

# A divine version of ourselves

God: A Human History

By Reza Aslan

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the time of the Babylonian conquest of Israel by Nebuchadnezzar II. In eastern religions, polytheism is not just widely and dominantly practiced but seems to be at ease with its pantheon of hundreds of gods — all having human traits and human weaknesses and corruptibility, just as it was till about 2500 years ago, everywhere in the known world.

Even if settling down for the sake of the practice of religion seems a radical claim, Aslan's ground is neither

one asks why Jesus of Nazareth is fair, blonde and blue-eyed when he is otherwise from the hot, dry and inhospitable terrains of the Middle-east, with carpentry as his trade. As long as he resembled humans of an ideal form — most likely the Crete template, since devout early Christians were Greek-speaking and the four early Gospels were in Greek — he was to be accepted across the world regardless of the local preference for the colour

**The divine, before the rise of Judaism and Christianity, had never been anything else but utterly human — in both form and function. This is the primary message of Reza Aslan's book *God: A Human History*. In fact, Aslan's most startling claim in the book is that it is not agriculture which had stopped the hunter-gatherer 'paleoliths' in their tracks and forced them to**

**find stasis around the site of their produce. It was the birth of religion as an organised set of practices and the building of large temple complexes like the Göbekli Tepe in Turkey which forced them to organise their life around a place and abdicate their nomadic character. For Aslan the question is not *if* the humans had first imagined and then devised the divine in the form of their own. The question is *why*? And why did it become necessary in the West to move towards monotheism as a radical break from the Assyrian, Egyptian and Hellenic traditions?**

unknown nor unexpected. After all, it is not a new discovery that there is no form of the divine in the wide 'historical' period which looks unlike the human or has very effective and identifiable non-human traits. Even Christianity — the world's most populous monotheistic religion — had to appoint (or rather manufacture) a human to act as god's son on earth, with traits that are significantly and disturbingly removed from the site of origin of the 'messiah'. In fact, no

of skin and length and texture of hair. The last part of the observation is partially drawn from Aslan's last book *Zealot: The Life and Times of the Jesus of Nazareth* (Random House, 2013). There, he had made a riveting attempt at historicising the Christ figure, slowly and laboriously separating crumbs of historical fact from an avalanche of sources and scriptural texts that were configured for mythification. If not entirely, he was to a large extent successful. After reading *Zealot*, even

if one did not know who exactly the historical Jesus was, one certainly knew who he wasn't. And that is not a mean feat.

Like in his last book, here too, Aslan deals with very significant historical questions. For him (as much as for us) the question is not *if* the humans had first imagined and then devised the divine in the form of their own. The question is *why*? And why did it become necessary in the global west to move towards monotheism as a radical break from the Assyrian, Egyptian and Hellenic traditions? This is a sort of inquiry that needs to be constantly substantiated with illustrations and archaeological findings from across belief-systems in ancient provinces. Like in *Zealot*, Aslan never falls short of that primary requirement. He keeps the historian's craft close to his chest. At the same time, he never lets his sweeping subject to be overwhelmed by the scholarship that already exists. For sure, Aslan is not the first scholar of religion and neither is he the most formidable. But he has a gift for storytelling, which manages to keep the narrative free from being constantly obstructed and belted by the need for historical substantiation. He neatly divides the book, almost in half, between the actual story of god on earth and the detailed notes and references. This way, one reads not a tome of dry historical inquiry but essentially the epic story of man (and woman) or at least the set of beliefs, customs and practices which were once a tool of self-reflection. It is through a long historical process of conquest, power and hegemony, that those same innocent systems of belief took a vile form.

To come back to the 'why' of it, Aslan's arguments move towards a convincing answer, even to the issue of monotheism and emergence of religion as a set of inviolable practices aimed at placating a powerful, conceited god. He writes:

When we organised ourselves in small, wandering packs of hunter-gatherers united in blood and kinship, we envisioned the world beyond ours to be a dreamlike version of our own, bursting with hordes of tame animals, shepherd by the Lord of Beasts for our spirit ancestors to stalk with ease. When we settled down in small villages and began growing our food instead of hunting for it, the Lord of Beasts surrendered to Mother Earth, and the celestial realm was reimagined as a place ruled by a host of fertility gods who maintained an eternal harvest. When those small villages expanded into independent city-states, each with its own tribal deity, in perpetual conflict with each other, the heavens made room for a pantheon of distinct martial deities, each a divine protector of its respective city back on earth. And when those city-states merged into massive empires ruled by all-powerful kings, the gods were rearranged into hierarchies reflecting the new political order on earth. (pp 101-102)

If we need any proof of how gods, otherwise projected with a set of superpowers, are in essence actually human, we need not go very far. We can just walk into the temple at Sabarimala in Kerala and be assured of it. ■

# Stephen Hawking's singular swansong

Brief Answers to the Big Questions

By Stephen Hawking

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rumours that had been rife about the Cambridge PhD student's proof that the universe originated in a singularity. He was "tremendously impressed", he says, by the lucid exposition of the argument that used the expanding universe, Einstein's general relativity, a few reasonable assumptions and new mathematical techniques devised by the Cambridge-educated mathematician Roger Penrose, to prove that the

Oxford and Hawking says "I surprised myself by being successful" in securing a scholarship in natural sciences at the College. After Oxford, Hawking planned to go to Cambridge hoping to have Fred Hoyle supervise his PhD. Hawking had grown up believing in the eternal and unchanging 'steady-state' universe of which Hoyle was a leading proponent. Hoyle was not available and he was assigned Dennis

**In his final volume of popular science essays, published posthumously, Hawking speaks to us about a wide range of topics, offering his passionately-held opinions on issues that go beyond the area of his professional specialisation. Asking "Is there a God?" Hawking replies: "I use the word 'God'... like Einstein did, for the laws of nature, so knowing the mind of God**

**is knowing the laws of nature ... the mind of God will be known by the end of this century."**

universe originated in a singularity some ten billion years ago. He notes that within a decade, Hawking and Penrose teamed up to further strengthen this proof as well as the one that showed that at the core of every black hole lurks a singularity. Thorne recounts his life-long friendship with Hawking and provides an overview of the pioneering contributions that Hawking made, against all odds. Thorne shared the 2017 Nobel Prize in Physics with Rainer Weiss and Barry C. Barrish for building the LIGO detector and detecting gravitational waves from colliding black holes 1.3 billion light years from Earth.

In a free-floating chapter entitled "Why we must ask the big questions" Hawking provides a capsule account of his life and career. His father encouraged him to pursue science and go to Oxford or Cambridge. His father had been to University College

Sciama as his supervisor. Einstein's general theory of relativity lay dormant for nearly half a century until Roger Penrose inaugurated a new era with the use of global techniques to prove the existence of black hole singularities, side-stepping conventional methods which proved to be notoriously barren.

The ten Big Questions addressed by Hawking in the book are as deep as they are wide. The fifth chapter asks "What is inside a black hole?" Hawking traces the concept of a black hole to the 'dark stars' hypothesised in 1783 CE by an obscure 'Cambridge man' named John Michell. (Michell is described as a polymath and cleric, "a little short Man, of a black Complexion, and fat.") Michell reasoned that the gravitational force of a star vastly more massive than the Sun would be so powerful that the velocity with which anything could escape might exceed the speed of light, making it invisible. The prediction

relied on the theory of gravitation of the "incomparable" Isaac Newton, the second occupant of the Lucasian Chair of Mathematics at Cambridge University that Hawking came to occupy as the 17th, 310 years later.

The idea of gravitational collapse was greeted with skepticism or worse, derision in 20th-century astrophysics. Cosmology evolved into a branch of theoretical physics after Albert Einstein formulated the general theory of relativity in 1915, ten years after the special theory. Applied to the universe, his equations showed that it had to expand, and to suppress the expansion he introduced the cosmological constant, which he later called his "greatest blunder". The American astronomer Edwin Hubble discovered in 1929 that the universe was indeed expanding.

Hawking publicly pronounced Hoyle wrong after a sneak peek at the manuscript of his paper with his student Jayant Narlikar. This has uncanny parallels with the spat that Arthur Eddington had with Subrahmanyan Chandrasekhar three decades earlier. Chandrasekhar proved that a star with a mass exceeding 1.4 solar masses would explode as a supernova, leaving its core to contract irreversibly to a point of infinite density i.e. a singularity. Eddington was dismissive, saying, "I think there should be a law of Nature to prevent a star from behaving in this absurd way!"

In both cases, the older men were proved wrong. Age seldom confers authority in science. The properties of black holes were studied extensively by Hawking and Penrose, Brandon Carter, James Bardeen and Bekenstein among others. Hawking noted independently that when two black holes merge, the area of the resulting black hole exceeded the sum of the areas of the two, which was eerily reminiscent of entropy. Hawking showed that the entropy was real and derived the equation relating it to the area, which is engraved on his memorial slab in Westminster Abbey.

Entropy implies temperature, which implies radiation. Hawking sought an explanation in the creation of particle-antiparticle pairs in the strong gravitational field of a black hole. One member of a pair could fall into the black hole while the other escapes as radiation. Hawking found in 1973 that this radiation is thermal, which meant that information is lost, contravening quantum theory. He proclaimed that not only did God play dice; he also threw it where nobody could look. Quantum theorists pushed back, calling it the black hole information paradox. Hawking turned to string theory for an explanation. According to string theory, elementary particles are modes of vibration of tiny one-dimensional strings whose length is 1 over a billion trillion trillion centimetre.

Asking "Is there a God?" Hawking replies: I use the word 'God'... like Einstein did, for the laws of nature, so knowing the mind of God is knowing the laws of nature... the mind of God will be known by the end of this century.

In 2001 I accepted his offer of a 50:50 bet that physics would become 'redundant' in 20 years, during our meeting with President KR Narayanan. His 2002 Dirac lecture "Gödel and the End of Physics" cites Gödel's incompleteness theorem to concede the bet with a generic argument. Sadly, I cannot ask him any more for his reconciliation. ■