

believers. Louis de Broglie laid the groundwork for interpreting the quantum mechanical wavefunctions as waves on submicroscopic, cosmic electromagnetic strings.

Recent review papers in the *IEEE Transactions on Plasma Science*¹ enumerate and give references concerning locations where and times when the viewing of cosmic strings (both large and small) is good. These papers show how the 4-B's will help all pilgrims discover and understand these ubiquitous, omnivorous cosmic strings. I further suggest that the "smart money" referred to by the 2-G's might well be invested in the string-like real world of the 4-B's.

Reference

1. *IEEE Trans. Plasma Sci.* **PS-14**(6) (1986). See especially papers by W. H. Bostick, p. 703; A. L. Perratt, pp. 613, 639, 763; A. Egeland and E. Leer, p. 666; P. F. Browne, p. 718; C. G. Falthammar, p. 629; H. Alfvén, p. 629; B. E. Meierovich, p. 683; O. Buneman, p. 661.

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God as the Ultimate Unifying Force

The conflict between the causality of science and the acausality of religion raises deeper questions about the origins of our universe than those probed by the likes of Niels Bohr and Albert Einstein (John A. Wheeler's article "Niels Bohr, the Man," October 1985, page 66), Paul Ginsparg and Sheldon Glashow ("Desperately Seeking Superstrings?," May 1986, page 7) or "inflationists" such as MIT's Alan Guth. We address this sensitive debate as causal scientists, neither agnostic nor fanatically religious, but accepting the existence of God within the known physical limits of the universe. We believe that God as the ultimate unifying force is a solution as elegant as superstring theories and manmade universes.

For centuries, physicists have studied the symmetries and forces of nature and quantified their characteristics into "fundamental" laws. Bohr tenaciously implored Einstein to accept quantum theory and "stop telling God what to do," but for Einstein God only existed as a force responsible for the symmetry and homogeneity observed in nature, not one responsible for the deeds of human beings. Even Bohr's idea of reality (the quantum solution) was too limited.

It is not coincidence that the Salam-Weinberg electroweak model is

physics's only tangible evidence of modern-day attempts to unify the four forces known to nature. Attempts to incorporate the strong nuclear force and gravity into the quantum domain remain futile because the underlying theories are based on pyramidal models with so many "tunable" parameters that they are crushed under the sheer weight of mathematics. Glashow's criticism of superstring theories is justified, but not for the reasons he thinks. Superstrings will fail to yield the grand unified solution not because they attempt to incorporate gravity into quantum physics (as our colleagues from India and Manoa suggest; March 1987, page 15) or to explore these possibilities on the scale of the Planck mass, but because we simply don't have all the pieces of the puzzle yet.

Einstein's unification dream, far from being "fruitless" (as Glashow puts it), is not possible with the forces we know at present. Another force(s) may exist, unmanifested in the universe's time frame thus far. Manifestation of this missing link, which we believe is an attribute of the supernatural force theologians refer to as God, will enable physicists to incorporate Newtonian gravity into a unified field theory identifying God as the ultimate force. The evidence for our hypothesis is in the holy books today, yet scientists ignore God's hints. Why?

Science and religion must coexist. Constructing pyramids of logic that exclude God's existence is a futile attempt by humans to explain that which they cannot see. Some of our colleagues (Guth, for example) go so far as to construct in their laboratories unverifiable models of universes caused by the pinching off of overgrown aneurysms at undetermined points in time. Guth's contention that the precise density of matter and the smoothness observed in the universe today are not merely flukes of cosmology or due to a simple "toss of the dice" is correct, but God is certainly as elegant a force for causing these effects as the parent-child relationship of Guth's inflationary universes.

Whether we call the ultimate unification force God or something else is irrelevant. But incorporation of His attributes into our models and theories is an inevitability the physics community should not continue to ignore.

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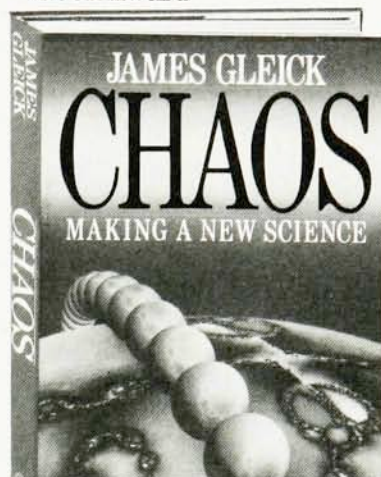
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