

with the chief evidence of her feeble-mindedness coming from schoolteachers who had taught not her but her relatives.

He puts an even more personal face on sterilization with an extended visit to Lucille, a 78-year-old Colorado woman who, declared legally insane after a troubled childhood, had been sterilized with her parents' consent. The loss of her reproductive capacity haunted her for half a century, further complicating the depression and other mental troubles that compromised her life. In a painstaking picture of this desolate soul, Bruinius tells us that Lucille, who refused to discuss the subject of children with him, spends her final days in a nursing home watching *Perry Mason* reruns.

The portrayal of these two women may be Bruinius's chief contribution to the history of eugenics. By showing that real people's lives were changed irrevocably by the movement, he provides, by implication, a persuasive argument against forging ahead with efforts to genetically enhance the next generation. Promises of collective benefit to all humankind are all very well, but they don't mean much if individuals are left worse off than they began.

—*Shari Rudavsky*

The Cosmic Computer

SOME 14 BILLION YEARS ago, just after the Big Bang, the universe was a strange but fundamentally simple place, a hot dense blob of stuff teeming with elementary particles. So how did we get from there to here? How did that mostly featureless goo evolve into the universe we find today, with its galaxies and stars, planets and rocks, oceans and weather, bacteria, beetles, and, of course, our own estimable selves?

Seth Lloyd, a professor of mechanical engineering at MIT, would like us to think he has the answer, or at least the beginnings of one. Lloyd does not build bridges or design power stations. His interest is in computing, specifically the novel discipline of

quantum computing. A conventional computer operates on classical bits—the familiar ones and zeroes of binary arithmetic. The “qubits” of a quantum computer, by contrast, can exist in several states at once—superpositions, to use the official word—that resolve into particular outcomes only when some suitable measurement is made. What this means in principle, as Lloyd explains, is that a quantum computer—if it can ever be made to work—is just the thing for doing massively parallel calculations, where you want to perform the same operations on lots of data at once.

Lloyd's cosmic ambitions hinge on two points. First, in a precise sense, the whole universe *is* a quantum computer. That is, it's a physical system running according to the rules of quantum mechanics and generating an observable outcome. Second, the complexity of the universe today, as contrasted with its simpler origins, can be thought of as an increase in information content. You need more data to describe a motley collection of stars and planets and animals than you do to describe a uniform blob of hot particles.

Connecting these two points is the marvelous fact that a quantum computer can actually generate information. Because quantum events are only partially predictable, and can lead to a range of possible outcomes, a quantum system can grow in information content as it evolves. By thinking in these terms, Lloyd asserts, we can get a handle on how the universe came into its present state.

Lloyd's writing is engaging but not always easy. Following his explanations is sometimes like trying to solve horrible chess problems in one's head. Still, the general idea comes across.

Yet I read this book with mounting skepticism. Is Lloyd offering an explanation of the universe, or merely a new description? In the 19th century, at the peak of the industrial age, it was commonplace to regard the world as a giant machine. Now, in the information age, the universe has apparently become a giant computer. Lloyd's argument is that describing the universe in terms of quantum computations provides a new way to tackle pressing theoretical problems in physics.

**PROGRAMMING
THE UNIVERSE:**
A Quantum
Computer Scientist
Takes On
the Cosmos.

By Seth Lloyd.
Knopf, 221 pp. \$25.95

But a chicken-and-egg question arises: Can the informational approach lead to new physics, or do we need to understand the physics in order to work out the evolution of information? On this crucial point, Lloyd's eager presentation falls short. It's nice to know, in a broad sense, that the growing complexity of our cosmic habitat does not contravene any basic laws. But what we really want to know, surely, is not just how any old complex universe came into being, but how this particular universe and our cozy planet, with its odd collection of life forms, came to pass.

—David Lindley

CONTEMPORARY AFFAIRS

Iran's Authentic Voices

FOR SHIA MUSLIMS IN IRAN who oppose the theocratic repression of the last 25 years, one of the holiest statements ever uttered was that of Hossein, grandson of the Prophet Muhammad, when

WE ARE IRAN:
The Persian Blogs.

*Edited and translated
by Nasrin Alavi.*
Soft Skull Press.
336 pp. \$15.95

he refused to submit to the corrupt Islamic tyrant Yazid in AD 680. "The most honorable jihad," he declared, "is a just word spoken to an unjust ruler."

It's probably coincidence, but Hossein is also the name of the journalist who taught Iran to blog. In 2001, a recent immigrant to Canada named Hossein Derakhshan was moved by the attacks of 9/11 to launch a weblog in Farsi. Then, writes Nasrin Alavi, the editor of this remarkable book, Derakhshan "created a simple how-to-blog guide in Farsi. With the modest aim of giving other Iranians a voice, he set free an entire community." By 2004, the number of Persian-language blogs was 64,000 and counting.

Published by the Brooklyn-based Soft Skull Press, the publishing equivalent of an alternative record label, this is a new kind of book: half guidebook to contemporary Iran, half greatest hits from a remarkable flowering of free speech in a country described by Reporters Sans Frontières as "the biggest prison for journalists in the Middle East." Alavi (the pseudonym of an Iranian writer and academic who now lives in the United Kingdom) innovates with exceptional clarity and taste. Banish all thought of blogging as self-indulgent verbiage. Her selections range from the boldly polemic to the beautifully poetic. Here are some examples:

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