

When science meets theology

His unique approach to questions such as the origins of the universe has earned John D. Barrow the much-coveted Templeton Prize, JENNY JACKSON writes.

This year's winner of the Templeton Prize for religion and science is a British mathematician who really boasts some amazing numbers:

- 400 research papers;
- 56 talks and presentations, just in the past year;
- 25 awards, including two for writing plays;
- 24 invitations to give prestigious, formal lectures;
- 18 fellowships and postings at universities such as Cambridge, Oxford, and the University of California;
- 17 books translated into 27 languages;
- and 100 million hits on his Millennium Mathematics Project website, a University of Cambridge project to help children get more comfortable with math.

Yet in a paradox worthy of one of his books on the cosmos, none of these accomplishments actually won him the prize. The Templeton is unusual because it recognizes people whose careers have bridged the schism between science and religion in a new way.

Philanthropist John Marks Templeton established the annual award in 1973 for those who have "shown extraordinary originality in research or discoveries to advance understanding of God and spiritual realities."

He believes science has been given most of our research time and money, for astonishing advances in medicine and other technologies. Wouldn't mankind benefit just as much from similar inquiries into faith and theology?

John D. Barrow's popular books on such weighty questions as the origins of the universe have helped people look at science and theology as different ways of answering the same questions: Is there one answer to everything? How big is the universe? Will time end?

Some final fun with figures: The Templeton comes with \$1.6 million, the largest prize in the world to an individual for lifetime achievement. And Mr. Barrow is only 53.

"Yes, I was rather surprised at winning," he said in an interview from his New York hotel room. "People are usually a great age when they win these things."

John Templeton Jr. spoke for his father at yesterday's news conference announcing the award: "(Mr. Barrow) has used insights from mathematics, physics, and astronomy to set out wide-ranging views that challenge scientists and theologians to cross the boundaries of their disciplines."

Mr. Barrow finds the divide between faith and reason something of a chimera, since it implies faith has no reason and vice versa.



Michelangelo's version of *The Creation*, found in the Vatican's Sistine Chapel. In 1973, British philanthropist John Marks Templeton established an annual award for those who have "shown extraordinary originality in research or discoveries to advance understanding of God and spiritual realities."

RECENT WINNERS OF THE TEMPLETON PRIZE FOR RELIGION AND SCIENCE

2005: Charles Townes, a Nobel laureate in physics, for his work in the convergence of science and religion.

"Their differences are largely superficial, and ... the two become almost indistinguishable if we look at the real nature of each," he wrote.

2004: George Ellis, a South African professor of applied mathematics, who argued that deep ethical truths are not human inventions, but part of the physical universe.

2003: Holmes Rolston, father of environmental ethics. Other past winners include: Mother Teresa, Aleksandr Solzhenitsyn and Billy Graham.



John D. Barrow, this year's Templeton Prize winner, has helped people use science and theology to answer age-old questions.

"Many of the questions are the same in both areas. The answers have a different complexion."

In fact, he says, for some people, science is a kind of religion — especially physics, which inspires such a sense of grandeur and awe.

"Modern science has that mystery and the abstract and unusual ideas that once upon a time (people) looked to religion to supply."

People seek a sense of transcendence in the larger universe, but they want to feel personally significant and connected to other people as well. Physics can fit that bill, but so can baseball, for that matter, he says.

The whole idea of constants of nature springs from our Judeo-Christian perspective that there is one God who issues decrees of nature, and that these laws can be explored and discovered. In ancient China, for instance, which had no sense of one God, scientific inquiry soon collapsed since there was no underlying order to build on.

Mr. Barrow and his wife, Elizabeth, attend Emmanuel United Reform Church in

Cambridge every week. And, yes, his work increases his sense of spiritual wonder.

His most recent work, *The Infinite Book: A Short Guide to the Boundless, Timeless and Endless*, is an elegant discussion of our concept of infinity throughout history — as an expression of God, as an expression of mathematics, or as an idea about the unimaginable vastness of the universe.

His talent for an assured and easygoing synthesis of such views show up time and time again. He speaks easily from his notes, connecting with the audience with jokes like saying math appreciation is "the joy of X" and using metaphor and common language to make complex subjects more approachable.

The Book of Nothing: Vacuums, Voids and the Latest Ideas about the Origins of the Universe talks about zero as a number, the idea of nothingness, and "the astonishing physical properties of vacuums in space. *The Artful Universe* looks at why humans like music and art and how our tastes relate to how we have evolved.

He even wrote a play, *In-*

finites, which was performed four years ago in Milan. In one segment, the audience wanders through corridors of mirrors brimming with identical characters, suggesting the impossibility of uniqueness in an infinite universe. In another, elderly people wonder what it would really be like to live forever. The play received two awards.

Similarly, in his remarks accepting the award yesterday, Mr. Barrow recalled a visit last year to the Basilica of St. Mark, built in 1063 in Venice with magnificent vaulted ceilings of gold and mosaic.

"I arrived at the church in the early evening with a small group of other scientists. When we entered, it was almost in total darkness. There are few windows and those are small and far from transparent. Then, very slowly, the light levels slowly rose, above us and around us, and the interior began to be illuminated by a discreet system of hidden sodium lights. The darkness around us gave way to a spectacular golden light. The arching ceilings above us were covered in a spectacular gleaming mosaic of glass and gold."

He realized that even the workmen who made the ceiling hundreds of years ago had never understood the whole of what they were creating.

"They worked in the gloomy interior aided by candlelight and smoky oil lamps to illuminate the small area on which they worked, but not one of them had ever seen the full glory of the golden ceiling."

"Our universe is a bit like that, too. The ancient writers who celebrated the heavens' declaration of the glory of the Lord saw only through a glass darkly. Unbeknownst to them, and countless others who followed them, the universe has revealed itself — by the instruments that modern science has made possible — to be far bigger, more spectacular, and more humbling

than we ever imagined it to be.

"Our scientific picture of the universe has revealed time and again how blinkered and conservative our outlook has often been, how self-serving our interim picture of the universe, how mundane our expectations, and how parochial our attempts to find or deny the links between scientific and religious approaches to the nature of the universe."

John David Barrow was born in London in 1952 to Walter Barrow, a manager for an engineering company, and his homemaker wife, Lois.

He was their second and last child, and has a sister 22 years his senior. He was clearly gifted, completing advanced high school studies in seven subjects including literature, religious studies, Latin and Greek, as well as maths and sciences.

He got help from a running coach who was also trained in philosophy, and who needed some coaching of his own in maths and physics.

"So I got used at a very early age to explaining things orally and learning things by explaining them," Mr. Barrow once told the *Financial Times*.

"I can remember from the age of 16 or so wanting to do astrophysics. I was not one of these people who wanted to look through telescopes. What interested me was this issue of mathematics. I remember asking at school: Why is it that when we heat this thing up it does what the maths says it will do? How does it know? The prospect of being able to understand a star millions of light years away just by using simple laws of heat and gravity all seemed very neat."

He went on to a stellar academic career, graduating with his doctorate in astrophysics from the University of Oxford in 1977. He taught at the University of Sussex and the University of California as well as Cambridge, where he now divides his

time between his work as a cosmologist and as director of the Millennium Mathematics Project. Last month, the program was awarded the Queen's Anniversary Prize for Higher and Further Education.

In 2002, he was appointed Gresham Professor of Astronomy at Gresham College in London, a position once held by Sir Christopher Wren. Founded in 1596, it is the world's oldest science professorship.

Mr. Barrow denies he has discovered some new form of energy in producing so much at such a young age. He says, modestly: "I can do lots of slightly different things in close succession, and if you find it easy to write things, that can make you quite efficient."

He says the prize money will likely go to some charities he and his wife have in mind. Mrs. Barrow runs a business making wedding cakes, and donates considerable time to a charitable program that teaches people with learning difficulties job skills by working in a café.

The award was announced yesterday, but will be presented to Mr. Barrow by Prince Philip, the Duke of Edinburgh, at Buckingham Palace on May 3.

Sir John Templeton, who was knighted by the Queen for his philanthropy, stipulated that the prize should always be worth more than the Nobels to underscore that research and advances in spiritual discoveries can be more significant than those in the Nobel categories.

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