

I Never Saw a Black Hole, (And Never Hope to See One)

by Hilton Ratcliffe

**The Black Hole War: My Battle with
Stephen Hawking to Make the World Safe
for Quantum Mechanics**

by Leonard Susskind

New York: Little, Brown, 2008

Hardcover, 480 pp., \$27.99

Perhaps I'm not the best person to review Prof. Susskind's book. I'm far too inclined, prior to reading it, to sing its praises, for this style of writing—science lite, with soul—is right up my street. It is a tale of human conflict, told from the inside out, and promises to be compelling drama.

As I looked at the cover of *The Black Hole War*, I recalled the tense human interactions of *Interstellar Matters*, Gerrit Verschuur's magnificent revelation of the discovery by pioneer astro-photographer E.E. Barnard of substantial contents in the so-called dark voids in the Milky Way. Dark voids, Black Holes, what's the difference? Immense! And Prof. Susskind should be just the right person to answer my question. The subtitle, "My battle with Stephen Hawking to make the world safer for Quantum Mechanics," was already enough to get my slaving attention. Someone publicly admits to battling with Stephen Hawking, icon of theoretical physics elite? Tell me more!

Susskind and his co-conspirators met at the lavish soirées of Werner Erhard in San Francisco in the 1970s, and it was there that Hawking dropped his bombshell: Information falling into a Black Hole would be irretrievably lost. Not only that, but emerging trickle-radiation, with simultaneous fluctuation of countless mini Black Holes saturating the cosmos, would generate rampant entropy, and along with it, unbridled heat.

Space would in seconds become a tril-

lion-degree cauldron of chaos.

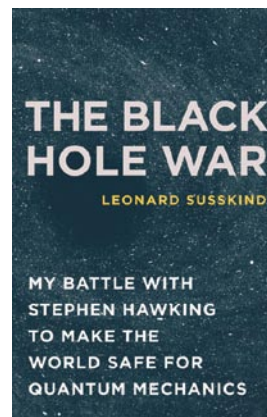
It takes a certain type of scientist to get excited by such a claim. No doubt Professor Hawking was excited, Gerard 't Hooft was excited, and, of course, Leonard Susskind was so excited that he felt compelled to write a book about it. Let me be frank: Even if I had been privy to that meeting of minds, I doubt I would have been excited. Talk of the behavior of Black Holes has always bored me to tears, and whether or not they regurgitate their breakfast is of no concern to me at all. It is all just imagined in brilliant minds, and is obviously not happening in reality. Who cares?

A Compelling Tale

Nevertheless, Susskind's tale is compelling, for it takes us into that esoteric, etherial world of quantum theory and mathematical conjecture, where insulated minds are somehow convinced that their predictions have been seen and measured, and we are able to glimpse the stupefying intellectual altitude of Hawking, 't Hooft, Gell-Mann, Finklestein, and Feynman. We get to know the human foibles of a cloistered clique, and it is fascinating!

Susskind calls Hawking the Evel Knievel of physics, and we learn, to our horror, that the tragically afflicted mathematician once emulated Steve McQueen's crazy dash down San Francisco's roller-coaster hillside—in his electric wheelchair! It is these sporadic emotive threads that let the book live and breathe for me, while I am left feeling thoroughly disappointed by the science.

I read on with bated breath, anxious to discover just where Susskind stood on the whole matter of Black Holes in physical reality. When it came, I felt deflated. "But whether Einstein liked them or not, black holes are real," Susskind tells us, "Astronomers routinely study them, not only in



the form of single collapsed stars, but also in the centers of galaxies."

Really? I've been an astronomer for over 30 years, have stared intently at many collapsed stars and galaxy nuclei through the eyes of our greatest observatories, and truly, I have never once seen a Black Hole or anything remotely like it. Nor have my colleagues, numbering hundreds, perhaps thousands, worldwide.

When I saw the cover blurb about the author's battle with Stephen Hawking, I warmed in anticipation of a take-no-prisoners debate between intellectual giants, our heroes, which might just lead to a conclusion about the reality of Black Holes. Instead, we have the analogue of a head-to-head conflict on flying saucers that turns out to be a petty argument about whether they are better painted pink or purple.

I really don't care to contest the Black Hole hypothesis, and once I stopped trying, I honestly enjoyed this book. One thing is clear: Leonard Susskind, on the strength of the present work, is a very good teacher. As a Relativity 101 course, *The Black Hole War* is one of the best I've read, better even than Einstein's own introductory texts. For the layman wanting to get into relativistic physics and quantum science from the ground up, this is the book to get.

If, however, like me (and Susskind, apparently), you are not a fan of Minkowski-Lorentz-Poincaré-Einstein relativity, and dislike irrational science (unlike Susskind, a quantum mechanician), then it will be

less useful. You pay your money and you take your choice.

Faith-based Beliefs

So, read this book on the clear understanding that in *The Black Hole War*, the subject is an axiom in the theoretical assumptions of the author. If you have a problem with that, as I do, you will continuously hear discords in Susskind's symphony, false notes in the harmony of

spheres. Despite that, I read the book with relish, finishing it in a couple of days, and I ended up enriched by the experience.

I don't have to agree to respect a viewpoint. My point is, when you make a foundational assumption (in this case, that Black Holes do exist, in the form suggested), don't forget that whatever you derive from that downstream, it is all based upon a prior choice between op-

tions. It seems we are attributing far too much scientific truth to our faith-based beliefs. No matter; *The Black Hole War* is a good popular-science read, and I recommend it.

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Peering at the Edges of a Unified Concept of the Earth

by Ryan Milton

Earth: The Biography

Washington, D.C.: National Geographic Society, 2008DVD of 5-episode miniseries, 230 min., \$29.95 (Available at http://shopngvideos.com/products/earth_the_biology_2)

It is in human nature to want to know why we are on Earth and what processes led to our being here. This internal drive also implies that human beings choose to progress beyond our current existence. That is the nature of discovery. When I was in high school, National Geographic was where research often began for preparing "authoritative science projects," and therefore I was eager to again be enlightened with National Geographic's new miniseries, *Earth: The Biography*. But upon reviewing this series, it became clear that the producers did not want their viewers to develop a better scientific understanding; instead, they wanted to create an emotional, unscientific, antihuman ideology.

This miniseries covers five areas of nature: the atmosphere, the oceans, ice, volcanoes, and something they call "the rare Earth." Over millennia, these natural forces shape and mold the surface of the Earth, "drive the climate," distribute and create all the greenhouse gases, and are intertwined as natural forces to protect life and regulate the environment on a local as well as a global scale. For as long as the geological history can show, massive changes have occurred, frequently in the form of natural disasters: a great meteor that killed all the dinosaurs, or huge vol-



canic eruptions that burned up Earth's forests, or oceans that dried up and wiped out the animal life. Nonetheless, as shown, the vibrant Earth has been able to recreate all the ecosystems and even new species of complex life.

Many questions remain to this day about the beginning of the Earth and the

development of life. This series presents a weak version of Johannes Kepler's harmonic orientation of the Solar System, where the relationship of each planet to the Sun and to each of the other planets defines the basis for our unique Earth. Unfortunately, National Geographic's scientists produced no unifying idea of planetary beginning and the unfolding of the three phase spaces of life, the abiotic, the biotic, and the noetic, as Russian biogeophysicist Vladimir Vernadsky showed as one elegant gestalt.

Fascinating Examples

Although lacking that higher scientific idea, *Earth: The Biography* does peer at



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Fissures in the ground through a port hole in the Afar region of Ethiopia.