“Beware of geeks bearing formulas.” So saith Warren Buffett, the Wizard of Omaha. Words to bear in mind as we bail out banks and buy up mortgages and tweak interest rates and nothing, nothing seems to make any difference on Wall Street or Main Street. Years ago, Mr. Buffett called derivatives “weapons of financial mass destruction” — an apt metaphor considering that the Manhattan Project’s math and physics geeks bearing formulas brought us the original weapon of mass destruction, at Trinity in New Mexico on July 16, 1945.

In a 1981 documentary called “The Day After Trinity,” Freeman Dyson, a reigning gray eminence of math and theoretical physics, as well as an ardent proponent of nuclear disarmament, described the seductive power that brought us the ability to create atomic energy out of nothing. “I have felt it myself,” he warned. “The glitter of nuclear weapons. It is irresistible if you come to them as a scientist. To feel it’s there in your hands, to release this energy that fuels the stars, to let it do your bidding. To perform these miracles, to lift a million tons of rock into the sky. It is something that gives people an illusion of illimitable power, and it is, in some ways, responsible for all our troubles — this, what you might call technical arrogance, that overcomes people when they see what they can do with their minds.”

The Wall Street geeks, the quantitative analysts (“quants”) and masters of “algo trading” probably felt the same irresistible lure of “illimitable power” when they discovered “evolutionary algorithms” that allowed them to create vast empires of wealth by deriving the dependence structures of portfolio credit derivatives.

What does that mean? You’ll never know. Over and over again, financial experts and wonkish talking heads endeavor to explain these mysterious, “toxic” financial instruments to us lay folk. Over and over, they ignobly fail, because we all know that no one understands credit default obligations and derivatives, except perhaps Mr. Buffett and the computers who created them.

Somehow the genius quants — the best and brightest geeks Wall Street firms could buy — fed $1 trillion in subprime mortgage debt into their supercomputers, added some derivatives, massaged the arrangements with computer algorithms and — poof! — created $62 trillion in imaginary wealth. It’s not much of a stretch to imagine that all of that imaginary wealth is locked up somewhere inside the computers, and that we humans, led by the silverback males of the financial world, Ben Bernanke and Henry Paulson, are frantically beseeching the monolith for answers. Or maybe we are lost in space, with Dave the astronaut pleading, “Open the bank vault doors, Hal.”

As the current financial crisis spreads (like a computer virus) on the earth’s nervous system (the Internet), it’s worth asking if we have somehow managed to colossally outsmart ourselves using computers. After all, the Wall Street titans loved swaps and derivatives because they were totally unregulated by humans. That left nobody but
the machines in charge.

How fitting then, that almost 30 years after Freeman Dyson described the almost unspeakable urges of the nuclear geeks creating illimitable energy out of equations, his son, George Dyson, has written an essay (published at Edge.org) warning about a different strain of technical arrogance that has brought the entire planet to the brink of financial destruction. George Dyson is an historian of technology and the author of “Darwin Among the Machines,” a book that warned us a decade ago that it was only a matter of time before technology out-evolves us and takes over.

His new essay — “Economic Dis-Equilibrium: Can You Have Your House and Spend It Too?” — begins with a history of “stock,” originally a stick of hazel, willow or alder wood, inscribed with notches indicating monetary amounts and dates. When funds were transferred, the stick was split into identical halves — with one side going to the depositor and the other to the party safeguarding the money — and represented proof positive that gold had been deposited somewhere to back it up. That was good enough for 600 years, until we decided that we needed more speed and efficiency.

Making money, it seems, is all about the velocity of moving it around, so that it can exist in Hong Kong one moment and Wall Street a split second later. “The unlimited replication of information is generally a public good,” George Dyson writes. “The problem starts, as the current crisis demonstrates, when unregulated replication is applied to money itself. Highly complex computer-generated financial instruments (known as derivatives) are being produced, not from natural factors of production or other goods, but purely from other financial instruments.”

It was easy enough for us humans to understand a stick or a dollar bill when it was backed by something tangible somewhere, but only computers can understand and derive a correlation structure from observed collateralized debt obligation tranche spreads. Which leads us to the next question: Just how much of the world’s financial stability now lies in the “hands” of computerized trading algorithms?

Here’s a frightening party trick that I learned from the futurist Ray Kurzweil. Read this excerpt and then I’ll tell you who wrote it:

But we are suggesting neither that the human race would voluntarily turn power over to the machines nor that the machines would willfully seize power. What we do suggest is that the human race might easily permit itself to drift into a position of such dependence on the machines that it would have no practical choice but to accept all of the machines’ decisions. ... Eventually a stage may be reached at which the decisions necessary to keep the system running will be so complex that human beings will be incapable of making them intelligently. At that stage the machines will be in effective control. People won’t be able to just turn the machines off, because they will be so dependent on them that turning them off would amount to suicide.

Brace yourself. It comes from the Unabomber’s manifesto.

Yes, Theodore Kaczynski was a homicidal psychopath and a paranoid kook, but he was also a bloodhound when it came to scenting all of the horrors technology holds in store for us. Hence his mission to kill technologists before machines commenced what he believed would be their inevitable reign of terror.
We are living, we have long been told, in the Information Age. Yet now we are faced with the sickening suspicion that technology has run ahead of us. Man is a fire-stealing animal, and we can’t help building machines and machine intelligences, even if, from time to time, we use them not only to outsmart ourselves but to bring us right up to the doorstep of Doom.

We are still fearful, superstitious and all-too-human creatures. At times, we forget the magnitude of the havoc we can wreak by off-loading our minds onto super-intelligent machines, that is, until they run away from us, like mad sorcerers’ apprentices, and drag us up to the precipice for a look down into the abyss.

As the financial experts all over the world use machines to unwind Gordian knots of financial arrangements so complex that only machines can make — “derive” — and trade them, we have to wonder: Are we living in a bad sci-fi movie? Is the Matrix made of credit default swaps?

When Treasury Secretary Paulson (looking very much like a frightened primate) came to Congress seeking an emergency loan, Senator Jon Tester of Montana, a Democrat still living on his family homestead, asked him: “I’m a dirt farmer. Why do we have one week to determine that $700 billion has to be appropriated or this country’s financial system goes down the pipes?”

“Well, sir,” Mr. Paulson could well have responded, “the computers have demanded it.”

Richard Dooling is the author of “Rapture for the Geeks: When A.I. Outsmarts I.Q.”