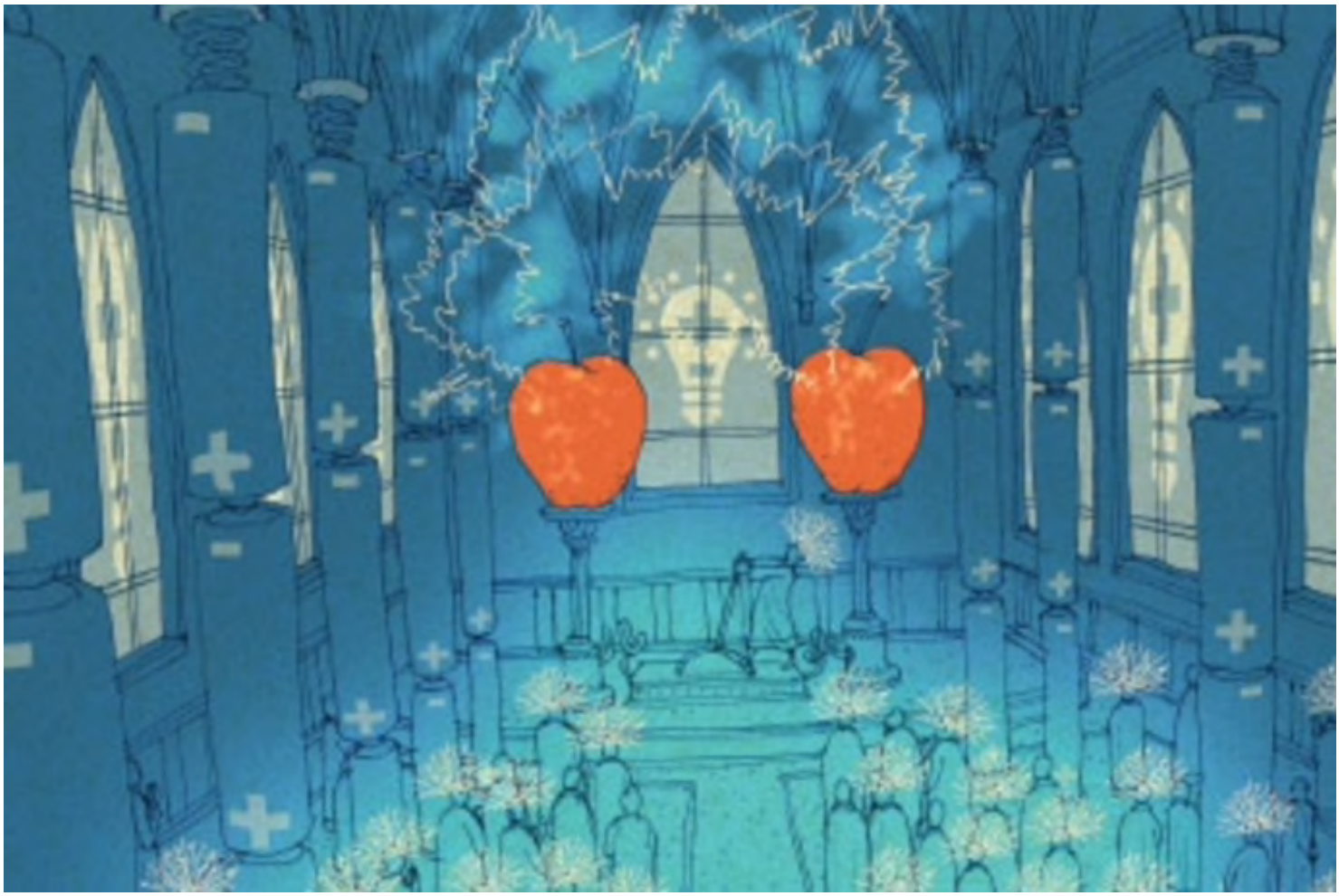
THE SCIENCES

The Difference between Science and Pseudoscience

Discerning science from pseudoscience

By Michael Shermer on October 1, 2015



Credit: Izhar Cohen

Newton was wrong. Einstein was wrong. Black holes do not exist. The big bang never happened. Dark energy and dark matter are unsubstantiated conjectures. Stars are electrically charged plasma masses. Venus was once a comet. The massive Valles Marineris canyon on Mars was carved out in a few minutes by a giant electric arc sweeping across the Red Planet. The “thunderbolt” icons found in ancient art and petroglyphs are not the iconography of imagined gods but realistic representations of spectacular electrical activity in space.

These are just a few of the things I learned at the Electric Universe conference (EU2015) in June in Phoenix. The Electric Universe community is a loose confederation of people who, according to the host organization's Web site (thunderbolts.info), believe that “a new way of seeing the physical universe is emerging. The new vantage point emphasizes the role of electricity in space and shows the negligible contribution of gravity in cosmic events.” This includes everything from comets, moons and planets to stars, galaxies and galactic clusters.

I was invited to speak on the difference between science and pseudoscience. The most common theme I gleaned from the conference is that one should be skeptical of all things mainstream: cosmology, physics, history, psychology and even government (I was told that World Trade Center Building 7 was brought down by controlled demolition on 9/11 and that “chemtrails”—the contrails in the sky trailing jets—are evidence of a government climate-engineering experiment).

The acid test of a scientific claim, I explained, is prediction and falsification. My friends at the nasa Jet Propulsion Laboratory, for example, tell me they use both Newtonian mechanics and Einstein's relativity theory in computing highly accurate spacecraft trajectories to the planets. If Newton and Einstein are wrong, I inquired of EU proponent Wallace Thornhill, can you generate spacecraft flight paths that are more accurate than those based on gravitational theory? No, he replied. GPS satellites in orbit around Earth are also dependent on relativity theory, so I asked the conference host David Talbott if EU theory offers anything like the practical applications that theoretical physics has given us. No. Then what does EU theory add? A deeper understanding of nature, I was told. Oh.

Conventional psychology was challenged by Gary Schwartz of the University of Arizona, who, in keeping with the electrical themes of the day, explained that the brain is like a television set and consciousness is like the signals coming into the brain. You need a brain to be conscious, but consciousness exists elsewhere. But TV studios generate and broadcast signals. Where, I inquired, is the consciousness equivalent to such production facilities? No answer.

A self-taught mathematician named Stephen Crothers riffled through dozens of PowerPoint slides chockablock full of equations related to Einstein's general theory of relativity, which he characterized as “numerology.” Einstein's errors, Crothers proclaimed, led to the mistaken belief in black holes and the big bang. I understood none of what he was saying, but I am confident he's wrong by the fact that for a century thousands of physicists have challenged Einstein, and still he

stands as *Time*'s Person of the Century. It's not impossible that they are all wrong and that this part-time amateur scientist sleuth is right, but it is about as likely as the number of digits after the decimal place in Einstein's equations accurately describing the relativistic effects on those GPS satellite orbits.

The EU folks I met were unfailingly polite, unquestionably smart and steadfastly unwavering in their belief that they have made one of the most important discoveries in the history of science. Have they? Probably not. The problem was articulated in a comment Thornhill made when I asked for their peer-reviewed papers: “In an interdisciplinary science like the Electric Universe, you could say we have no peers, so peer review is not available.” Without peer review or the requisite training in each discipline, how are we to know the difference between mainstream and alternative theories, of which there are many?

In his book *The Electric Kool-Aid Acid Test*, Tom Wolfe quotes Merry Prankster Ken Kesey: “You're either on the bus or off the bus.” It's not that EUers are wrong; they're not even on the bus.

SCIENTIFIC AMERICAN AND HENRY HOLT ARE AFFILIATES

This article was originally published with the title "The Electric Universe Acid Test"

ABOUT THE AUTHOR(S)

Michael Shermer

Michael Shermer is publisher of *Skeptic* magazine (www.skeptic.com). His book *The Moral Arc* (Henry Holt, 2015) is out in paperback.

Credit: Nick Higgins

Recent Articles

Artificial Intelligence Is Not a Threat--Yet

Why Humans Prefer to Be the Center of the Universe

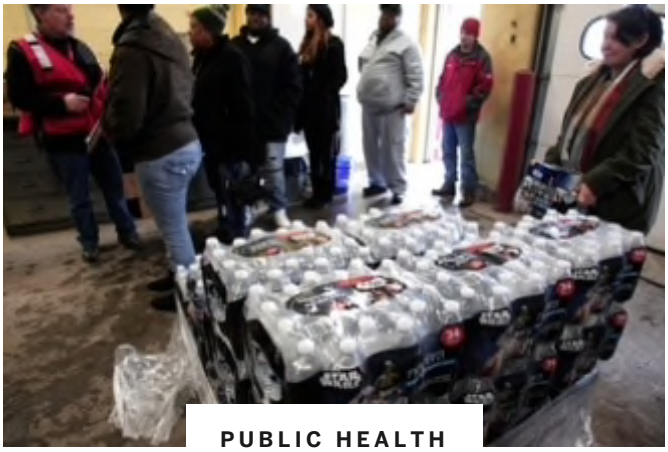
How to Convince Someone When Facts Fail

LATEST NEWS

BEHAVIOR & SOCIETY

Accidental Therapists: For Insect Detectives, the Trickiest Cases Involve Bugs That Are Not There

0 minute ago — Kayana Szymczak and STAT



PUBLIC HEALTH

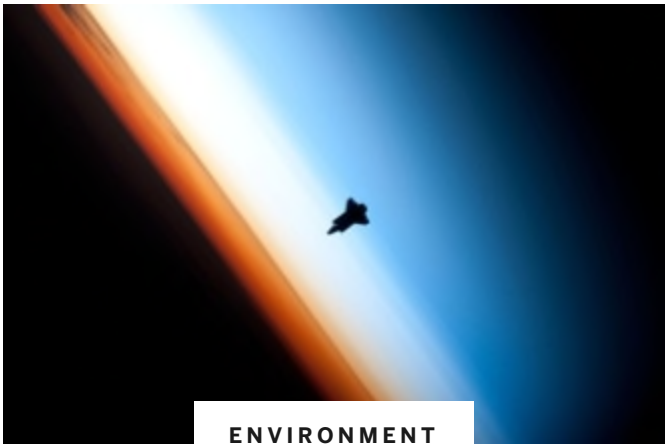
Lead Poisoning Afflicts Neighborhoods Across California

15 minutes ago

SPACE

No Hidden Figures

0 minute ago — Emily V. Driscoll



ENVIRONMENT

Why Is the Ozone Hole Shrinking?

March 22, 2017 — Everyday Einstein Sabrina Stierwalt

BEHAVIOR & SOCIETY

Good Relationships Are All in the Family

2 hours ago — Catherine Caruso

CLIMATE

This Ground-breaking Museum is Already Under Water

2 hours ago — Kalliopi Monoyios