

Arthur C. Clarke's 'Credo'

People have debated the problems of existence for thousands of years—and that is precisely why we should be skeptical of the answers. One of the great lessons of modern science is that millennia are only moments. It is not likely that ultimate questions will be settled in such short periods of time.

ARTHUR C. CLARKE

For thousands of years the subtlest minds of the human species have been focused on the great questions of life and death, of time and space—and of man's place in the universe. The answers have been encapsulated in the holy books of countless religions and whole libraries of philosophy, folklore, and myth.

Can our age contribute anything both new and true to these ancient debates? I believe so. We have been lucky enough to live at a time when knowledge that once seemed forever beyond reach can be found in elementary school-books. Our generation has seen the far side of the Moon, and close-ups of all the major bodies circling the Sun. We have opened the Pandora's box of the atomic nucleus. And

perhaps most marvelous of all, we have uncovered the secret of life itself, in the endless twining and untwining of the DNA spiral. This is perhaps the greatest discovery in the whole history of science, yet even now it is barely thirty years old.

There are those who claim not to be impressed by such achievements, arguing that science deals with unimportant questions that can be solved, while religion is concerned with important ones that can't. The logical positivists would maintain that this is nonsense; if a problem can't be solved, at least in principle, it doesn't really exist. In other words, there's no such animal as metaphysics.

Without knowing it, I became a logical positivist at about the age of ten. Every Sunday, I was supposed to make the two-mile walk to the local Church of England—it was a long time before I discovered there was any other variety—to attend a service for the village youth. To encourage us to sit through the sermons, we were rewarded with stamps illustrating scenes from the Bible. When we had filled an album with these, we were entitled to an "outing"—i.e., a bus trip to some exotic and remote part of Somerset, perhaps as far as twenty miles away. I stuck with it for a few weeks, then decided—to quote Churchill's famous memorandum on the necessity of ending sentences with a proposition—"This is nonsense up with which I will not put."

Half a century of travel, reading, and contact with other faiths has endorsed that early insight.

Now I myself am not completely innocent, according to one of the last letters I received from the great biologist J.B.S. Haldane. Shortly before he died (going not gently but heroically into the good night with a witty poem entitled "Cancer Can Be Fun") he wrote: "I would like to see you awarded a prize for theology, as you are one of the very few living persons who has written anything original about God. You have in fact, written several mutually incompatible things. . . . If you had stuck to one theological hypothesis you might be a serious public danger."

I am only sorry that J.B.S. never had a chance to criticize my later (doubtless yet more incompatible) speculations, developed in the novels *The Fountains of Paradise* and *The Songs of Distant Earth*. He would, I am sure, have enjoyed this specimen from *Fountains*:

There can be no such subject as comparative religion as long as we study only the religions of man. . . . If we find that religion occurs exclusively among intelligent analogs of apes, dolphins, elephants, dogs, etc., but not among extraterrestrial computers, termites, fish, turtles, or social amoebae, we may have to draw some painful conclusions. . . . Perhaps both love and religion can arise only among mammals, and for much the same reasons. This is also suggested by a study of their pathologies; anyone who doubts the connection between religious fanaticism and perversion should take a long, hard look at the *Malleus Maleficarum* or Huxley's *The Devils of Loudun*.

But I am quite serious about the profound philosophical importance of the Search for Extra-Terrestrial Intelligence (SETI); this may be its supreme justification. The fact that we have not yet found the

slightest evidence for life—much less intelligence—beyond this Earth does not surprise or disappoint me in the least. Our technology must still be laughably primitive; we may well be like jungle savages listening for throbbing of tom-toms, while the ether around them carries more words per second than they could utter in a lifetime.

The greatest tragedy in mankind's entire history may be the hijacking of morality by religion. However valuable—even necessary—that may have been in enforcing good behavior on primitive peoples, their association is now counterproductive. Yet at the very moment when they should be decoupled, sanctimonious nitwits are calling for a return to morals based on superstition.

Having disposed of religion (at least until next Wednesday), let us consider something really important: God—aka Allah/Brahma/Jehovah, etc. ad infinitum. In *The Songs of Distant Earth*, I distinguished between two aspects of this hypothetical entity, calling them Alpha and Omega to defuse emotional reactions.

Alpha might be identified with the jealous God of the Old Testament, who watches over all creatures ("His eye is on the sparrow") and rewards good and evil in some vaguely described afterlife. Even today, belief in Alpha is fading fast; I suggested that early in the next millennium the rise of "statistical theology" would prove that there is no supernatural intervention in human affairs. Nor does the "problem of evil" exist; it is an inevitable consequence of the bell-shaped curve of normal distribution.

Unfortunately, most people do not understand even the basic elements of statistics and probability, which is why astrologers and advertising agencies flourish. If you want to start an interesting fight, say in a loud voice at your next cocktail party, "Fifty percent of Americans (or whatever) are mentally subnormal." Then watch all those annoyed by this mathematical tautology instantly pigeonhole themselves.

I also, rather mischievously, demolished Alpha by invoking the ghost of Kurt Gödel, whose notorious "incompleteness of knowledge" theorem quite obviously rules out the existence of an omniscient being. However, this is an area where logic gets you nowhere. Belief—or disbelief—in Alpha appears to be irrevocably programmed into most people at an early age.

A man I admire, who has held the highest medical position in the United States, recently declared. "There are no atheists at the bedside of a dying child." It is a compassionate statement, nobly expressed, with which every humane person must sympathize. But, with all respect, it is simply untrue.

Nor have I ever felt a need for Alpha on the several occasions when I thought I was about to die (in each case, at a depth of embarrassingly few fathoms). Certainly the notion of appealing for divine help never entered my mind; I was much too busy thinking, "How do I get out of this ridiculous situation?"

Omega—the Creator of Everything—is a much more interesting character than Alpha, and not so easily dismissed. Although irredeemable agnostics may smile at Edward Young's "The undevout astronomer is mad," no intelligent persons can contemplate the night sky without a sense of awe. The mind-boggling vista of exploding supernovae and hurtling galaxies does seem to require a certain amount of explaining: to answer the question "Why is the universe here?" with the retort "Where else would it be?" is somehow not very satisfying. Although—the logical positivists would be pleased—it may be all the answer that is needed, because the question itself may not make sense.

Let me offer an analogy, suggested by a conversation I once had with C.S. Lewis. We science fiction authors are always picking each

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other's brain, and Lewis asked me what the horizon would look like (ignoring atmospheric absorption) on a really enormous planet—one not thousands, but millions, of kilometers in radius.

Any inhabitants would be convinced that they were living on a perfectly flat plane and might fight holy wars over the rival doctrines (a) the world goes on forever and ever; (b) you'll fall off when you reach the edge. But to us, there is no problem. We have watched the globe of the Earth floating on our television screens and have no difficulty in understanding why both flatlander cults are wrong. If they ever got around to making spaceships, their religious disputations would be ended.

So it is very, very risky to maintain that, as the old B-grade movies loved to intone, "There is some knowledge not meant for Man." I am fond of quoting a monumental gaffe made by Auguste Comte, who told the astronomers in no uncertain terms just what they could ever expect to know about other worlds—"We may determine their forms, their distances, their bulk, their motions—but we can never know anything of their chemical or mineralogical structure; and, much less, that of organized beings living on their surface."

Within a century of Comte's death, thanks to the invention of the spectroscope, much of astronomy had become astrochemistry—a science he had roundly declared impossible. I wonder what he would have said about space exploration, had anyone been rash enough to suggest such an absurdity to him.

So it may be that questions which now seem almost beyond conjecture may one day be conclusively settled. The limits of space, the beginning and ending of time, the origin of matter and energy, may have no mysteries to our remote descendants. And many of the questions we ask of the universe may turn out to be completely meaningless—as certain theories on the frontiers of modern physics tantalizingly suggest.

I felt this very strongly when I was privileged to make a television program, modestly entitled "God, the Universe and Everything Else" with Newton's successor Dr. Stephen Hawking. If you have not read *A Brief History of Time*, please rectify the omission—and read the bits about "imaginary time." Thank you; that saves me a lot of hand waving, trying to explain how our own views of past and future may be as naive as the flatlanders' ideas about the geometry of their giant planet.

The extraordinary success of Dr. Hawking's book is one of the best pieces of news from the popular science—indeed, educational—front for many years. I have been appalled by the way in which the United States (and much of the world, East and West) appears to be sinking into cultural barbarism, harangued by the fundamentalist ayatollahs of the airwaves, its bookstores, and newsstands poisoned with mind-rotting rubbish about astrology, UFOs, reincarnation, ESP, spoon-bending, and especially "creationism." This last—which implies that the marvelous and inspiring story of evolution, so clearly recorded in the geological strata, is all a cosmic practical joke—helps me to understand the revulsion that a devout Muslim must feel toward *The Satanic Verses*. If there is indeed such a thing as blasphemy, it is here. . . .

The Pontifical Academy of Science—which I have been honored to address—has now firmly stated: "Masses of evidence render the application of the concept of evolution to man and the other primates beyond serious dispute."

I began this essay by saying that men have debated the problems of existence for thousands of years—and that is precisely why I am skeptical about most of the answers. One of the great lessons of modern science is that millennia are only moments. It is not likely that ultimate questions will be settled in such short periods of time, or that we will really know much about the universe while we are still crawling around in the playpen of the Solar System.

So let us recognize that there is much concerning which we must reserve judgment, and refuse to take seriously all dogmas and revelations whose acceptance demands faith. They have been proved wrong countless times in the past; they will be proved wrong again in the ages to come.

And worse than wrong. Who can forget Jacob Bronowski, in his superb television series, *The Ascent of Man*, standing among the ashes of his relatives at the Auschwitz crematorium and reminding us: "This is how men behave when they believe they have absolute knowledge." This is how they are still behaving—in Ireland, in Lebanon, in Iran—and at this very moment, alas, in my own Sri Lanka.

Yet, if absolute knowledge is unattainable, someday most of the great truths may be established—if not with absolute certainty, then beyond all reasonable doubt. Do not be impatient; there is plenty of time.

How much time, we are only now beginning to appreciate. In a famous essay, "Time Without End," Freeman Dyson speculated that a high-technology cosmic intelligence might even be able to make itself, quite literally, immortal.

So let me end with the final chapter, "The Long Twilight," from my *Profiles of the Future: An Inquiry into the Limits of the Possible*.

Whether Freeman Dyson's vision (some would say nightmare) of eternity is true or not, one thing seems certain. Our galaxy is now in the brief springtime of its life—a springtime made glorious by such brilliant blue-white stars as Vega and Sirius, and, on a more humble scale, our own Sun. Not until all these have flamed through their incandescent youth, in a few fleeting billions of years, will the real history of the universe begin.

It will be a history illuminated only by the reds and infrareds of dully glowing stars that would be almost invisible to our eyes; yet the somber hues of that all-but-eternal universe may be full of color and beauty to whatever strange beings have adapted to it. They will know that before them lie, not the millions of years in which we measure eras of geology, nor the billions of years which span the past lives of the stars, but years to be counted literally in trillions.

They will have time enough, in those endless aeons, to attempt all things, and to gather all knowledge. They will be like gods, because no gods imagined by our minds have ever possessed the powers they will command. But for all that, they may envy us, basking in the bright afterglow of Creation; for we knew the universe when it was young. □



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