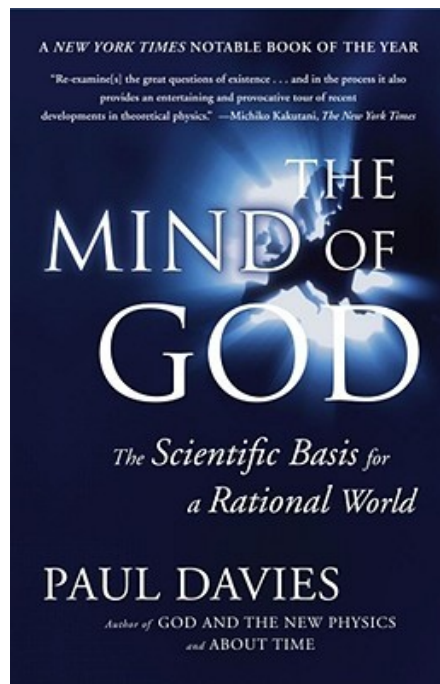




The Mind of God: The Scientific Basis for a Rational World

Paul Davies

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The Mind of God: The Scientific Basis for a Rational World Paul Davies

Throughout history, humans have dreamed of knowing the reason for the existence of the universe. In *The Mind of God*, physicist Paul Davies explores whether modern science can provide the key that will unlock this last secret. In his quest for an ultimate explanation, Davies reexamines the great questions that have preoccupied humankind for millennia, and in the process explores, among other topics, the origin and evolution of the cosmos, the nature of life and consciousness, and the claim that our universe is a kind of gigantic computer. Charting the ways in which the theories of such scientists as Newton, Einstein, and more recently Stephen Hawking and Richard Feynman have altered our conception of the physical universe. Davies puts these scientists' discoveries into context with the writings of philosophers such as Plato, Descartes, Hume, and Kant. His startling conclusion is that the universe is "no minor byproduct of mindless, purposeless forces. We are truly meant to be here." By the means of science, we can truly see into the mind of God.

The Mind of God: The Scientific Basis for a Rational World Details

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discussion about god and his relation to universe.

Jeffrey says

Paul Davies is really smart. At least he is a lot smarter than I am, or he makes me feel that he is a lot smarter than I am. I am sure that he knows a lot about math and physics. Parts of this book are dense with explanations of mathematical theories and physics that can help us understand the complexity and beautiful simplicity of the universe. Is the universe describable in simple equations like $E=((MC)^2)$ because we like to think in simple terms or because it was designed that way, or maybe because it had to be that way for us to exist to understand it in the first place. Why should the universe even be a place that we can understand at all? Is it because we ourselves are made of the same stuff as the universe and work in a way that gives us an innate ability to think in ways that make the world understandable?

My mother-in-law gave me this book after she finished it. I don't know how she read it. She says she just skimmed over the parts she didn't understand. That could have been a lot of the book.

In any event, I learned less about God and more about physics and math from Davies. My conclusion is that what we have discovered about quantum mechanics and the probabilities that govern subatomic activities contains the clues to all the answers to all our questions about existence. Life seems amazingly improbable, but we are here. Just like the survivor of a catastrophe, many coincidences and fortuitous events had to occur for life to happen. If we were to see it in a movie, we'd find it improbable. But it happens. Life happens, and happened. It almost seems like it had to happen, in retrospect.

The universe is an amazing place and Paul Davies helps us see our improbable place in it. It was fun and challenging to read, and I'll keep looking for the answers to those questions.

Christopher Sutch says

This book is a great argument for the contention that physicists should not write books concerned with metaphysics. Davies, like others in his profession, normally follows empirical reasoning and evidence...EXCEPT in his thinking about "religion," "god," and the destiny of humanity. In those instances, his reasoning becomes trite and circular. Just because some scientists wish that humanity was not just a random event in the universe doesn't mean that there must be a grand destiny for us; that merely replicates, on a large scale, the logical shortcomings the anthropic principle. Still, there are some very interesting ideas to play with here, so long as one avoids the easy temptation toward positivism (another logical error exhibited by physicists with a metaphysical bent).

Mohammad Mohsen says

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I must confess, this is the most monumentally unfair review I have ever written. But how could I resist?

I just finished a book that required my full attention and challenged many of the assumptions I had about a divide between god and science. This book I would say is one of the most challenging science slash philosophy book I have completed, but one of the most rewarding. What this book proposes is that science is a limited tool but one that can allow us to gather evidence of god. This is suggested by the mysteries that lie outside the scientific realm (mainly the existence of the laws of physics and consciousness) and the limitations of science and mathematical reasoning. Even though these are two of the chief ways of discovering the truth, they have their limitations, which before reading this book I did not fully understand. This book also proposes a kind of reverential or mystical awe of the world that is furthered through an understanding in science. Therefore it avoids many of the pitfalls of conventional religion and instead simply reveres god, the absolute, the infinite, call it what you will. That this book is able to combine science and mysticism through a detailed and concise review of contemporary physics sets it apart as something special. Science, though beautiful, is limited. It is limited primarily because it uses inductive reasoning, which at best can say something is very likely to happen but never certain. It is further limited because it assumes the world is rational, when there very well may be certain questions that lie outside the scope of its reach or do not conform with our assumption of rationality. Mathematics faces similar problems. Both are invaluable, but I did not understand their limitations or the leaps of faith required in following either field. Another strong aspect of this book is that it does not cling to any one possible explanation or route of reasoning. Instead it proposes many different theories that support its hypothesis of an ordered yet potentially evolving universe. It leaves room for indeterminism and becoming at the individual and even universal scale. In order to support these claims, the author uses many arguments. The bulk of them are from science, explaining the laws of physics, the connection between matter and energy, singularity at the moment of the big bang, quantum mechanics, the elegance of mathematical formulas, the existence of consciousness and others, but he also strays into other somewhat philosophical justifications including the existence of beauty, the potential power of mysticism, and a somewhat Platonic realm of existence. For me, the Platonic

argument rang very hollow (as did his explanation of game theory or computer simulation universes), but because that was only one of many strands of evidence employed, I could easily disagree with him in that specific area but agree with him overall. This is a strength of the book, it presents many different options and leaves room for disagreement. It is not limited by a dogma it must defend, but rather open to many different ideas.

One of the most beautiful parts of the book involves a discussion of “existence is this paradoxical conjunction of begin and becoming.” While I usually think of this on a philosophical level and interpret it simply on the realm of people and other animate objects, Davies extends the idea of being and becoming to the universe itself. He calls this process theory, and he says that the universe may in fact be evolving and changing in an indeterministic way much like the individuals who inhabit and actively participate in this change. It “asserts the primacy of becoming over being” 184. That’s a mind blowing idea. Interestingly enough, the idea of a timeless god juxtaposed with a changing physical universe is full of ideological problems, which Aquinas and Augustine among others tried to reconcile. Davie’s theory of an evolving universe that is simply a part of god avoids these pitfalls.

It may also be helpful to describe the three basic notions of god that exist – deism, theism, and pantheism. Deism is “belief in a divine being who starts the universe off and then ‘sits back’ to watch event unfold, taking no direct part in subsequent affairs.” (all these quotes will be from page 43) Secondly comes theism “belief in a god is who creator of the universe, but who also remains directly involved in the day-to-day running of the world, between creator and creature.” Finally comes pantheism where “no such separation is made between god and the physical universe.” I feel myself most comfortably in the last camp, due to the presence of god that I see in others and the physical world. I think Davies is also in this camp, though he may attribute a bit of the watchmaker theist god in terms of the evolving universe. That I can’t quite pin down what he believes in points to the author’s fairness in presenting different ideas without advocating his own at the expense of another.

Perhaps the main argument Davies uses, and I would say rather brilliantly, is that he doesn’t use matter as his main piece of evidence, but rather the existence of overarching physical laws as evidence as to god’s hand in the universe. “[According to Stephen Hawking] The universe of space-time is internally consistent and self-contained. Its existence does not require anything outside of it; specifically, no prime mover is needed...Given the laws of physics, the universe can, so to speak, take care of itself, including its own creation. But where do these laws come from? Must we, in turn, find an explanation for them?” 68. While most contemporary scientists are content to ignore wondering about the origins of these laws (one could say they make a leap of faith in this area), Davies explores this subject brilliantly. For Davies, these laws are godlike. They are universal, perfect, absolute, omnipotent, and eternal. Isn’t it funny that these are attributes religions often give to their gods? I think this is one of the strongest and most compelling points of the book, scientific laws are clues of god that we can glimpse and study as they are imbedded in the universe.

Equally fascinating is how Davies clearly values science and math and yet recognizes their limitations and ascribes them a level of uncertainty due to quantum mechanics. I had no idea that there are hosts of unsolvable problems and uncomputable numbers in mathematics, or the connection of uncertainty in quantum mechanics to both mathematics and science. “Underlying the complexity of nature is the simplicity of physics” 135, what a beautiful sentence, and what a deeper mystery it points to. Through science we discover the world is simultaneously algorithmically compressible and open to organized complexity, which allows us to be in deterministically open to creating our own path. So cool.

What is ultimately beautiful about this book is it admits that human reasoning and the scientific method may not be enough to answer all our questions, in particular the ultimate questions or metaphysical questions. However, it only arrives at this conclusion after a careful study of science, not just a casual dismissal. This is an author who thoroughly understands science, and does a good job of communicating that eloquence to the reader. This is also an author who understands the limitations of science and the leaps of faith one takes while being a follower of science. I guess I’m proud to consider myself in the same camp as Davies, a student of science and a happy participant in this cosmic mystery that is god’s dream. A damn good book.

Quotes

“There remains that odd problem about the end of the explanatory chain [achieved by reductionism].

However successful our scientific explanations may be, they always have certain starting assumptions built in...sooner or later we all have to accept something as given, whether it is god, or logic, or a set of laws, or some other foundation for existence. Thus 'ultimate' questions will always lie beyond the scope of empirical science as it is usually defined." 15

"Far from exposing human being as incidental products of blind physical forces, science suggests that the existence of conscious organisms is a fundamental feature of the universe. We have been written into the laws of nature in a deep and, I believe, meaningful way...Science is a noble and enriching quest that helps us to make sense of the world in an objective and methodical manner. It does not deny a meaning behind existence. On the contrary." 21

"This cosmic order is underpinned by definite mathematical laws that interweave each other to form a subtle and harmonious unity." 21

"Science is founded on the hope that the world is rational in all its observable aspects. It is possible that there may be some facets of reality which lie beyond the power of human reasoning." 24

"Thinking is a process. Being is a state. When I think, my mental state changes with time. But the 'me' to which the mental state refers remains the same. This is probably the oldest metaphysical problem in the book...Through our own selves constitute our primary experience, we also perceive an external world, and we project onto that world the same paradoxical conjunction of process and being, of the temporal and the atemporal. On the one hand, the world continues to exist; on the other hand, it changes...Superimposed on this backdrop of being in continual change. Things happen. The present fades into the past, and the future 'comes into being': the phenomenon of be-coming. What we call 'existence' is this paradoxical conjunction of begin and becoming." 34

"Heisenberg's uncertainty principal...this unpredicatability implies that the microworld is indeterministic: to use Einstein's picturesque phraseology, god plays dice with the universe...by weakening the link between cause and effect, quantum mechanics provides a subtle way for us to circumvent the origin of the universe problem." 61

"The essence of the dispute is whether one is simply to accept the explosive appearance of the universe as a bald, unexplained fact – something belonging to the 'that's-that' category – or to seek some more satisfying explanation." 60

"[According to Stephen Hawking] The universe of space-time is internally consistent and self-contained. Its existence does not require anything outside of it; specifically, no prime mover is needed...Given the laws of physics, the universe can, so to speak, take care of itself, including its own creation. But where do these laws come from? Must we, in turn, find an explanation for them?" 68.

"The existence of regularities in nature is an objective mathematical fact. On the other hand, the statements called laws that are found in textbooks clearly are human inventions, but inventions designed to reflect, albeit imperfectly, actually existing properties of nature. Without this assumption that the regularities are real, science is reduced to a meaningless charade." 81

"No one who is closed off from mathematics can ever grasp the full significance of the natural order that is woven so deeply into the fabric of physical reality." 93

"Is it not a miracle that the universe is so constructed that such a simple abstraction as number is possible?" 108

It appears as if there is a kind of randomness or uncertainty (dare I call it 'free will') built into the Life universe, as indeed there is in the real universe, due to the restrictions of logic itself, as soon as systems become complex enough to engage in self-reference. 115

The popular image of mathematics as a collection of precise facts, linked together by well-defined logical paths, is revealed to be false. There is randomness and hence uncertainty in mathematics, just as there is in physics. 133

The world is ordered both in the sense of being algorithmically compressible, and in the sense of having depth. The order of the cosmos is more than mere regimented regularity, it is also organized complexity, and it is from the latter that the universe derives its openness and permits the existence of human beings with free will. 139

'The book of nature,' opined Galileo, 'is written in mathematical language.' Why this should be so is one of the great mysteries of the universe...There are two broadly opposed schools of thought concerning its

character. The first of these holds that mathematics is purely a human invention, the second is that it has an independent existence. 141

If beauty is more than mere biology at work, if our aesthetic appreciation stems from contact with something firmer and more pervasive, then it is surely a fact of major significance that the fundamental laws of the universe seem to reflect this ‘something.’ 176

Process though is an attempt to view the world not as a collection of objects, or even as a set of events, but as a process with a definitive directionality. The flux of time thus plays a key role in process philosophy, which asserts the primacy of becoming over being...process philosophy stresses the openness and indeterminism of nature. The future is not implicit in the present. 181

Is this not to admit an element of irrationality into the world? Einstein thought so (“God does not play dice with the universe!”). This was why he could never accept that quantum mechanics is another complete description of reality. But one man’s irrationality is another person’s creativity. And there is a difference between stochasticity and anarchy. The development of new forms and systems is subject to general principles of organization that guide and encourage, rather than compel, matter and energy to develop along certain predetermined pathways of evolution...One might say there is order in disorder. Even chaos can possess statistical regularities. 192

The world contains individual objects and systems, but they are structured such that, taken together, they form a unified and consistent whole...The life cycle of stars provide just one example of the ingenious and seemingly contrived way in which the large-scale and small-scale aspects of physics are closely intertwined to produce complex variety in nature. 197

All three of the above arguments [regarding the existence of the universe] are founded on the assumption of human rationality: that it is legitimate to seek ‘explanations’ for things, and that we truly understand something only when it is ‘explained.’ Yet it has to be admitted that our concept of rational explanation probably derives from our observations of the world and our evolutionary inheritance. It is clear that this provides adequate guidance when we are tangling with ultimate questions? Might it not be the case that the reason for existence has no explanation in the usual sense? This does not mean that the universe is absurd and meaningless, only that an understanding of its existence and properties lies outside the usual categories of rational human thought. 225

[Regarding mystical experiences] the language used to describe these experiences usually reflects the culture of the individual concerned. Western mystics tend to emphasize the personal quality of the presence, often describing themselves as being with someone, usually god, who is different from themselves but with whom a deep bond is felt...Eastern mystics emphasize the wholeness of existence and tend to identify themselves more closely with the presence. 227

According to Rudy Rucker [apparently a guy who trips pretty often] ‘the central teaching of mysticism is this: reality is one. The practice of mysticism consists in finding ways to experience this unity directly. The One has variously been called the good, god, the cosmos, the mind, the void, or (perhaps most neutrally) the absolute. No door in the labyrinthine castle of science opens directly onto the absolute. But if one understands the maze well enough, it is possible to jump out of the system and experience the absolute for oneself. 228

We, who are children of the universe – animated stardust – can nevertheless reflect on the nature of that same universe, even to the extent of glimpsing the rules on which it runs. How we have become linked into this cosmic dimension is a mystery. Yet the linkage cannot be denied. 232

Peter Lobell says

Paul Davies is a working physicist who believes that the universe is not an accident, that the laws science has discovered have a special form that links the human mind with the physical world. You may agree or disagree, but this book will make you think. Recommended to anyone who thinks about science and religion,

either together or separately.

Stephanie H says

Once upon a time, I thought Paul Davies was awesome. I read "About Time" for a Physics for Poets and Philosophers class and it was so accessible and fantastic. I thought all his books would be fantastic, but this was lackluster.

Paul Davies makes it perfectly clear that he's a deist -- a believer in God the watchmaker or God the ultimate architect. He's not as pushy about his beliefs like Dawkins is in his books, but he is very very redundant. 200 pages later, we've covered the randomness of quarks, the beauty of pi, the idea of parallel universes and the necessity of the universe being just right for life. Yet this is a book that could have been written in a lot fewer pages.

He doesn't try to introduce any universal theory, of everything, but states purely that the existence of everything is too complex for the mere random arrangement of quarks. It was a good idea, but poorly executed.

Amin says

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James says

The Mind of God by Paul Davies is subtitled The Scientific Basis for a Rational World, it is both a tour and explanation of theories, physical and metaphysical, regarding ultimate causes. Its title comes from a quotation from Stephen Hawking: "If we do discover a theory of everything...it would be the ultimate triumph of human reason—for then we would truly know the mind of God."

In the preface, Davies explains that he has been interested in ultimate causes since childhood, having annoyed his parents with unending "why's" about everything, with each answer demanding another "why," and usually ending with the reply, "Because God made it that way, and that's that!" Davies' narrative explores: the nature of reason, belief, and metaphysics; theories of the origin of the universe; the laws of nature; the relationship of mathematics to physics; a few arguments for the existence of God; the possibility that the universe shows evidence of intelligent design; and his opinion of the implications of Gödel's incompleteness theorem, that "the search for a closed logical scheme that provides a complete and self-consistent explanation is doomed to failure."

Leyla says

No matter if you are a deist, atheist, agnostic or whatsoever, just go and read if you have that curiosity beyond. Don't read to decide whether to believe or not, but read to question what you want to believe.

Mohammad Kamelan says

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