

POWER OF THE SUN

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“The Cup dipped into the Sun. It scooped up a bit of the flesh of God, the blood of the universe, the blazing thought,

—RAY BRADBURY,
The Golden Apples of the Sun

Astronomers claim to know why the Sun shines. There would be some implosion of credibility, research grants, etc. if doubt were cast upon this. At this time of this writing (March 2014), the yearly conference of the Electric Universe people is taking place in New Mexico, and they are posing such a challenge: an alternative discourse over what makes the Sun shine.

Neutrinos found

Astronomers generally feel that they can now say what makes the Sun shine, because they have at last been able to detect the required “neutrinos” emanating from the center of the Sun.¹ That clinches it, in their view. They will now cheerfully say that *trillions* of neutrinos pass through you every second, but we don’t notice because they have no effect. But do we really want to believe this? Have the axioms gone wrong somehow?

The now-found neutrinos have no mass (or very little) and no charge and travel only at the speed of light—and while traveling from Sun to Earth they *change into different forms*, as they have three different forms into which they can metamorphose. Is that the only evidence for solar fusion? Yes, that is the only evidence for solar fusion. It is hard to avoid the feeling that this is a rather tortured bit of logic, held together by an unduly long chain of assumptions.

1 Frank Close, *Neutrino*, p.165.

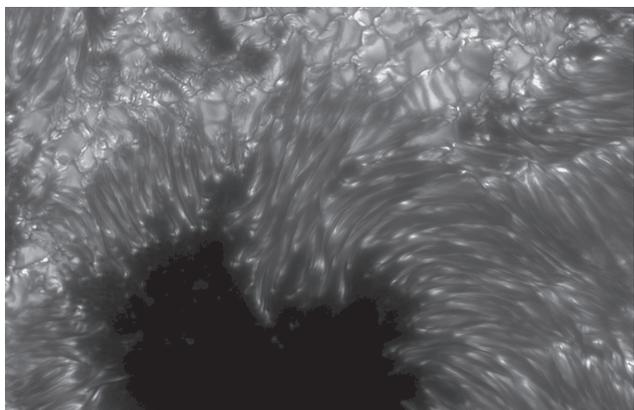
We here recall Lord Rutherford’s worthy axiom, that any scientific theory worth its salt should be explicable to a barmaid, although barmaids may not have such leisure time these days. As a science historian I’d say that there is a perceived distrust over the unreality of this new model.

Just about nothing on the surface of the Sun looks remotely as if produced by thermonuclear fire at the core. Indeed, none of the observed features of the Sun—the corona, chromosphere, spicules, granulation, sunspots, solar flares, and so on—*have any business being there* on the accepted model. All of the stupendous drama we see on the Sun’s surface *looks* electrical-magnetic in nature, as if the electrical turmoil of the solar surface is the source of the light with which the Sun shines. Is not the photosphere a brilliant electrical discharge phenomenon? Sunspots are dark instead of bright, which is *prima facie* evidence that heat is *not* trying to escape from within.

For half a century physicists have been trying to produce stable fusion power—the much-touted “Holy Grail” of free energy for a future civilization—and have got absolutely nowhere. They have always used its alleged occurrence inside the Sun to justify their research grants. The one and only thing that really has been shown about thermonuclear power is that it goes bang rather quickly.

If I may bring in a bit of science here, the rate of a thermonuclear reaction varies as the fourth power of temperature. The reaction generates heat, then the resulting increase in temperature very sharply increases the reaction rate: which is why the thing always tends to go bang!

Looking up at the serenity of the night sky, do you want to believe the stars are burning from



Close-up of a sunspot; image from the La Palma Telescope, Canary Islands, Royal Swedish Academy of Sciences, 2002.

such fusion power, as Hans Bethe averred? Yes, Fred Hoyle wrote the equations, from hydrogen to helium to beryllium; that's as far as it supposedly goes inside the Sun. To explain all the other elements in the Sun as shown by its spectrum, one has to suppose that much bigger stars earlier existed, producing all the heavier elements by fusion, which then blew up and from which our solar system condensed...

The “Electric Universe” Model

The “Electric Universe” people recently lost their Wikipedia entry, around the time of their 2013 Arizona conference, optimistically entitled “The Tipping Point.” Advocates of the Electric Universe model suggest that these magnetic-electrical phenomena on the surface do *not* come from deep inside the Sun—and are what makes the Sun shine. To quote Wal Thornhill at that conference, concerning the image of a sunspot shown here: “Does this sunspot look like turbulent boiling-hot gas?”² He added that there is “virtually no convection detectable on the Sun.”³

2 Wal Thornhill, *The Tipping Point*—Electric Universe Conference (Albuquerque, NM, Jan. 3–6, 2013). See video of his talk: <https://www.youtube.com/watch?v=HgdJcghkri4>, “From Cosmic Currents to the Electric Sun” (28 minutes into his talk). See <https://www.youtube.com/watch?v=yvXoCIikN1c> for a “Time-lapse sunspot” for motion of the filament lights *into* the sunspot.

3 Thornhill alluded to a recent article: Shravan M. Hanasoge, “Anomalously weak solar convection,” *Proceedings of the National Academy of Sciences*

The matter of the Sun is non-atomic; it is in “plasma” form. Does galactic energy light up stars, by currents of electrical plasma? The Electric Universe people have been focusing on this non-atomic condition of matter as comprising 99.9% of the universe. The two classic books on the subject I recommend are *The Electric Universe* by Thornhill and Talbot and *The Electric Sky* by Donald Scott. Both have chapters about the Sun, contesting the notion that it is powered by nuclear fusion, whereas its current website www.electricuniverse.info/Electric_Sun_theory only has this down as a “speculative theory”!

This implosion of confidence has (I suggest) derived from the apparent resolution of the solar-neutrino dilemma over the last decade. Can the whole “Electric Universe” story thereby be cast as a pseudo-science that temporarily appeared, during the decades while this missing-neutrino dilemma flourished? I suggest not.

The ever-more close-up pictures of the solar surface are looking ever-less like anything produced by thermal energy emanating from the solar interior. The Solar surface has three different layers interacting: the photosphere, the chromosphere (“The chromosphere has spicules, long thin fingers of luminous gas which appear like the blades of a huge field of fiery grass growing upward from the photosphere below”⁴), and the corona. There is a rather organic, biological feel about all this, as tremendous electrical arcs and storm-activity takes place.

A sunspot is where a magnetic field tube emerges from the Sun, which loops round and reenters an adjacent sunspot of opposite polarity. Symmetry above and below the solar equator exists in such a way that there tends to be a comparable sunspot-cluster of reverse polarity in the other hemisphere of the Sun, suggesting that tubes of magnetic force might be going through the Sun. Such a complex magnetic inner structure is hardly compatible with the idea of thermonuclear fire at the center.

in the United States of America, vol. 109, no. 30 (May 3, 2012), saying that convective velocities were 20 to 100 times weaker than they should be, just below the photosphere. See also the journal *Science*, June 14, 2012.

4 See <http://en.wikipedia.org/wiki/Chromosphere>.

Sunspots grow and fade away in an eleven-year cycle. Nothing on Earth resembles these self-reversing magnetic-electrical processes that take place every twenty-two years; it does not look *at all* like a phenomenon produced by thermal convection currents emanating from the Sun's center. Two very different paradigms are here involved.

Wrong-Way Temperature Gradient

The temperature gradient on the Sun is the single greatest problem for the fusion-energy heat model. The Sun's corona mysteriously stays at several million degrees centigrade (NOTE: the solar corona should not exist at all on the standard model). Then the solar photosphere is about five to six thousand degrees centigrade. We can see below that into the center of a sunspot, and that is only at three to four thousand degrees centigrade. It appears dark *because* it is thus cooler. There is a huge temperature gradient here, and it is totally the wrong way. This looks like a fatal flaw in the Standard Model.

The Sun rotates faster at its equator than at its poles (twenty-five days compared to thirty-five days, as seen from Earth). That is a massive thirty-percent differential in the rate of rotation. Astronomers have no clue why this is happening and, in fact, keep rather quiet about it because they suspect it's going to wreck their theory. If there were a central, thermonuclear heat source, with its heat diffusing outward by convection currents, that would soon stop, by friction, any such differential rotation. Such convection currents welling up from the center—supposedly carrying heat to the outside where it turns into light—would bring a stop to any such differential rotation. *Au contraire*, one would expect the flow of solar wind coming from around the Sun's equator and rotating round at something like a twenty-seven-day period—it fans out from the Sun in an Archimedes spiral—to exert a retarding torque upon the equatorial rotation. So, if anything, we should expect the solar equator to be rotating more slowly.

The solar corona (which becomes visible during solar eclipses) lacks this differential rotation somewhat, and in this respect it does not look as if the corona is being produced by the solar surface.

Heartbeat of the Sun

The heartbeat of the Sun every twenty-two years *is* a self-reversing magnetic field. It's *quite unearthly*—i.e., one cannot easily model what is going on. Long words like *magneto-hydro-dynamic* appear here. Like everything we see on Sol, it is in no way predicted or expected from the standard model.

Let us meditate upon the glory and majesty of this phenomenon. In 2013, a rather weak sunspot maximum had been reached, which means that the huge North–South magnetic field of the Sun had faded away. It grows strongest at sunspot minimum, then it starts to re-form, having *reversed* its magnetic polarity. Thus, the North–South magnetic field of the Sun reverses every eleven years.

Just about everything on the solar surface is affected by this huge eleven-year (or twenty-two-year) cycle. It conditions just about everything taking place on the solar surface, whereas there is *absolutely no reason for it to exist* on the fusion-thermal-energy model. At sunspot maximum, the pale-pink chromosphere⁵ expands somewhat and becomes more visible, especially at the poles.

One theory of how the eleven-year cycle works concerns the torsional lines of magnetic flux, which become strained and stressed with the differential rotation of the solar surface, thereby pulling the sunspots closer to the equator—that is, they move to lower solar latitude in the “butterfly” pattern, until the whole thing flips over and starts again. That flip-over of sunspot pattern happens at sunspot *minimum*, in contrast with the big North–South solar magnetic polar field reversal that happens at the *maximum*. Sunspots are strongest when the North–South magnetic field is weakest. If astronomers don't say more about this heartbeat of a star, which is unlike anything else in the known universe, it is surely because the entire cycle has no business to be there, according to the fusion-energy model.

Here you might want to meditate upon the four-stage systole–diastole of the human heart.

5 As pointed out by Ralph Jurgens, “The Photosphere: Is It the Top or the Bottom of the Phenomenon We Call the Sun?” *Kronos*, vol. 4, no. 4 (summer 1979)—available as a PDF from <http://www.kronos-press.com/jurgens/index.htm>.

Or, you might want to look at tree rings on the stump of a tree that has been cut down. One can usually see how every eleventh tree ring is the thickest. Do you notice how astronomers never want to talk about this? There is a deep biological connection between the heartbeat at the center of our solar system and all life on Earth, and astronomers don't want to mention it because it doesn't fit their theories.

The huge North-South magnetic field of the Sun will have to pass through the center of the Sun. Can one really have Sol's magnetic field passing through a nuclear-fire core at over ten million degrees centigrade? It sounds unlikely.

Paradigm Shift

Stars are too far away for us to be able to tell, whether any of them has a self-reversing magnetic field. Sol is, as far as we know, unique. Does neutrino flux density vary with the eleven-year sunspot cycle—i.e., correlate with the number of surface sunspots, as some have suggested? If so, that would suggest they are a surface phenomenon. That would indeed be a testable prediction between the two theories. On the Electric Universe theory, nuclear fusion does take place in the tendrils coming out from the sunspots (see image, above), which have had helium detected around them. The center of the Sun may be quite cool, as Sir William Herschel believed.

A pioneer of the Electric Universe model for the Sun, Ralph Jurgens at Flagstaff, Arizona, wrote: "...the established theory of stellar energy is embarrassed by the mild behavior of the Sun's photospheric granules." Conventionally, the photospheric granules are supposed to be the tops of vigorous convection cells driven by the Sun's central nuclear furnace. Internal convection is essential to the Standard Solar Model, because convection is "somehow" supposed to generate the Sun's complex magnetic fields. These convection currents as not very evident.

For what makes the stars shine, there is a fine talk by Wal Thornhill at the 2013 EU conference "From Cosmic currents to the Electric Sun" (see

footnote 2). In "Anomalously Weak Solar Convection," an article in the journal *Science* of June 14, 2012, Thornhill found that the Sun's "convective velocities are 20 to 100 times weaker than current theoretical estimates...prompting the question, what mechanism transports the heat flux of a solar luminosity outward?" He commented, "That essentially means that the theory of how the Sun works is incorrect."

Isaac Newton wrote in his *Principia* that "natural phenomena of the same kind should be assigned to the same causes," giving the example, "the light of a kitchen fire and of the Sun," but that didn't work very well. Sol is very unearthly. Sol is somehow able to shine on without exhausting itself; that's the mystery! Maybe we should just leave it, as Goethe the German poet wrote:

The Sun-orb sings, in emulation,
 'Mid brother-spheres, his ancient round:
 His path predestined through Creation
 He ends with step of thunder-sound.
 The angels from his visage splendid
 Draw power, whose measure none can say;
 Thy lofty works, uncomprehended,
 Are bright as on the earliest day.

—RAPHAEL, prelude to *Faust*



A NOTE FROM THE EDITOR OF *JOURNAL FOR STAR WISDOM*: The following quote from Rudolf Steiner serves as an interesting afterthought to this article:

The Sun is not a ball of gas; but in that place where the Sun is, there is something less than empty space—a sucking, absorbing body.... Where the Sun is, is emptier than empty space. This can be said of all parts of the universe where we find ether.... Ether is sucking, absorbing.... The Sun is a sucking, absorbing ball, and wherever ether is present, we have this absorbent force.... The Sun possesses the power of suction only, being nothing but ether, nothing but suction.

—RUDOLF STEINER,
Mystery of the Universe, April 16, 1920