Lightman’s book begins in the cave of Font-de-Gaume, in France, which is famous for its adornment of ochre and charcoal painted animal forms left behind by its long deceased Paleolithic inhabitants. Lightman’s visit inspired musings about how these primal people may have imagined the meaning of their existence. It is as though our species has always been moved by two great mysteries: by the unconscious depths within our psyches and by the ever-expanding edges of the evolving cosmos. We are lured deep into dark labyrinthine caves to paint living forms on fire-lit walls, and we are drawn skyward toward ancestral light in an attempt to calculate the spiraling of stars. Creation and discovery, art and science, are presented to us. Homo sapiens seem caught in a “necessary tension” between the two. With one foot aloft in a spiritual world of eternal Absolutes and the other firmly planted in a perpetually perishing material world, we stumble along through history.

Toward what?

Lightman doesn’t pretend to have answers, but his ruminations heighten the sense of the importance of these questions. Is there meaning in it all? Or is it all just material? Even if it is all just material, isn’t it still beautiful, anyway? Depending on our personal proclivities, the existential tension produced by such questions can either release us into enchantment with mysterious paradox or entrap us in the frustration of irresolvable contradiction. Our nature is not a unified essence. We are tripartite: artists striving to enjoy and express nature’s beauty, scientists trying to explain its necessary truths, and priests longing to embrace and be embraced by its goodness. Expression, explanation, embrace. Beauty, truth, goodness. Art, science, religion. How are these human ideals connected? Must one or the other of them dominate, or is some integral harmonization possible? Can our search for hard scientific truth be made to cohere with our longing for meaning and our love of beauty?

Lightman moves from curiosity concerning the spirituality of the ancients to recounting his own mystical experience. One night, while he was piloting a small boat on the way to his cabin on Pole Island, Maine, he was struck by the desire to turn off the lights and cut the engine of his vessel. He lay down on the deck to gaze up at the stars in silent contemplation. It wasn’t long before the boat, his body, and any sense of separation from nature dissolved. He began to feel like he was “falling into infinity.” A spiritual sensation of his cosmic kinship with the stars overtook him.
Unlike many theists, whose faith in a personal God originates in such experiences of overpowering transcendent unity, Lightman did not draw religious conclusions. He remains committed to a purely scientific view of the world, a view he has held since his childhood experiments with petri dishes and pendulums. Accepting that his experience may be nothing more than an infantile regression back into his mother’s womb, he references Freud’s view of such “oceanic feelings.” Despite this possible interpretation, his personal experience of being swallowed whole by the sky has allowed him to at least understand the power and allure of religious belief.

“The materiality of the world is a fact, but facts don’t explain the experience.”

Lightman admits that even science is founded on a kind of faith, a faith in what he calls “the Central Doctrine of Science,” that all physical events are governed by universal and necessary laws, or mathematical patterns, that hold everywhere in observable time and space. Because of this scientific faith, he can imagine no “miracles,” or seemingly unexplainable supernatural events. Any such events, while perhaps surprising at first, should be treated as nothing more than opportunities to refine and expand the laws of physics.

He contrasts the theological certainty of Augustine with the geometrical certainty of Euclid. In Lightman’s view, Augustine’s certainty, rather than a product of divine revelation, is nothing more than fervently held personal opinion. Science, on the other hand, is empirically validated and mathematically proven.

“Theoretical physics is a temple built of mathematics and logic and aesthetics.”

Lightman contrasts the process of scientific discovery with that of artistic creation. Whereas the artist’s creativity, even if rooted in some sort of transcendent experience, remains purely subjective or internal, transcendent moments of discovery in science are both inner and outer, at once subjective and objective. Scientific inspiration has a “vital connection to the physical world,” and thus operates as a kind of “double discovery”: the inner mental world aligns with and thus reveals to consciousness the mathematical truth of the outer material world.

Lightman recounts the history of modern science and the way its discoveries decentered and humbled the human being. After Copernicus, Kepler, Bruno, Galileo, and Newton, it became more difficult for humans to imagine themselves as the uniquely special creation of a personal God. We now know (as Bruno was among the first to speculate) that there are countless other planets that are potentially habitable. Life, even intelligent life, may be pervasive in the universe. We are hardly special.

Lightman views death not as an on/off switch, but as a gradual process of disassembly of the atomic assemblage that, for a time, constitutes who and what we are. Consciousness, he wagers, is just an illusion, a word we use to describe the “mental sensation” of electrochemical flows of neurons in the brain. He claims to be “content with the illusion of life,” with the idea
that he is but a “self-referencing machine.” Strangely, however, he is a machine with *feelings*. Even if illusory, our “mental sensations” remain undeniable.

Lightman reframes Descartes’ argument for the reality of the soul: instead of “I think, therefore I am,” it becomes “I feel, therefore I am.” He accepts that, since he cannot escape the feeling of being alive, of life's joys and sorrows, it hardly matters whether he is actually a soulless machine or not. He may as well find ways to maximize pleasure and minimize pain. Despite the illusory nature of consciousness, the neural sham of selfhood, Lightman thinks morality can still be grounded on this simple hedonistic principle.

Lightman ponders the source of our universe’s apparent “fine tuning,” the idea that, were any of the fundamental physical constants even the slightest fraction different from their observed values, life and consciousness could never have emerged. He offers the multiverse theory—the theory that our universe is just one of infinitely many universes to have randomly emerged from the quantum vacuum, and we just happen to be in one of the rare worlds where the constants aligned just right so as to produce creatures capable of reflecting on this fact—as one possible explanation. Since, however, there is no known way to test whether or not other universes exist, and because the multiverse theory offers a pseudo-explanation rooted in pure chance rather than causal necessity, Lightman is unsure whether it can really be considered scientific. On the question of the origin of the universe, of why there is something rather than nothing, Lightman admits that physical science reaches its limits, and philosophy and religion still have a role to play.

While I have some problems with his view of humanity’s place in the universe, I appreciate Lightman’s acknowledgement that philosophy, and even religion, still have a place in human life (at least so long as they avoid making false claims about the physical world). This is far better than some popularizers of science, like Neil deGrasse Tyson, Bill Nye, and Richard Dawkins, who tend to dismiss philosophy and ridicule religion.

I would challenge Lightman on whether we could ever finally define the meaning of “physical” without doing metaphysics. Physicists can bracket many philosophical questions to pursue their measurements and mathematical models, but at the end of the day their theoretical definitions inevitably fade off into metaphysics around the edges. So I have philosophical objections to some of what Lightman seems to take to be incontestably scientific claims. He sometimes wanders into metaphysics without realizing it, particularly when he discusses consciousness and the mind/body problem.

Lightman repeatedly refers to the “mere” materiality of everything we experience: our personal identity is “nothing but” neurochemistry; the enchanting beauty of an island-enveloping fog is really just minuscule droplets of water hovering in the air; the magical bioluminescent shimmering of the ocean is just little bugs in the water, etc. He grants that “the human body is the most amazing and baffling phenomenon of the material world,” but still, he assures us, it is all just molecules and chemicals. These are metaphysical claims.
Another mathematical physicist, Alfred North Whitehead, offers an alternative reading of the scientific evidence:

It is the accepted doctrine in physical science that a living body is to be interpreted according to what is known of other sections of the physical universe. This is a sound axiom; but it is double-edged. For it carries with it the converse deduction that other sections of the universe are to be interpreted in accordance with what we know of the human body” (Process & Reality, 119).

We think of ourselves as so intimately entwined in bodily life that a man is a complex unity--body and mind. But the body is part of the external world, continuous with it. In fact, it is just as much part of nature as anything else there--a river, or a mountain, or a cloud. Also, if we are fussily exact, we cannot define where a body begins and where external nature ends (Modes of Thought, 21).

The human body provides our closest experience of the interplay of actualities in nature...Analogous notions of activity, and forms of transition, apply to human experience and to the human body. Thus bodily activities and forms of experience can be construed in terms of each other. Also the body is part of nature. Thus we finally construe the world in terms of the type of activities disclosed in our intimate experience” (Modes of Thought, 115).

I am in agreement with Lightman that mind/body dualism offers an incoherent compromise. Somehow, the mental activities disclosed in our intimate experience must be connected to the physiological activities of our body. Like Lightman, I reject vitalistic interpretations of living organisms, where some extra spirit or vital force is thought to inhabit and organize the material body. Physics is the same, whether it takes place inside or outside the skin of a living organism. It’s all matter. But “just” matter? “Mere” matter? Why must we take such a deflationary view of materiality when, as the evidence of our own intimate experience makes clear, it is capable of nothing less than conscious reflection and intelligent deliberation? What is to prevent us, like Whitehead, of generalizing from our own experience so as to recognize that all matter is to some extent experience-imbued?