

THE DREAMS OF WHICH STUFF IS MADE

By James A. Haught

(Free Inquiry magazine - Dec-Jan, 2014-15)

The European Southern Observatory - a 15-nation consortium that operates telescopes in Chile - recently released a photo of two galaxies colliding. Here's the stunner: It happened 7 billion years ago, when the universe was younger, but it took 7 billion years for fast-traveling light to reach Planet Earth just now. To look at the image today is looking backward in time through incredible eons.

If you follow science, you may get an eerie sense that daily reality - people, houses, cars, trees, air, earth and all the rest - is just a shred amid a hugely greater array of existence. Philosopher-engineer R. Buckminster Fuller put it this way:

"Up to the 20th century, 'reality' was everything humans could touch, smell, see and hear. Since the initial publication of the chart of the electromagnetic spectrum, humans have learned that what they can touch, smell, see and hear is less than one-millionth of reality."

Here are some random examples:

Each cell of your body (except red blood cells) has about six feet of DNA tightly coiled into 46 chromosomes in its nucleus. Since the human body has an estimated 37 trillion cells, each person contains perhaps 30 billion miles of DNA.

When you sit perfectly "still," you're traveling vastly faster than a bullet - 1,000 miles per hour with Earth's rotation (at the equator), 67,000 mph with the planet's orbit around the sun, 486,000 mph with the solar system's whirl around the Milky Way galaxy, and an estimated 1.3 million mph with the galaxy's travel through the universe. A bullet goes about 3,000 mph.

When electrons come loose from atoms, they can make spectacular lightning or the current flow driving the entire modern electrical age. In most atoms, electrons are placid because they're paired in couples of opposite "spin" (which doesn't mean whirling). But iron atoms have a few electrons that aren't paired, making each atom a magnet. When all the atoms in a piece of iron become aligned, it creates a magnet powerful enough to make maglev (magnetic levitation) trains hover above rails. The spin of electrons is more powerful than gravity.

Einstein's relativity is fully accepted today. But ask yourself: Can time really slow down and dimensions shorten as speed increases?

Einstein's famed $E=MC^2$ equation showed that matter and energy are interchangeable. Less matter than a dime turned into energy at Hiroshima in 1945.

Nobody really knows what subatomic particles are. Sometimes they're objects; sometimes they're waves. They seemingly exist in several places at once. They're "the dreams of which stuff is made," one physicist said. Some "virtual particles" appear and vanish in pure vacuum.

Physicists Paul Davies and John Gribbin wrote a book titled *The Matter Myth*, which contends that "materialism is dead." Quote:

"Quantum physics undermines materialism because it reveals that matter has far less substance than we might believe.... An extension of quantum theory, known as quantum field theory... paints a picture in which solid matter dissolves away, to be replaced by weird excitations and vibrations of invisible field energy. In this theory, little distinction remains between material substance and apparently empty space, which itself seethes with ephemeral quantum activity."

Here's a grabber: Nearly all the weight, or mass, of matter comes from protons and neutrons, which are composed of three quarks each. Yet the masses of three quarks add up to just one percent of the mass of a proton or neutron. *NewScientist* says theorists think that actions of the strong nuclear force, which binds quarks together, creates 99 percent of the mass.

Atoms are as empty as the night sky. If one were as big as a cathedral, its nucleus would be the size of a grain of salt. Yet these voids form solid-seeming matter, because their negative outer electrons repel each other.

When emptiness is squeezed from atoms -- when intense gravity compresses a collapsing star into a pulsar, a solid mass of neutrons -- the substance weighs 10 million tons per thimbleful. Astounding.

To show the mysteries of existence, California Unitarian minister Ted Webb cited statistics like these:

"Your body and mine make 300 million new cells every minute."

"The information in the DNA molecule in every cell would fill a thousand 600-page books."

What conclusion can be drawn from all this? Here's mine: Science shows that reality is amazing, baffling, incredible, bizarre, seemingly miraculous. I can't imagine why anyone would need supernatural gods, devils, heavens and hells of religion - purely fictitious, as far as any honest observer can learn - when science reveals greater enigmas.

(Haught is editor emeritus of West Virginia's largest newspaper, *The Charleston Gazette-Mail*. He can be reached by phone at 304-348-5199 or e-mail at haught@wvgazette.com.)