beings, giving us a clearer view of our intuitions and how we as people perceive the world. Unlike science, it is not seeking objective truths that transcend human interactions. Art has to do with our physical and emotional responses to the external world, bearing directly on internal experiences, needs, and capacities that science might never reach.

[...]

Science, on the other hand, seeks objective and verifiable truth about the world. It is interested in the elements of which the universe is composed and how those elements interact... Practitioners of science attempt to keep human limitations or prejudices from clouding the picture so that they can trust themselves to obtain an unbiased understanding of reality. They do so with logic and collective observations. Scientists try to objectively figure out how things happen and what underlying physical framework could account for what they observe.

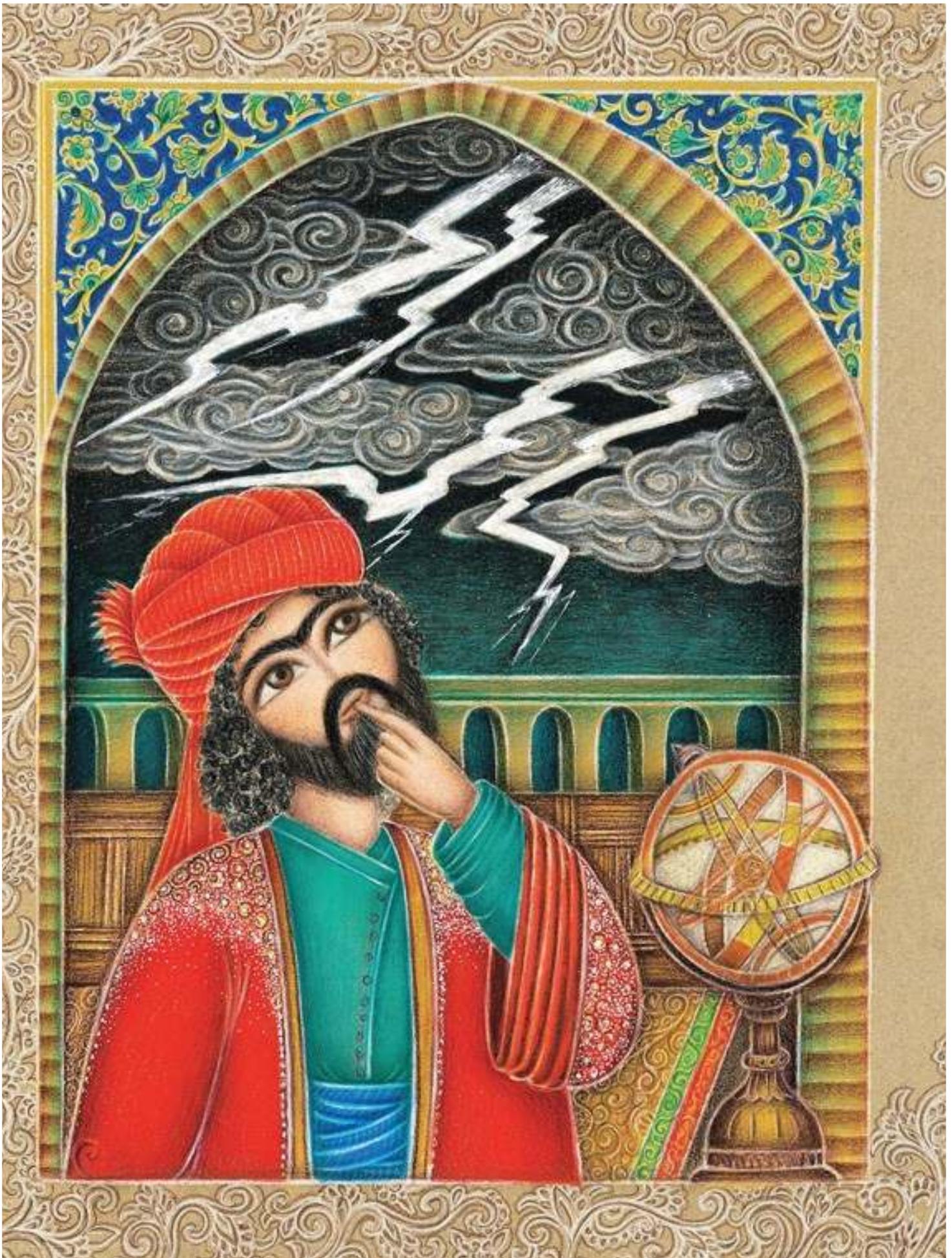


Illustration from [the picture-book biography](#) of Persian polymath and trailblazing scientist Ibn Sina

A generation after Richard Feynman's meditation on [the relationship between science and religion](#), Randall considers how the two address our quest for understanding:

The key distinction between science and religion might well be the character of the questions they choose to ask. Religion includes questions that fall outside the domain of science. Religion

asks “why,” in the sense of the presumption of an underlying purpose, whereas science asks “how.” Science doesn’t rely on any sense of an underlying goal for nature. That is a line of inquiry we leave to religion or philosophy, or abandon altogether.

[...]

But an unconcerned universe is not a bad thing — or a good one for that matter. Scientists don’t look for underlying intention in the way that religion often does. Objective science simply requires that we treat the universe as indifferent.

Rather than disempowering, this notion of cosmic indifference is a vitalizing antidote to our human solipsism, at once grounding and elevating in reminding us that the universe doesn’t exist for our satisfaction and that we are, after all, [a cosmic accident](#) — an awareness that puts even our most tumultuous existential throes into perspective. But truth and meaning, as [Arendt memorably argued](#), are crucially different beasts, and confusing the respective questions each asks is the seedbed of trouble — a confusion at the heart of the friction between science and religion.

Randall considers how calibrating our questions can resolve that millennia-old conflict:

Science aims for a predictive physical picture that can explain how things work. The methods and goals of science and religion are intrinsically different, with science addressing physical reality, and religion addressing psychological or social human desires or needs.

The separate aims shouldn’t be a source of conflict — in fact they seem in principle to create a nice division of labor. However, religions don’t always stick to questions of purpose or comfort. Many religions attempt to address the external reality of the universe as well, as can be seen even in the definition of the word: *The American Heritage Dictionary* tells us that religion is “belief in a divine or superhuman power or powers to be obeyed and worshiped as the creator(s) and ruler(s) of the universe.” Dictionary.com says that religion is “A set of beliefs concerning the causes, nature, and purpose of the universe, especially when considered as the creation of a superhuman agency or agencies, usually involving devotional and ritual observations, and of constructing a moral code governing the morality of human affairs.” Religion in these definitions is not only about people’s relationship to the world — be it moral or emotional or spiritual — but it’s about the world itself. This leaves religious views open to falsification. When science encroaches on domains of knowledge that religion attempts to explain, disagreements are bound to arise.

Despite humanity’s shared desire for wisdom, people using different methods to ask questions and find answers or people with different goals haven’t always gotten along and the pursuit of truth hasn’t always neatly separated along lines that would avoid controversy. When people apply religious beliefs to the natural world, observations of nature can push back, and religion has to accommodate these findings.



Francisco de Holanda envisions the creation of the Ptolemaic universe by an

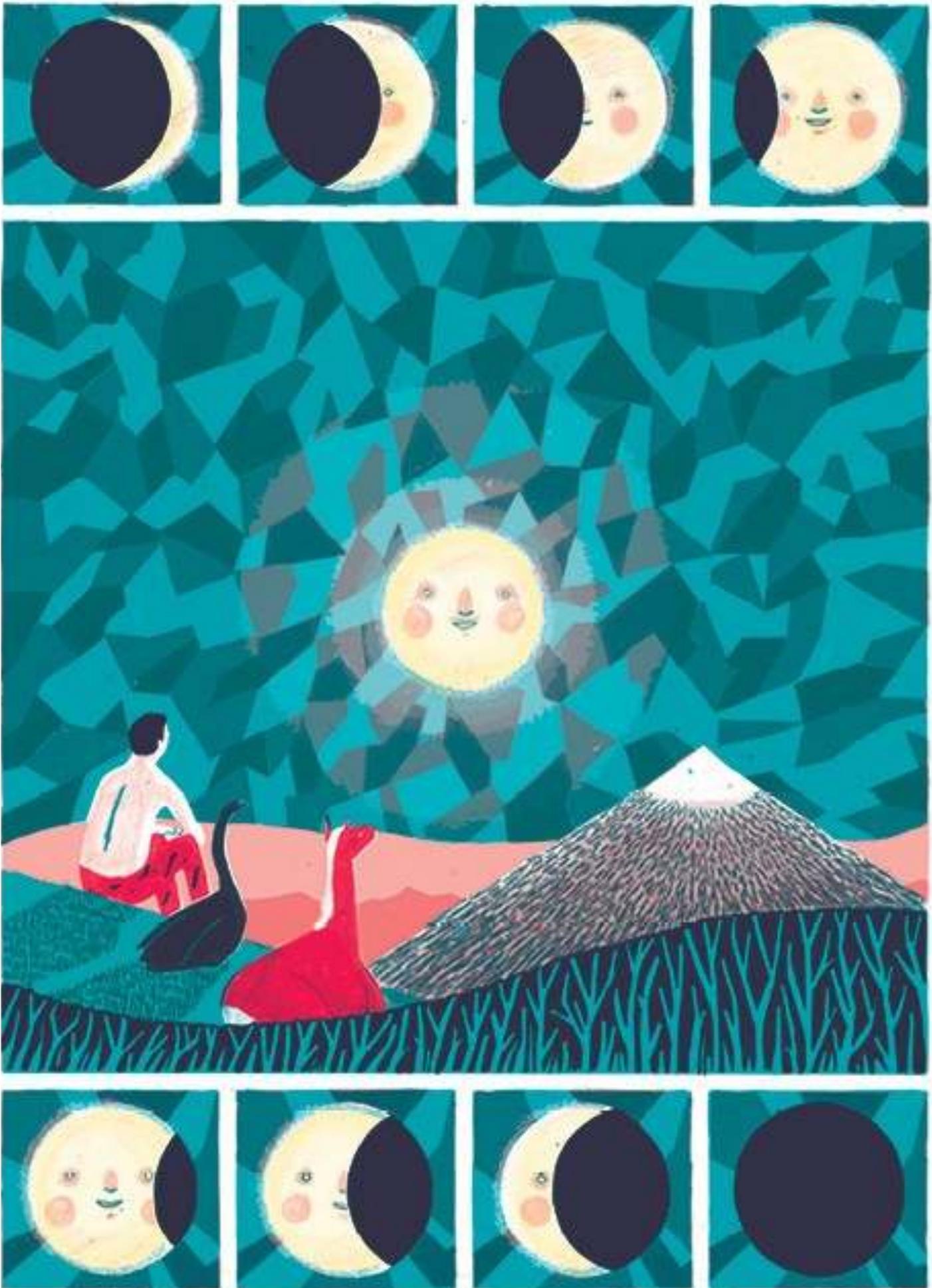
omnipotent creator. Painting from [Cosmographics](#) by Michael Benson.

With an eye to Galileo — that [patron saint of critical thinking](#), whose [revolutionary confrontation with the church](#) ushered in the Scientific Revolution — Randall argues that the real conflict is not over science or religion as such but over authority:

Faith requires active questioning, and many religions demand it of the observant. Yet at the same time, many religions ... call for a rejection or suppression of independent will. In Calvin's words: "Man by nature inclines to deluded self-admiration. Here, then, is what God's truth requires us to seek in examining ourselves: it requires the kind of knowledge that will strip us of all confidence in our own ability, deprive us of all occasion for boasting, and lead us to submission." These particular words applied primarily to moral questions. But the belief in the necessity for external guidance is unscientific, and it can be difficult to know where to draw the line. The struggle between the desire for knowledge and the mistrust of human pride reverberates throughout religious literature... Similar warnings appear in the writings of John Milton. Although he firmly believed in the necessity for robust intellectual inquiry, he nonetheless has Raphael tell Adam in *Paradise Lost* that he should not inquire too curiously into the motion of the stars, for "they need not thy belief."

[...]

Maybe the question of whether people can access truth on their own is the real issue at the heart of the religion/science debate. Is it possible that the negative attitudes toward science we hear today are partially rooted in the admittedly extreme beliefs expressed by Herbert and Milton? I'm not sure we are arguing so much about how the world came to be as about who has a right to figure things out and whose conclusions we should trust. The universe is humbling. Nature hides many of its most interesting mysteries.



Art from *A Graphic Cosmogony*

Randall, whose ample and effortless allusions to the canon of art clearly show that she cherishes humanity's creative legacy of meaning-making beyond objective truth, suggests that the greatest gift of science — as well as its greatest point of contention with religious authority — is a kind of intellectual self-reliance which invites us to figure things out for ourselves instead of settling for

easy, ready-made answers. And that, she reminds us, is an immensely emboldening experience:

Most people want to feel empowered and to experience a sense of belonging. The question each individual faces is whether religion or science offers a greater sense of control over the world. Where do you find trust, comfort, and understanding? Do you prefer to believe that you can figure things out for yourself or at least trust fellow humans to do so? People want answers and guidance that science can't yet provide.

Nonetheless, science has told us much about what the universe is made of and how it works. When you put together all of what we know, the picture scientists have deduced over time fits together miraculously well. Scientific ideas lead to correct predictions. So some of us trust in its authority, and many recognize the remarkable lessons of science through the ages.

Among those lessons is the idea that, as Richard Feynman [put it](#), "it is impossible to find an answer which someday will not be found to be wrong" — something essential given our propensity for self-deception, which [Faraday famously lamented](#). But our hunger for asking these questions, even if their answers are constantly evolving, is what defines our very humanity. Randall captures this beautifully:

People's curiosity and the ability to make progress toward satisfying this hunger for information make humanity very special indeed. We are the one species equipped to ask questions and systematically chip away to find the answers. We question, we interact, we communicate, we hypothesize, we make abstractions, and in all of this we end up with a richer view of the universe and our place within.

This doesn't mean that science necessarily will answer all questions. People who think science will solve all human problems are probably on the wrong track as well. But it does mean that the pursuit of science has been and will continue to be a worthwhile endeavor. We don't yet know all the answers. But scientifically inclined people, whether or not they have religious faith, try to pry open the universe and find them.

[\*Knocking on Heaven's Door\*](#) remains one of the finest, most dimensional and scintillating science books ever written. Complement this particular portion with Carl Sagan on [science and spirituality](#) and Einstein's [letter to a little girl](#) who asked him whether scientists pray, then revisit Simone Weil on [science and our spiritual values](#).