



A SATIRICAL Egyptian papyrus (1196–945 BC) showing a lion and gazelle playing a board game. Such games were popular in ancient Egypt. One called 'senet' ('passing') had the most cultural and religious significance, and was often placed in tombs to provide a pastime for the deceased in the afterlife. Taken from *Reading Egyptian Art: A Hieroglyphic Guide to Ancient Egyptian Painting and Sculpture* by Richard H. Wilkinson. Newly published in paperback by Thames & Hudson, £9.95.

Sophistry and illusion

Frank J. Tipler

The Fire in the Equations: Science, Religion and the Search for God. By Kitty Ferguson. Bantam: 1994. Pp. 308. £16.99.

GOD is making an appearance in many popular science books these days. Leon Lederman, a Nobel prizewinner, called his recent book *The God Particle*, cosmologist George Smoot asserts that finding the fluctuations in the cosmic background radiation is like "seeing God" and Stephen Hawking tells us that the aim of science is knowledge of the "Mind of God".

Such statements seriously mislead the average person, who believes that scientists are finding the personal God of traditional theology. Nothing could be further from the truth. Lederman calls the Higgs boson the "God Particle" because it is the most important particle in particle physics today; Smoot means that, when contemplating the cosmic radiation, he experiences a feeling of awe analogous to that of religious believers; and Hawking's phrase is shorthand for the Theory of Everything. All three physicists — like most scientists of this century — describe themselves as agnostics or atheists. They do not believe in a Person who created the Universe.

Kitty Ferguson develops what I shall call a "sophisticated" God-of-the-Gaps theory. The old "naive" God-of-the-Gaps theory found God in the gaps in our

knowledge: the early nineteenth-century naturalists invoked God to explain the adaptation of living organisms to their environment. The sophisticated version finds the gap in the foundations of science. The most basic physical laws, Ferguson claims, are so strange and their underpinnings so shaky that invoking God as the ultimate source is no less arbitrary. She provides a fairly good overview of many of the models of fundamental reality now being discussed by physicists, but I'm afraid her knowledge of these models is too shallow to permit a deep discussion of their possible philosophical relevance. For example, in my own area of expertise she correctly points out that the singularity theorems probably mean that the Universe had an infinite density a finite proper time in the past. Her inference: the Einstein equations broke down then, and therefore something more basic underlies them. But it could also mean that the Einstein equations are predicting a new form of 'stuff' — singularities, just as real as matter. Or it could mean that proper time is an inappropriate timescale in cosmology: in York time, a standard timescale in computer simulations of general relativity, the singularities are at temporal infinity. She does not adequately address David Hume's suggestion that the Universe itself may be logically necessary. This possibility underlies the search for a Theory of Everything.

Whatever the ultimate foundation of reality, if it is to be called "God" rather

than "the Universe", this ultimate level should be "personal" in some recognizable sense. Ferguson gives no reason whatsoever for believing it is, so her book is as misleading as the statements by Lederman *et al.* She is very hard on Hume for rejecting miracles and the possibility that God may actually be present in a mystical experience. Hume contended that the overwhelming observational evidence that the dead do not rise must be given due weight against claims of having seen Jesus after his death, the central miracle of Christianity. Ferguson asserts with the English physicist-theologian John Polkinghorne that Hume was "an intransigent sceptic who would never accept any evidence contradicting his prior expectation. . . . [this] is the antithesis of being open to the truth. It is certainly uncongenial to the habits of thought of a scientist If any witness could have convinced David Hume, it would have had to be David Hume."

I regard Hume as an open-minded sceptic. He knew that the human sensory system can easily misinterpret unfamiliar stimuli. So rationally he would probably not have believed his own 'observations' of a risen dead man. Timothy Ferris has adduced that the mystical experience of God's presence — a feeling of the unity of All — is due to a malfunction of a brain program responsible for integrating the mind into a single personality. But Hume, like a scientist, would have been more open to a reported miracle if there were first some consistent physical theory for a personal God who occasionally intervenes in His creation.

For scientists to take God-talk seriously, a book on science and religion would have to contain statements such as: "If God exists, then the top quark must have a mass of 185 ± 20 GeV; if God is a Person, then the Higgs boson must have a mass of 220 ± 20 GeV; and if She will one day raise us all to live forever in Heaven, then the temperature fluctuations $\Delta T/T$ of the cosmic background radiation must be less than 6×10^{-5} ".

Don't hold your breath. In a book suggesting God may be in the equations, there should at least be one equation. I can imagine what Hume would say about this book: "If we take in our hand any volume; of divinity or school metaphysics, for instance; let us ask, *Does it contain any abstract reasoning concerning quantity or number?* No. *Does it contain any experimental reasoning concerning matter of fact and existence?* No. Commit it then to the flames: for it can contain nothing but sophistry and illusion". I cannot agree with Hume on the flames. To burn it, you would have to buy it. □

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