Front-Page Physics: Why the News From Beyond Is Beyond Us

The news from physics is not good. It seems that an X-ray satellite has detected evidence ofenormous amounts of “dark matter” in the far reaches of space, perhaps enough to stop theexpansion of the universe and cause its eventual extinction in the Big Crunch, a spectacular reversal ofour birth in the Big Bang.Some people find this news depressing because it foretells the End. Not me. After all, the expandinguniverse is no picnic either. It too ends—in a state of infinite, frozen dissipation. Given the choicebetween fire and ice, I hold with those who prefer the world to end in fire.What I find more depressing than the prospect of the End is the epistemological void illuminated bythese flashes from physics. Front-page physics is noteworthy less for the new knowledge it imparts thelayman than for the invincible ignorance in which it leaves him.What, after all, is “dark matter”? The New York Times blithely, and no doubt accurately, refers to it as“invisible material of an unknown kind.” What possibly can that mean? The fact that there might be 10times as much of this invisible stuff around as ordinary chairs and tables does not make it any more solidor comprehensible.Consider another recent piece of physics news: 315 scientists using a massive atom smasher whosedetector alone cost $65 million were unable to find the squarks and gluinos required for the theory of“supersymmetry.” Interesting news, with serious policy implications—Congress is planning to spend$8.2 billion on an even stronger squark-hunting gizmo in Texas. But what does it mean? Supersymmetry—a way to unify theories of electromagnetism, the weak and strong nuclear forces—is even moreopaque a notion than dark matter, which at least has some analogue in magic.Why is physics so difficult? The reason is that at its heart is math of astonishing complexity. Oneeither devotes a lifetime to penetrating the math—two winters ago I worked my way through a 700-page calculus text in preparation for an assault on Everest, before capitulating in exhaustion at BaseCamp 1—or one tries the shortcut of metaphor.Problem is, metaphor doesn’t work. Stephen Hawking’s best-selling A Brief History of Time is allmetaphor and, as anyone who has read it can tell you (I read it twice), entirely incomprehensible. Arecently done film version of the book is engaging but even less illuminating.Or take James Gleick’s wonderful new biography of the great physicist Richard Feynman. Gleick,perhaps the country’s finest science writer, is a master of metaphor. (My favorite: batches of cards in aprimitive computing system passing each other “like impatient golfers playing through.”) He illuminatesfor us the life of a man who for amusement picked the locks of his co-workers’ safes while working onthe atomic bomb at Los Alamos. But what is there to understand about Feynman’s theory of quantum

electrodynamics, which won him the Nobel Prize in 1965? When asked by newsmen about hisdiscovery, Feynman was tempted to say: “Listen, buddy, if I could tell you in a minute what I did, itwouldn’t be worth the Nobel Prize.” In fact, even Gleick cannot really tell you in a book.Why is any of this important? For reasons of policy, obviously—$8 billion is real money. But evenmore for reasons of theology. In the age of science, physics is a form of revelation. For Einstein it wasthe purest form: God’s rulebook. Einstein saw in the order and the beauty of the universe evidence of abenign Intelligence. Other physicists have been driven to contrary conclusions. It was said of the greatphysicist and atheist Paul Dirac, “There is no God, and Dirac is His prophet.” It would be nice forordinary mortals to be able to mediate between these views, or even to understand them. But theyremain impenetrable to laymen.The layman’s only comfort is that just as he cannot penetrate physics, physics cannot penetratetheology. “It seems as though science will never be able to raise the curtain on the mystery of creation,”writes astronomer Robert Jastrow at the close of his book God and the Astronomers. “For the scientist...the story ends like a bad dream. He has scaled the mountains of ignorance; he is about to conquer thehighest peak; as he pulls himself over the final rock, he is greeted by a band of theologians who havebeen sitting there for centuries.”Jastrow is a scientist with, one might say, a layman’s appreciation of the mystery of physics, its deepermeaning being as hidden from the physicist as the underlying equations are from the layman. He puts hishopes in a current NASA experiment listening for signs of sentient life in the universe. He calculatesthat any intelligence capable of signaling us must be millions, perhaps billions of years more advancedthan us. Enough time, Jastrow reckons, to have worked out, for the sharing, the theological conundrumsthat bedevil us.So he proposes his own shortcut to true knowledge: Check the mail. Got a better idea?

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