

LECTURE NO. 26

The Contemporary Aether

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This is the text of a paper written as a contribution to a conference held at the University of Perugia in Italy in 1996 to pay tribute to the memory of Rene Descartes.

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Introduction

Although 20th century scientific philosophy has sought to banish the aether and outlaw it from our modern civilisation, that effort has failed. The great contributions of philosophers of earlier centuries, giving us recognition of the aether, and notably by Rene Descartes, live on, notwithstanding acceptance of the four-space notions of the theory of relativity. The aether remains the essential fabric of space, the canvas on which Nature has painted the glorious picture of the world and the universe we see around us. This paper will simply point to one scientific phenomenon which reveals a direct manifestation of the aether and shows us how to tap into its power. This paper also provides a bibliographic listing of this author's 20th century discoveries concerning the aether, this being research which has been published in spite of the opposition by those who prefer to accept the virtual reality images which stem from Einstein's doctrines. The key property of the real aether is its universal rhythm, its universal time keeping, as enforced by a phase-lock between its quantum properties. This property is manifested by aether in rotation because the phase-lock involves one-way energy transfer from aether to matter in company with an electric charge induction by rotation, neither of which feature in Einstein's vision of the properties of space.

Descartes was the first to bring the aether into science, by postulating that it had mechanical properties. Descartes assumed that the aether comprises particles that are continually in motion, but as there is no empty space, he inferred that those particles are continually moving into places vacated by other aether particles which are themselves in motion. Overall, the motion was that of vortices as the particles were all part of a great machine, but one which we can now examine at a microscopic quantum level and see as a kind of universal clock mechanism.

Sadly, however, towards the end of the 19th century, the mechanistic aether seems to have lost favour, because the aether came to be viewed, not as a clock which kept everything in the universe together in a rhythmic dance, but rather only as the 'sea' rippled by light waves. The luminiferous aether concept became

the dominant consideration. The aether was not deemed to be the bonding agency which wedded all matter in the universe together in an energy machine. Electromagnetic waves and their finite speed were seen as the signature that proved the aether existed and, once that signature became blurred, there were those who broke away from the aether faith.

It was in the early part of the 20th century that a French astronomer, Alexandre Veronnet, made a bid to arouse interest in an 'etheron' particle picture of the aether, bringing the Bohr magneton into that 'clock mechanism', but wave mechanics had a different style of presentation and the aether began to sink into its own sea of oblivion.

Einstein was the champion who led the aether dissenters. As philosopher Bertrand Russell explained:

" Empty space, to Descartes, is as absurd as happiness without a sentient being who is happy. Leibnitz, on somewhat different grounds, also believed in the plenum, but he maintained that space is merely a system of relations. On this subject there was a famous controversy between him and Newton. The controversy remained undecided until the time of Einstein, whose theory gave the victory to Leibnitz."

History of Western Philosophy, 1961 Edition,
Published by Allen & Unwin, page 87.

Well, I now submit here that the controversy is far from over. Space is not merely a system of 'relations'. It is a real mechanism, albeit one that is, as is all matter, rooted in the electrical form of the constituent aether particles.

The way forward from the Einstein diversion requires that we heed what another British philosopher had to say about Einstein's theory.

"The effects of rotation are among the most widespread phenomena of the apparent world, exemplified in the most gigantic nebulae and in the minutest molecules. The most obvious fact about rotational effects is their apparent disconnection from outlying phenomena. Rotation is the stronghold of those who believe that in some sense there is an absolute space to provide a framework of dynamical axes. Newton cited it in support of this doctrine. The Einstein theory in explaining gravitation has made rotation an entire mystery."

The above was quoted from p. 356 of 'The Principle of Relativity' in the book 'Alfred North Whitehead: An Anthology', published by Cambridge University Press, 1953. (A further quote at the end of this text is from p. 357).

So, I introduce the subject of this paper by asserting that we must look to 'rotation' to see how we can revive belief in the aether, and I note that vortices and rotation are complementary aspects of the universal mechanism that is tuned to the spirit of Descartes.

Vacuum Spin

Can the aether spin? If those 'vortices' or those aether particles describing minute circular orbital motion, as part of that universal clock we call the aether, can store energy, as by expanding their orbits so as to move faster, then we have territory to explore. If, further, those aether particles can, by analogy with matter, group together to form structure, but by keeping their mutual spacing, then we have the makings of a geometry which determines a dimensionless physical constant connected with both energy quanta and that aether. That gives us a larger aether form that we can explore in terms of spin, a form which might set up pulsating ripples as surrounding aether is disturbed by that structure in rotation. This suggests a route to the photon, linked to the theoretical derivation of the fine-structure constant, the latter comprising Planck's constant, the fundamental unitary electric charge and the speed of light.

On a larger scale, maybe large spherically-formed expanses of aether can be set in rotation, as with body Earth or the Sun, all leading to interesting properties revealing the role of the aether.

On an intermediate scale, there are other possible spin forms of aether. Remember that we can move through the aether, as if it does not exist, and so aether in spin can move through a solid wall to transport its action from one side of that wall to the other. Yes, there is evidence of that to be seen in the thunderball phenomenon, which becomes a candidate for research enquiry into the aether. There are other mysteries connected with atmospheric electrical phenomena and invariably there is something spinning, as in the funnel of a tornado. Indeed, observers have seen the tornado travel one way when the prevailing wind direction was in the opposite direction! Rotation, therefore, offers the logical entry point for a fascinating study of the aether.

Now, my main aim here is to interest the reader in my theory as a whole, but that can only be by individual study of my many published papers and other writings on the subject. The appended bibliographic listing is, therefore, the primary contribution I make in presenting this paper.

In 1977 I was invited to explain my aether theory to the students and staff of the Physics Department at Cardiff University in Wales [113]. My argument was that the aether contains electric charge, as needed to sustain displacement according to Maxwell's theory. Charge has the dimensions of mass M, length L, and time T, taken together with the electrical dimension of the dielectric constant k. The question at issue was that of understanding how, if the aether could develop spherical pockets that could rotate inside enveloping aether, its angular rotation or spin would relate to electric charge. If I assumed that a uniform charge density would be induced in proportion to the angular velocity of vacuum spin I found that the aether would need to exhibit a uniform mass density to keep the dimensions to balance. In fact, I developed the relationship between vacuum spin, the radial electric field and the angular momentum of aether spin, together with their energy connection.

charge density σ	$M^{1/2}L^{-3/2}T^{-1}k^{1/2}$
angular velocity ω	T^{-1}
mass density ρ	ML^{-3}
$(\sigma^2/\omega^2\rho)$	k

I was aiming at the objective of showing that the energy added owing to that rotation would be both the electric field energy stored by charge displacement and an equal amount of kinetic energy.

The easiest way in which to explain this 'vacuum spin' induction is to imagine that all space exhibits a quantum activity as if everywhere there is electric charge keeping in universal phase in minute orbital loop motion at the same frequency. Here we need to picture large spheres of aether as capable of spin at an angular frequency ω and see every charge in that aether as a quantum unit having a microcosmic orbital spin motion at a very high frequency compared with ω . This latter frequency is the Compton electron frequency $(\Omega/2\pi)$ and it corresponds to the photon energy needed to create an electron. Quantum mechanics involves linear harmonic oscillations and that tells us that the controlling medium has a linear restoring force rate when displaced. An electric charge e in the aether, as needed in Maxwell's displacement theory, complies with a force rate of $4\pi N e^2$, where there are N charges e in unit volume of space, all neutralized overall by a universally-constant density of background charge of opposite polarity. Here I use the c.g.s system of units, in which an electric field of strength E stores energy density $E^2/8\pi$ in vacuum of unit dielectric constant, owing to Ee being equal to $4\pi N e^2$.

This restoring force rate determines the jitter frequency of the vacuum state by the equation:

$$8\pi N^2 e^2 = \rho(\Omega)^2 \dots\dots (1)$$

where ρ is the effective mass density of the aether, which is proportional to N . In the equation 8π has replaced 4π because, to assure dynamic balance, the orbital radius of the motion is half of the displacement, which spans the orbit diameter.

Now consider the superimposed effect in a sphere of aether which spins at the angular frequency ω . If the spin is in the same sense (parallel axes of spin) as the quantized orbital motion, then to keep the phase-lock as between enveloping aether and aether in spin, the equation (1) becomes:

$$8\pi(N-\delta N)e^2 = (\rho/N)(\Omega - \omega)^2 \dots\dots (2)$$

where ρ/N is constant.

From (1) and (2) we can deduce the relationship:

$$\delta N/N = 2\omega/\Omega \dots\dots\dots (3)$$

This means that δN charges e per unit volume of that aether sphere are displaced from it owing to spin ω .

Conversely, if we can feed electrostatic energy into that sphere to displace that amount of charge, the phase-lock asserted by the external aether will promote the spin at ω . Or, if we can get the aether sphere to spin by other means, the phase-lock asserted by the external aether will promote charge induction. Once the external aether has to assert itself to hold that phase-lock as between different regions of aether, it does work and that is our 'free energy' input!

Suppose we can contain some positive ions into a small sphere. The aether will see this as producing a radial electric field from the centre of that sphere and it will develop a charge displacement to neutralize that core charge and effectively transfer the charge effect to the surface of the sphere. Now, this means that N has been changed in that sphere and so the natural frequency of quantum jitter will change. The aether charges lying outside that sphere will, however, not allow this loss of synchronism and very powerful electrostatic forces are asserted to ensure that the synchronism holds. The vast amount of energy sustaining the quantum jitter at the Compton electron frequency in the aether of enveloping space will be pooled with that of the rotating aether sphere to keep that state of synchronism. The relative frequency is what is held

constant. Thus, if N increases in the sphere to cause the local value of Ω to increase, then the offset of ω , will assure that synchronous condition. In other words, rotation at ω follows as a consequence of the phase-lock constraint.

This imports energy from the aether.

Owing to the linear harmonic motion properties of the quantum world, there is equipartition of energy in the sense that for every unit of electric field energy stored there is an equal unit of kinetic energy stored. Therefore, by adding one joule of energy in one pulsation of the 'vacuum spin' state we receive 'gratis' one further unit of energy drawing on the universal energy priming of the aether activity at that jitter angular frequency Ω .

It has therefore become an interesting task, technologically, to reiterate this action at a rapid pulse rate, given that we can, in fact, set up that priming radial electric field or the spin in an effective way. This is what now takes this aether subject from the realm of oblivion and, without stopping in the arena of philosophical debate, progressing directly into the field of technology, where the aether can be seen to serve us as an energy source.

As long ago as 1960 I published my first account of this 'vacuum spin' induction theory [107] and evaluated the spin charge density in relation to spin angular frequency ω . The formula gave the charge density as 4.781 esu/cc per rad/s of spin (page 32 of that reference). In terms of coulombs, one micro-coulomb per cc would correspond to aether spin at 6,000 rpm. I note that one micro-coulomb per cc. squeezed into a sphere of 7 cm. diameter corresponds to an energy density of the order of 10^9 J/m³.

I now note that the experimental data of record in recently granted U.S. patents [116, 117] concern a method of holding 500 J in an abnormal glow discharge which is trapped between electrodes, close to the cathode, and probably confined to a volume of a fraction of 1 cc, which also corresponds to 10^9 J/m³ of energy density.

In my 1977 lecture paper [113] I explained how the Sun was created by gravitational attraction between protons setting up a positive core charge which produced a radial electric field. That charge had the density of $(G)^{1/2}$ times the 1.4 gm per cc mass density of the Sun. Put G as 6.67×10^{-8} in c.g.s units and one obtains 3.6×10^{-4} esu/cc, which develops a vacuum spin of 7.5×10^{-5} rad/s or one revolution every 23 hours. If the whole angular momentum of the solar system as it is today were to be put back into the Sun, then, as that paper [113] shows, the Sun would spin at 8.3×10^{-5} rad/s or one revolution every 21 hours. My 1980 book 'Physics Unified' [112] put on record a more formal account.

This is close enough to explain how the solar system got its angular momentum from the phase-locked aether and support the proposition that energy can be shed by this 'vacuum spin' activity of the aether and transferred to matter. Our experiments can tap the aether energy in the same way, simply by setting up a radial electric field inside a conductive medium that can sustain the build up of the charge displacement.

In 1983 I presented the theory of 'vacuum spin' at a conference held by the U.K. Institute of Physics at Oxford University. See pages 179-184 of reference [29]. I explained how the known facts about the energy density of thunderballs pointed to an aether in which there could be energy storage by spin.

I referred to Altschuler et al. of the High Altitude Lab. in Boulder, Colorado (1970) and their suggestion in Nature [114] that thunderballs might be nuclear powered because they all had an energy density in the range 2 to 5×10^9 J/m³. This is the same energy density as mentioned above!

My 1983 paper went further because I knew that if the Earth shared its spin with the aether then that would involve two systems each neutralizing one another in electric charge terms but in a way which would still produce a magnetic field. The Earth's magnetic field is seated in the charge displaced in, and rotating with, the Earth, but the vacuum charge involved in that aether spin cannot develop a magnetic field because it is the reference against which magnetic action is measured.

From knowledge of the strength of the Earth's magnetism I could calculate the Earth's vacuum spin charge and it was found to have a value which would constrain vacuum spin, whether in thunderballs, tornadoes or in our motor experiments, to have an energy density estimated as being 2.37×10^9 J/m³. See page 183 of reference [29].

Proof that there is an Aether

If we can get energy from vacuous space, energy in excess of that we can store by setting up electric or magnetic fields, then that proves there is something in space that stands apart from matter. That 'something' is the aether.

Now, I know of several ways in which this 'free energy' scenario can be demonstrated. Indeed, it is the subject of my primary research interest at this time. However, I will take up the theme that follows from my 1983 paper [29]. It refers in its penultimate paragraph to Nobel Laureate Kapitza's efforts to produce thunderballs for application in triggering fusion reactions [121]. Then, in the last sentence, I declared in my paper that:

" It remains to devise and conduct experiments aimed at inducing this (vacuum) spin condition by using radial electric fields, so as to verify and perhaps apply the phenomenon to useful ends."

That was my outlook in 1983. I can now quote the research achievement of Dr. Kiril Chukanov. He reports [119]:

" I first produced experimental proof that artificially created ball lightning could produce energy for practical needs in 1987 in Bulgaria."

After describing his experimental set-up, which involved an ionized gas discharge in a quartz tube, he wrote:

" I experienced great difficulty in evaluating the amount of power produced by the quantum plasma macro-object, but my rough estimation was three to four times more power output than that being supplied by the (input of the high frequency signal-generating) lamp."

By 1990 he had taken his research project into Sunnivale, California and his onward reporting on his production of excess energy showed that he had measured heat generated in a water jacket enclosing the evacuated glow discharge chamber used in his tests. In his 1994 book 'Final Quantum Revelation' he reports a 900 watt rate of excess energy generation using electrodes of some 3 cm separation. The vacuum, or rather, aether spin in a filamentary discharge region having a volume of, say, 3 cc, drawing in 'excess' energy at the rate of 109 J/m^3 , would need to take about 3 seconds to regenerate each action cycle to give the 900 watt excess output.

Chukanov mentions a 3 second duration of the burst discharge before the discharge, in writhing like a snake, spread to the sides and touched the walls of the containing tube and caused overheating.

Professor Chernetskii and his team of researchers in Russia have also produced excess energy at power levels in a self-sustaining plasma discharge device, claiming 4 to 5 times electrical power output compared with power input. This was reported in 1989 in a Novosti Press Agency Press Release [115].

Dr. Wingate Lambertson at a conference in 1994 in Denver, Colorado reported similar levels of power gain from a solid-state discharge device formed as a specially-fabricated thyristor [120].

Recently reported Canadian research in 1995 by Dr. Paulo Correa and Alexandra Correa [116 & 117] has established a sustained excess power generation of 500 J per pulse in a cold-cathode discharge confined to an abnormal glow region, with a prospective 40 megawatt-hour electrode lifetime. The Correa technology delivers electrical d.c. output steadily at several hundred volts and a power gain that is also of the order of 5:1 over d.c. input at similar voltage level.

The Correa technology will undoubtedly lead us forward on the quest to exploit energy sourced in the aether, especially as it is already well-patented in the USA.

Several other reports of excess energy production are now of record in the scientific and patent literature and one needs, therefore, to be prepared for the aether to reappear into our scientific philosophy, as being the only source that can supply that excess energy.

When the consequences of these developments and onward research on this new energy theme become generally known and accepted, the aether will reclaim its rightful place in physical science and then acquire a stature which will dwarf its early role in history. Meanwhile, we need to be a little patient and watch events as the interest grows and conferences on the subject as well as new journals devoted to these matters escalate in numbers.

Methodology in Science?

In conclusion, it is submitted that science has lost its methodology. Technology has needed science to point the way forward towards new sources of energy that are non-polluting, but science has faltered. Sensible methodology would have been tolerant of retention of the aether as the foundation on which to build the material world. Even though it is academically interesting to see how far we can go without using a word meaning the 'aether', it was not at all wise for science to reject the concept totally and without reservation. Now, in the present circumstances, too many of the scientists who build their hopes on physical theory are

committed to the denial that there is a universal timing mechanism governing everything. They deny the possibility that energy can be delivered to us by an aether, which, if seen at all, is deemed wholly passive in its role. As a result, instead of leading our thought processes and guiding us forward into a new technological era, building on knowledge of the aether, the scientific philosophers of today have crippled the mental agility of younger generations and made progress so much more difficult.

For my part, in writing this paper, my main objective is to draw attention to the bibliographical record of papers I have written in connection with aether theory. I say there is an aether and I use it throughout my research to explain much in physics that has otherwise remained unexplained.

I have been obstructed in my efforts by the prejudice of orthodox belief and have had many more papers rejected than have been accepted, especially in my earlier years of endeavour, from 1955 to 1975.

I here acknowledge my gratitude to the Italian Institute of Physics for their more tolerant review of several of my papers that were published thereafter in *Lettere al Nuovo Cimento*, that is, until the demise of that periodical. I think it was a great pity that the Italian Institute of Physics ceased publication of their *Lettere* periodical at the end of 1985. Indeed, I almost wonder whether there was any special significance in the fact that two of my papers, referenced [46 & 47] in the appended list, featured together at the end in that last issue!

The future ahead now rests, not with reason and philosophy, but with the forces of new technology, because pursuit of reason and logic is claimed as the exclusive province of those who insist on inventing descriptive language alien to Nature's own method of revelation. In physical science we now destined to witness a slow reformation as technology leads the field and those amongst us who are wise enough to seek recovery of lost ground will hopefully do so by paying more respect to those who have pioneered a belief in the aether. We need to pay homage to the memory of Rene Descartes and, again quoting the words of philosopher Alfred North Whitehead, words he used by reference to Albert Einstein:

The worst homage we can pay to genius is to accept uncritically formulations of truths which we owe to it.

In my writings I have not criticised Rene Descartes. Indeed, in my book 'Modern Aether Science' [110] published in 1972, I have developed my theory on the basis of Descartes' work, but as further advanced by that early-20th-century French astronomer, Alexandre Veronnet [118]. He quantized the aether particle motion in units of the Bohr magneton and partly anticipated what I was later to discover from my research as an analogy between aether and the ferromagnetic state. I go much further, even including the domain aspect of ferromagnetism. I came to picture each individual star nucleating within its own space domain as gravity appeared, akin to ferromagnetism appearing when a crystal inside iron cools through the Curie temperature.

There is always the need to be critical as, so often, revision of one's ideas and formulations is necessary, but, progressively, so long as we keep the main uncertainties in science as our target, we will solve all problems. The need for the phase-lock on a universal scale has been my main target, because it brings together magnetism, gravitation and the quantum connection as encapsulated in the fine-structure constant and from that flows the photon and the problem of duality with electromagnetic wave theory.

I leave it to my papers, as listed in the following bibliography, to tell their own story and to prove that many of the secrets of the aether are now exposed.

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