

What's Eating the Universe?: And Other Cosmic Questions by Paul Davies. Chicago, IL: University of Chicago Press, 2021. 208 pages. Hardcover; \$22.50. ISBN: 9780226816296.

I could not have foreseen Paul Davies' latest book appearing. It is distinctively different from his previous books. Once again, it is beautifully written, as only a renowned physicist with a gift for explaining highly abstract concepts in understandable terms could accomplish. Yet this book is much shorter, much more concise, and lacks the long philosophical musings that made Paul Davies' previous books so enjoyable. It contrasts with his earlier work "The Goldilocks Enigma: Why is the Universe Just Right for Life?", a brilliant ten chapter work over three hundred pages long. That book covers the physics of a universe just right for human life and pursues many different philosophical questions and answers. In contrast, "What's Eating the Universe?" has thirty truly short chapters with just 165 pages of material. Nevertheless, this book is highly recommended, especially for the novice who just wants an overview of the present state of our understanding of physics and cosmology, and a brief foray into some of the big questions.

Davies takes the reader on a journey beginning with the COBE (Cosmic Background Explorer) findings of ripples in the microwave radiation coming to us from every direction. These slight variations in temperature supported the Big Bang model of the universe by connecting the nearly uniform radiation background to galaxy formation with slight 'hot spots' necessary to seed the gravity wells, allowing matter to grow from a nearly uniform state to the galaxies we see today. This is just one outstanding example of how scientific investigation has succeeded in explaining our universe.

Davies then presents an historical overview of the major ideas that have contributed to our growing understanding, moving from Copernicus to Einstein. He uses delightful analogies to help the reader grasp the ideas. For example, he uses the analogy of a trained marksman (sharpshooter) to explain how precise the initial expansion of the universe had to be for it to avoid either quickly collapsing or expanding too fast to form stars and galaxies. The many questions addressed by Davies include the speed and shape of space as it expands, the source and nature of matter, including dark matter, and the enigma of dark energy, the cause behind the accelerating expansion of the universe. Davies is a wonderfully gifted writer, and his descriptions are extremely helpful in clarifying these matters.

The title suggests that there are deeply troubling questions about our present understanding of the universe and its governing laws, leaving us puzzling inconsistencies or paradoxes. And though there are some paradoxes, Davies is the first one to admit that the real story is that our present understanding of the universe via scientific investigation is an overwhelming success. The universe is understandable in terms of elegant mathematical laws that go astonishingly far in explaining and describing what we observe. And this is what's eating Paul Davies, not the universe. Most of his scientist friends have rejected the idea of meaning or purpose intrinsic to this universe, simply accepting the success of science without the need to question why it works. But Davies cannot leave it alone. He writes:

"A universe that 'just exists' for no reason, with specific properties that 'just are', is correctly described, in formal logic, as 'absurd'. But if there is no rational coherent scheme beneath the surface phenomena of nature, if things 'just are', if the universe is absurd, then the success of the scientific enterprise is totally enigmatic. It cannot be pursued with any expectation that the methods adopted hitherto will continue to work, that we will go on uncovering new mechanisms and processes that make sense, for how can sense be rooted in absurdity" (pp 158-159)?

However, for a Christian scientist, the universe is not absurd. It has meaning and purpose because it was created with meaning and purpose by a transcendent Creator God. Its basis of mathematically elegant

laws is no accident, but rather a clear case of design, regardless of how God chose to create it. Davies knows this and is quite willing to acknowledge that this avoids the absurdity of a rational universe without a rational cause. Yet Davies persists in the hope that science itself will one day uncover that deeper layer required to explain it. Davies personally experienced a journey from a Christian upbringing to atheist scientist, finally to agnostic scientist in which the deeper questions arising from science keep eating at him.

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