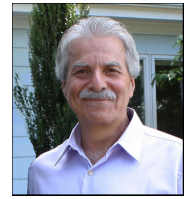


Tesla vs. Einstein: The Ether and the Birth of the New Physics



Author: Marc Seifer

Nikola Tesla (1856-1943) was an electrical inventor, well known as a competitor of arch rival Tom Edison. Where Edison's inventions include the light bulb, the microphone in the telephone and the phonograph, Tesla's inventions include fluorescent lighting, the AC hydroelectric power system and wireless communication. Tesla is therefore mostly billed as an inventor.

The fact is, Tesla was also a physicist who studied in college such courses as analytic geometry, experimental physics and higher mathematics.^[1] In his early 1890s lectures at Columbia University, the Chicago World's Fair and at Royal Societies in Paris and London, building on the ideas of Isaac Newton and Lord Kelvin, Tesla demonstrated and discussed the structure of atoms as being similar to solar systems and wave-like and particle-like aspects to what later became known as the photon. Colleagues he lectured before and corresponded with included many Nobel Prize winners like Wilhelm Roentgen, J.J. Thompson, Lord Raleigh, Ernst Rutherford and Robert Millikan and other scientists such as Elmer Sperry, Sir William Crookes, Sir Oliver Lodge, Lord Kelvin, Heinrich Hertz and Hermann von Helmholtz.

As far as I know, no standard text on the history of physics mentions Tesla even though these ideas would lead to Nobel Prizes when they were further developed by Rutherford and Bohr (with their solar-system description of the atom with electrons orbiting the nucleus) and Einstein's discovery of the photoelectric effect, which was equivalent to Tesla's wave and particle-like description of light.

However, another idea which Tesla discussed was abandoned by modern physicists, and that was the concept of the all pervasive ether. This led to a number of key differences between Tesla's view of the world as compared to that of Albert Einstein (1879-1955). Tesla disagreed with the findings of Einstein's Theory of Relativity in a number of ways. As far back as the turn of the century, Tesla thought that he had intercepted cosmic rays emanating from the sun that attained velocities "vastly exceeding that of light." In the last decade of his life he also claimed that these cosmic rays could be harnessed to generate electrical power. Tesla also saw radioactivity as evidence of the material body *absorbing* energy as much as it was giving it up.

On a separate front, the inventor stated that the impulses transmitted from his turn of the century Wardenclyffe wireless transmitting tower would also travel at velocities in excess of the speed of light. He likened the effect to the moon's shadow spreading over the Earth.

It is very difficult to explicate the first two speculations concerning tachyonic (faster than lightspeed) cosmic rays and radioactivity. However, with regard to the third claim, this suggestion that he transmitted energy at speeds in excess of the speed of light can be discussed from a variety of points of view. As the Earth has a circumference of roughly 25,000 miles, and light travels at about 186,000 miles/second, one can see that it would take light approximately 1/7th of a second to circle the Earth. But does the Earth itself exist in its own realm, that by the nature of its size transcends the speed of light? For example, does the north pole, interact/exist with the south pole instantaneously? If so, in a sense the theory of relativity is violated as nothing, accordingly, can "travel" faster than the speed of light, yet the Earth's very electromagnetic unity belies that theory.

Taking this concept a step further, does the solar system, or galaxy, when perceived as a functional unit, interact with itself in some way that by necessity makes a mockery of the speed of light? (The galaxy, of course, is hundreds of thousands of light years long.) In fact, when we look at photographs of galaxies, we are seeing entities that are hundreds of thousands of light years long. Certainly these systems have an orthorotational stability, and/or angular momentum which exists as a gestalt (totality) in a realm that easily transcends the speed of light and therefore, in that sense, violates relativity.^[2]

Concrete proof that relativity can be violated can be found in George Gamow's watershed book *Thirty Years That Shook Physics*. Gamow, one of the founding fathers of quantum physics, tells us that in the mid-1920's, Goudsmit and Uhlenbeck discovered not only that electrons were orthorotating, but also that they were spinning at 1.37 times the speed of light. Gamow makes it clear that this discovery did not violate anything in quantum physics, what it violated was Einstein's principle that nothing could travel faster than the speed of light. Paul Adrian Dirac studied the problem. Following in the footsteps of Herman Minkowski, who used an imaginary number i , (the square root of -1) to be equivalent to the time coordinate in space-time equations, Dirac assigned the same number i to electron spin. In this way he was able to combine relativity with quantum mechanics and won a Nobel Prize for the idea in the process (1966, pp. 120-121). That was the upside. The downside was that the finding that elementary particles spin faster than the speed of light as a matter of course went the way of the passenger pigeon. No physicist talks about this anymore. What this means is that the entire evolution of 20th and the following 21st century physics is evolving ignoring this key Goudsmit and Uhlenbeck finding. The ramifications suggest that elementary particles, by their nature, interface dimensions. Because they are spinning faster than the speed of light, the idea is that they are drawing this energy from the ether, a pre-physical realm, and converting the energy into material form.

The Structure of the Ether

On a body as large as the sun, it would be impossible to project a disturbance of this kind [e.g., radio broadcasts] to any considerable distance except along the surface. It might be inferred that I am alluding to the curvature of space supposed to exist according to the teachings of relativity, but nothing could be further from my mind. I hold that space cannot be curved, for the simple reason that it can have no properties. It might as well be said that God has properties. He has not, but only attributes and these are of our own making. Of properties we can only speak when dealing with matter filling the space. To say that in the presence of large bodies space becomes curved, is equivalent to stating that something can act upon nothing. I for one, refuse to subscribe to such a view.

Nicola Tesla^[3]

In Tesla's model, a force-field would curve light around large bodies. These ideas were related to Tesla's original theories on gravity which do not seem to have ever been published but can be ascertained by decoding related articles by or about Tesla from the 1930s and 40s. They also coincide with some of the most recent theories on physics, gravity and magnetism which challenge Einstein's claim that nothing can travel faster than the speed of light. E. Lerner, writing about "Magnetic Whirlwinds" in *Science Digest* in 1985, stated that "magnetism is as fundamental as gravity." Citing the research and theories of plasma physicist A. Peratt of Los Alamos National Laboratory, Lerner noted:

Astronomers using [a]... radio telescope [have]... observed filaments of gas arcing far above the galactic plane. These twisting spirals appeared to be held together by a magnetic field... stretching across 500 light years.... Such magnetic vortices [may] play a major role in the universe... as important... as gravitation.^[4]

Another key mystery where Tesla differs from Einstein involves the paradoxical findings of Michelson and Morley who in 1887, tried to detect the ether by using two sets of mirrors pointed at each other and placed miles apart. One set was aimed in the direction the Earth was moving and the other set was aimed at right angles to the movement of the Earth. It was hypothesised that if the ether existed, once an impulse was sent, there would be a difference in the return times of each set, yet no difference was found.

Einstein essentially agreed with the findings by stating that by its nature, the ether could not be detected. However, Einstein also upped the ante considerably by also saying that if the ether could be detected then his theory of relativity was in error.^[5] Einstein further stated that if light could travel like a particle it would not need a medium (i.e., the ether) to travel through. Even though most of the great scientists of the day such as Maxwell, Faraday, Kelvin, Fitzgerald and Lorentz all accepted the obvious conclusion that there had to a medium of transfer in space, i.e., the ether, all of this was glossed over. This led to a generally accepted conclusion that the ether did not exist and that is the situation today, a full century later! It would take Einstein 15 years before he addressed this glaring misconception but the damage had already been done.

In 1920, lecturing at the University of Leiden, on the topic “Ether and the Theory of Relativity,” Einstein stated outright that the ether did exist, that is was necessary as a medium of transfer because light also had wave-like properties. He even wrote Lorentz to clarify this point.^[6] But by now, the damage had been done. This lecture received little notice, it was ignored in Roland Clark’s watershed biography on Einstein published in 1971, and so the 20th and early 21st centuries evolved in such a way to dismiss entirely ether theory.

Since in the Michelson Morley experiment light travelled at the same speed in the direction the Earth was moving and at right angles to that direction, Einstein concluded that the speed of light had to be constant (according to the formulas of Special Relativity). He further suggested in 1905 that the ether of 19th century physics was not necessary although what he really meant to say was that it could not be detected. At the time, this was a radical view, it was soon widely accepted, even though it implied that there was nothing between the stars. This concept quickly became dogma as it helped solve a number of dilemmas, for instance, they no longer had to search for the ether because according to this view, it didn’t exist. “Einstein did not disprove the existence of the ether.... He only stated [in Special Relativity] that whether or not it existed, light would always travel at the same speed.”^[7]

From the perspective of popular science writers, “belief in the nonexistence of the ether remained alive, but in actuality, by 1916, Einstein had replaced the old ether in his theory of General Relativity by curved space-time itself. Only, this new ‘ether’ is no longer a medium in three-dimensional Euclidean space, but in four-dimensional non-Euclidean (curved) space-time.”^[8] It was this idea that was completely unacceptable to Tesla, and he criticised Einstein in the 1930s because of it.

One area where they were in some agreement, however, had to do with the speculations of the German physicist Ernest Mach. Taking his ideas from monotheistic and Buddhist teachings, and from Isaac Newton, who suggested that all material bodies attract one another through gravity, Mach postulated that the mass of any material body, such as the

earth, was dependent upon some type of gravitational force from *all* the stars. In other words, all effects in the universe were related to all others. Einstein wrote Mach to tell him that this idea was intrinsically related to his formulation of the Theory of Relativity.^[9]

I have yet to find a direct quote by Tesla of Mach's Principle, but in an article Tesla wrote in 1915, clearly based upon his writings of 1893, he states exactly this position.

There is no thing endowed with life – from man, who is enslaving the elements, to the nimblest creature – in all this world that does not sway in turn. Whenever action is born from force, though it be infinitesimal, the cosmic balance is upset and universal motion results.^[10]

It seems to me that the interconnectedness between all of the stars in the universe (related to Einstein's curved space/time) is the ether.^[11] Similarly, Tesla's view of the ether aligned itself with that of the Theosophists:

Long ago [I] recognised that all perceptible matter comes from a primary substance, of a tenuity beyond conception and filling all space – the Akasa or luminiferous ether – which is acted upon by the life-giving Prana or creative force, calling into existence, in never ending cycles, all things and phenomena.

The primary substance, thrown into infinitesimal whirls of prodigious velocity, becomes gross matter; the force subsiding, the motion ceases and matter disappears, reverting to the primary substance.^[12]

Removing the spiritual component from "Akasa," Tesla postulated that everything in the universe derived its energy from external sources. This corresponded to his model of the automata or remote controlled robot, which received commands from the electrician, and also of himself, that is, of the human condition itself. Denying the Platonic concept of intrinsic motivation, as an Aristotelian, and thus a believer in the idea of the *tabula rasa*, Tesla assumed that all of his ideas came from external sources even though, paradoxically, his life was the very essence and expression of self-determination and the power of the will. Each hierarchical entity in his system was not endowed with a soul, per se, but rather, a self-directed electrical component which moved by attraction or repulsion.

As a non-psychologist, Tesla also negated, by necessity, the concept of the unconscious, the archetypes, and also the Freudian id, as primary motivators. So, for instance, a dream would always ultimately derive from some extrinsic factor, never from a completely inner source. However, unlike Einstein, who negated the mental component from his model concerning the primary forces of the universe, Tesla addressed this factor with his construction of the first prototype of a thinking machine, his telautomaton or remote controlled robot which was in the form of a wireless activated boat that the inventor displayed before the public at Madison Square Garden in 1898.^[13] In essence, for Tesla, the mind was at its basis, a binary electrical system of attractions and repulsions, stimulated from an outside source, and wholly compatible with Pavlov's stimulus-response reflex model for cognitive processes.

Smashing Atoms

Tesla also differed with Einstein and the quantum physicists in his view of the structure of the elementary particles and the possible consequences caused by the smashing of atoms. “I have disintegrated atoms in my experiments with a high potential vacuum tube... operat[ing] it with pressures ranging from 4,000,000 to 18,000,000 million volts.... But as to atomic energy, my experimental observations have shown that the process of disintegration is not accompanied by a liberation of such energy as might be expected from present theories.”^[14]

To Tesla, the Theory of Relativity was just “a mass of error and deceptive ideas violently opposed to the teachings of great men of science of the past and even to common sense. The theory wraps all these errors and fallacies and clothes them in magnificent mathematical garb which fascinates, dazzles and makes people blind to the underlying error. The theory is like a beggar clothed in purple whom ignorant people take for a king. Its exponents are very brilliant men, but they are metaphysicists rather than scientists.” Writing a decade before the explosion of the atom bomb, and ignoring the space curvature data from the 1919 eclipse which supported Einstein’s idea that space was curved around large bodies such as stars, Tesla suggested that the existence of a force field would account for the same mathematical results. Thus, Tesla brazenly concluded, “Not a single one of the relativity propositions has been proved.”^[15]

It would be shortsighted to simply judge Tesla wrong and Einstein and the quantum physicists right for at least two reasons. (1) Both relativity and quantum theory have been established as incomplete, and in some sense, incompatible, theories on the structure of the universe.^[16] (2) Tesla was discussing these phenomena from a different perspective that was not completely analogous to the one espoused by the theoretical physicists. In Colorado Springs, for instance, Tesla was generating over 4,000,000 volts, whereas only about 1,000,000 volts is required for separating electrons from the nucleus of an atom. Thus, Tesla was able to disintegrate atoms, but in an entirely different way than that postulated by Einstein or the quantum physicists (for Tesla did not destroy the nucleus). No atomic explosion could ever occur with his type of apparatus. Tesla completely misunderstood the ramifications of Einstein’s equation $E = mc^2$, and the corresponding suppositions of the equivalence of mass and energy. Unfortunately, he would never live to see the proof that tremendous amounts of power were locked inside the tiny space occupied by the nuclei of atoms.^[17]

Gravity

Concerning the curvature of space (Einstein) versus the idea of a force field (Tesla), I discussed this point with Edwin Gora, Professor Emeritus, from Providence College. Gora, whose teachers include Werner Heisenberg and Arnold Sommerfeld, agreed that the two concepts might actually be different viable ways of describing the same thing. Both Tesla and Einstein are trying to describe the fundamental structure of space and its relationship to the constancy of lightspeed and gravity.

In an obscure paper I discovered on the web published by M. Shapkin but supposedly written by Tesla, Shapkin/Tesla states that the reason why light only travels at one speed, 186,000 mph, is because the ether, its medium of transfer, slows down photonic energy to that rate the same way air slows down sound to its constant speed.^[18] According to this view, the ether is a specific medium that restricts the speed of light to exactly the speed that it is. This is a very exciting theory because it suggests that the energy which manifests itself as light ultimately exists in a tachyonic realm, that is, in a realm that exceeds the speed of light.

Another aspect of this ether theory which derives from Tesla and numerous other modern writers such as Price and Gibson, Ed Hatch, Vencislav Bujic, Ron Heath, Warren York and David Wilcox outlined in detail in my book *Transcending the Speed of Light*, is that matter is constantly absorbing ether all the time.

If we look at the structure of matter, we see that it is comprised of atoms, which is, essentially, electrons orbiting protons and neutrons. But neutrons are, by definition, protons sandwiched to electrons. So the fundamental structure of matter is just two particles, electrons and protons and a glue that binds these atoms into molecules, which are photons. These particles spin. What keeps them spinning? Ether theory suggests that elementary particles are absorbing ether all the time to maintain their spin. And when they do this, they emanate the absorbed energy as electromagnetic fields. That is the link between gravity and electromagnetism.

Take the Earth, for instance. Classical physics sees the force of gravity as some type of almost magical attractive force between stars and planets. Ether theory has a totally different view. The reason we fall back to the Earth when we jump up is not this mystical force of gravity, but rather it is because the Earth is constantly absorbing a tremendous amount of ether to keep all of its elementary particles spinning. We are just in the way of this influx. This view explains what gravity is, and also explains Tesla's seemingly odd statement that the sun is absorbing more energy than it is radiating. The more you think about it, the more this seemingly nutty idea makes perfect sense. The sun requires a gargantuan amount of etheric energy to keep its integrity.

Grand Unification

Now we go to Einstein, who as we learn from the new Isaacson biography, came to reject Mach's principle. Einstein did indeed see a connection between gravity and acceleration, but he was not ready to accept the etheric view, because to do so would mean to drive a stake through his precious theory of relativity. Remember, he said that if ether could be detected, then his theory was wrong.

According to the etheric view as espoused by the various writers listed above, Price and Gibson, et al., ether is easily detected. If you are driving in a car and accelerate greatly, you will feel a G-force. This is an increased absorption of ether. That's what a G-force is. Ether flowing into matter is gravity, matter flowing rapidly through ether, that is, acceleration, is experienced as a G-force.

Einstein started to become aware of this in 1916, just as Louis de Broglie's wave mechanics was coming into vogue. Where before that time physicists were looking at electrons and protons as particles, de Broglie emphasised the wave aspect of their nature. Looking at electrons as waves rather than particles makes it a lot easier to understand a quantum leap, or the shift of an electron from one orbit to another without going into an in-between state. From this de Broglie wavelike point of view, quantum leaps occur when electrons simply shift their point of focus. Once de Broglie began to gain acceptance, elementary particles including photons were now looked at more from the wave point of view and this view was more in accord with the necessity for an ether as the medium of transfer for light, for instance, to get from the sun to the Earth.

Initially, Einstein was still too caught up in his particle view and in Mach's principle which suggested that all matter in the universe was interdependent. Thus, concerning rotating bodies, Einstein would write the young mathematician Karl Schwarzschild on January 9, 1916, "Inertia is simply an interaction between masses, not an effect in which space of itself is involved, separate from the observed mass." Schwarzschild, Isaacson points out, disagreed. Now, four years later, in

1920 after reconsidering the necessity of the ether, for instance, as a means to propagate light, Einstein changed his mind. He abandoned Mach's Principle and now saw that a rotating body did not obtain its inertia from, and in relations to, all the rest of the matter in the universe [Mach's Principle], but on its own accord due simply to "its state of rotation [because] space is endowed with physical qualities."^[19]

Because of the power of de Broglie's emphasis on particle wave theory, Einstein shifted gears to be current. Back ahead of the curve, he lectured on the ether at Leiden University (discussed above). Einstein never came to view gravity as the absorption of ether by elementary particles and electromagnetism as a product of this process, because to do so would be to abandon relativity. Einstein also never was able to integrate gravity into his grand unification scheme, a problem he wrestled with for the entire last half of his life.

Once it is realised that electrons spin at speeds in excess of the speed of light, a new paradigm is born. The idea simply is that the elementary particles, by their nature, are absorbing ether all the time. This influx is what gravity is. As ether is absorbed two things happen. (1) The process enables the elementary particles to maintain their spin, and (2) Simultaneously, this etheric energy, probably stemming from what some physicists call the zero point energy realm, which is a vast reservoir of untapped energy, is transformed into electromagnetic energy. That is Grand Unification, Einstein's dream of how to combine gravity with electromagnetism.

Tesla understood ether theory a lot better than Einstein did, but obviously, Tesla also did not truly understand the ramifications of Einstein's famous equation $E=mc^2$. He dismissed it as mathematical poppycock. Had he lived a few more years to see the explosion of the atom bomb, Tesla would have been forced to re-evaluate what he had discarded, and had Einstein re-evaluated the full ramifications of Tesla's ether theory, he may have been able to achieve his grand dream of unifying gravity with electromagnetism, a process explainable by a full understanding of ether theory.

A large number of thinking physicists believe that an ether of sorts exists, and that forces of some type may transcend lightspeed. Once one begins to study ether theory, profound new insights concerning such things as particle spin, zero point energy, the fundamental structure of matter and space, the constancy of lightspeed and the link between gravity and electromagnetism begin to emerge.

The above is excerpted and adapted with permission from Marc J. Seifer's book *Transcending The Speed Of Light: Consciousness, Quantum Physics & the Fifth Dimension* (Inner Traditions, 2008).

Note: There exists an expanded rendition of it this text in Marc Seifer's new book *Tesla: Wizard at War*, 2022

Footnotes

1. Marc Seifer, *Wizard: The Life & Times of Nikola Tesla*, New York: Birch Lane, 1996, pp. 18-19.
2. One need not resort to Bell's theorem of non-locality, or instantaneous transference of information, or the new worm hole theories, each which suggest extra dimensions, to follow the argument as far as I have taken it.
3. Nikola Tesla, Pioneer radio engineer gives views on power. In J. Ratzlaff (Ed.), *Tesla Said*. Millbrae, CA: Tesla Book Company, 1984, pp. 240-242.
4. E. Lerner, 'Magnetic whirlwinds', *Science Digest*, 6/1985, p. 26.
5. Roland Clark, *Einstein: The Life & Times*, NY: World Publishing, 1971, p. 78.
6. Walter Isaacson, *Einstein: His Life & Universe*, New York: Simon & Schuster, 2007, p. 318.

7. Edwin Gora, Physics Department, Providence College, private correspondence, 1991.
8. Ibid.
9. Einstein had really postulated two theories. The special theory of relativity postulated in 1905, dealing with uniform motions, and the general theory, which dealt with motions speeding up and slowing down. Mach's principle is linked to the general theory.
10. Nikola Tesla, (1915), in *Lectures, Patents, Articles*, Belgrade: Nikola Tesla Museum, 1956, p. A-172.
11. Or one hierarchical dimension of it. Further, each point in space (in a galaxy) codes for every other point, as each contain the intersecting light from every star in the system. This idea is associated with holographic principles and the "enfolded order" where the whole is distributed throughout each part, as expounded by such theoreticians as David Bohm.
12. Nikola Tesla, 7/6/1930; J. Ratzlaff, (Ed.), *Solutions to Tesla's Secrets*, Milbrae, CA: Tesla Book Company, 1981, p. 91.
13. Einstein, however, did not negate the conscious component from his philosophy. "I want to know how God created the world," Einstein said. "I want to know his thoughts; the rest are details" [from E. Mallove, 'Einstein's Intoxication with God and the Cosmos', *Washington Post*, 12/22/1985].
14. Nikola Tesla, 'Radio power will revolutionize the world', *Modern Mechanix & Invention*, 7/1934, pp. 40-42; 117-119.
15. Nikola Tesla, 'Tesla, 79, promises to transmit force', *New York Times*, 7/11/1935, 23:8; in Nikola Tesla, 1981, pp. 128-130.
16. "A principle of physics that Einstein held even more dear than determinism was the principle of local causality – that distant events cannot instantaneously influence local objects without mediation. What the EPR [Einstein, Podolsky, Rosen] argument did... was to show that quantum theory violated causality. This finding startled most physicists, because they held the principle of local causality sacred. This mean that either quantum physics was incomplete or non-local events [i.e., instantaneous information transmission] occurred." *The Cosmic Code*, by Heinz Pagels, Bantam Books, NY, 1982, p. 139.

Einstein's Theory of Relativity is also incomplete, as physicists have not, as yet, obtained a Grand Unification Theory based upon it. See, for instance 'Einstein's Dream', by Gary Taubes, *Discover*, 12/1983, p. 48, whereby an 11 dimensional graviton (gravity particle) has been postulated as the ultimate particle to explain supergravity, quarks, electrons, etc.

17. It would take approximately 55 million volts to vaporise carbon, but only 4.37 million volts to change carbon into helium, the latter case within the parameters Tesla was capable of achieving [calculations performed by E. Gora]. A pound of carbon, on the other hand, if converted into nuclear energy, could provide enough electricity to run the country for an entire month [from Coleman, 1958, p. 54].
18. Mikhail Shapkin, "Unknown Manuscript of Nicola Tesla." Farshores.org/wmtesla.htm.
19. Marc Seifer, *Transcending the Speed of Light*, p. 96; Isaacson, p. 125.