

Essay 12. The Power of Yoga in Physics.

David Ash

"Science emerged from mysticism and has never completely separated itself."

Arnold Sommerfeld

Precis: In 1965, when I was sixteen, I stumbled across something that could totally transform physics. It was in a book on yogic philosophy lent me by a friend who lifted it from his dad's attic collection of antiquarian books. When I read the *Advanced Course in Yogi Philosophy* ¹ by Yogi Ramacharaka I was transfixed. Mystics in ancient India had achieved the impossible. Quantum physicists insist that a direct perception of quantum reality can never be attained but yogis had achieved it millennia before the emergence of quantum mechanics. That remarkable book contained a vision of quantum spin which physicists believe can never be visualised. With powers of mind over matter yogis saw, quite literally, that the smallest particles of matter were not material things but were vortices of *prana* (the Indian word for energy).

I decided to test this direct observation of quantum spin against modern physics and it worked. It has taken me 60 years to prove it but the Yogic idea that subatomic particles are vortices of energy explains practically everything in physics in simple language and enabled me to predict the Nobel Prize award winning discovery that the further galaxies are from us the further they are from us. The complete theory is here and the credit goes to Yoga. The world of physics is about to be transformed. The theories of quarks and virtual particles, general relativity and materialism go to be replaced by a single, all embracing theory for everything that springs out of the ancient wisdom of Yoga.

Essay: The philosophy of ancient Greece led to belief in the West that the world is formed of indestructible material atoms. That changed in the second half of 1905 when Albert Einstein had four papers published which set the foundation of modern physics. In the last one he published the earth shattering equation $E=mc^2$ which established that mass is not formed of material substance, it is formed of energy. But Einstein could not visualise how energy forms mass and in subsequent years when Pauli and Kronig discovered quantum spin in the foundations of matter they couldn't visualise what that was either. The founders of quantum theory were staring at the pieces but they couldn't put them together. What they didn't realise was that in ancient India yogis had achieved where they had failed. Two thousand years before the advent of science yogis used supernormal powers, repudiated by science, to solve the greatest enigma in science. They discovered by direct observation that energy spins to form the smallest particles of matter.

The supernormal powers used by yogis are called *siddhis*. Siddhi powers were attained through meditation and the use of these extraordinary powers to probe the atom were recorded as early as 400 B.C.E., in the *Yoga Sutras of Patanjali* where the results of meditation were described in detail. In Aphorism 3.46 it states that through meditation the yogi can gain an extended faculty of observation from the practice of the *anima siddhi* - an ability developed by yogis to shrink their consciousness commensurate with the very small. While siddhis were not mentioned in the original book I read on yogic philosophy, I was galvanised when I realised its first publication was in January 1905. ¹ The yogis had predated Einstein. It was immediately clear to me that if they could do that then maybe they were correct in their description of mass as vortex energy. As a boy I decided to test the yogic perception of the vortex of energy against modern physics. Since then I have been on an amazing journey of discovery that set me on a path to re-write physics around the simple idea that energy occurs in two forms; the wave and the vortex. I began my hypothesis with the assumption that the quantum of waves is the basis of heat and light and the quantum vortex accounts for subatomic particles in atoms of matter and antimatter.

On my exploration of physics, stretching over half a century, I came to realise that the yogic hypothesis of the vortex of energy could explain many things in the subject. In the main publication of my work in 1995. ² one of the conclusions I published then was that the further galaxies are from us the faster they accelerate away from us. When that was confirmed by Saul Perlmutter in 1998,³ followed by a Nobel Prize in 2011, for me it was mission

accomplished. My purpose was achieved. The vortex hypothesis stemming from a mystic insight of yoga that occurred in ancient times had proved to be a sound scientific theory.



Fig 1. The gyroscope

One of my earliest realisations was that the spin of vortex energy could set up the inertial mass of subatomic particles. Spin sets up inertia. This is evident in the gyroscopic spin that sets up inertia as resistance to movement out of the plane of spin. A vortex is a three dimensional spiral so the vortex spin of energy would set up inertia or resistance to movement of the vortex in every direction. This is how vortex spin could account for the inertial mass of particles of matter. It was also evident to me that the three dimensional vortex spin of energy forming subatomic

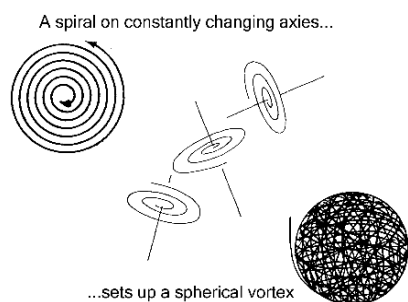
count for the extension of matter in three dimensions. 3D extension is something we take for granted. I was beginning to realise the vortex of energy could explain many things we take for granted.

The yogis spoke of *maya*, the illusion of forms. They may have come to this conclusion after discovering the vortex of prana underlying matter because I realised the vortex of energy was responsible for the appearance of material substance. Many people take it for granted we live in a material world but this could be an illusion set up by spin because material substance is defined in terms of the inertia and three dimensional extension of massive particles. If inertia and 3D extension are a consequence of the vortex spin of energy then materialism could be explained away as spin. People fixated with materialism may be deluded by spin.

The ball of wool provides a graphic image of the energy vortex and helps us understand the impact of $E=mc^2$. A ball of wool is a compact form of wool. Unwind it and very quickly it will fill a room with wool. Likewise if a vortex of energy is unwound a lot of energy would be released from a small amount of matter. This provides an account for the release of vast amounts of energy from minute amounts of mass in a thermonuclear explosion.

The yogic visualisation of the vortex of energy is like the picture in a jigsaw puzzle. Physics has all the pieces but in the hundred some years since 1905 quantum theorists have puzzled over how to put them together. The picture provided by the yogic vortex makes it easy so that anyone with a basic knowledge of physics, or is sufficiently interested to read popular books on the subject, can tackle the challenging jigsaw puzzle of quantum mechanics.

There are a number vortex types including conical and toroidal forms of vortex but in the vortex theory the degrees of freedom for energy to spin in three dimensions in a vortex suggests it would set up a sphere of spin causing it



to form a ball vortex rather than a conical or toroidal vortex. These vortices display an axis of spin so they have detectable poles but subatomic particles do not appear to have poles. The vortex that best images a corpuscular subatomic particle is the *ball vortex*, modelled by the ball of wool. The wool-ball model works because in a ball of wool the orientation of the axes of winding are constantly changing. A ball vortex of energy would have poles but they would not be detectable as the orientation of spin would be changing at the speed of light.

Fig 2. The 3D spin of energy sets up a ball vortex without measurable poles.

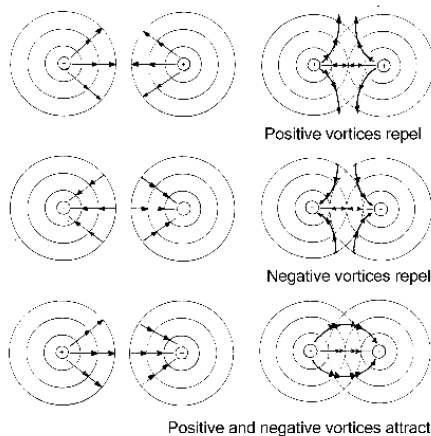
In a nutshell, the vortex of energy discovered by yogis in ancient times provides a visualisation of quantum spin. My daughter Jessica, a teacher of yoga teachers, says "*Everything goes back to yoga*". Yoga can help us make sense of quantum reality. The inability to visualise quantum spin or understand how energy forms mass has dogged quantum physics for the best part of a century. Now the problem is solved. With the yogic perception of energy spinning in the atom described as a ball vortex, quantum theorists can visualise the outcome of their equations and anyone with a basic knowledge of science can appreciate the quantum wonders of physics.

The first person to describe the atom as we know it today, in an understandable way, was Niels Bohr. He ascribed three quantum numbers to the way electrons move in atoms. When Wolfgang Pauli added a fourth quantum number everyone assumed it to be the top-like spin of an electron. But when the discoverers of quantum spin warned it was not that ⁴ quantum mechanics went into a spin and drifted away from common sense. Thanks to

the enlightenment of yoga it is now possible restore normality with the assertion that the quantum numbers should be attributed to the spin of energy in the vortex rather than the spin of the electron in the atom. The vortex is a three dimensional system of energy. That could account for the three quantum numbers attributed to subatomic particles. The fourth quantum number could then be ascribed to a feature of the ball vortex that the spin of energy in it is in all three dimensions at once as it spins into or out of the vortex. The ball of wool model shows clearly, when wool winds off or onto the ball, how the vortex contracts or expands in three dimensions. The growth or decay of the ball vortex could be taken to depict the fourth quantum number associated with quantum spin. It could show how the fourth dimension of space proposed by Pauli could denote the size of space, which could be the dimension of contraction or expansion. If the vortex of energy were to set up the bigness or smallness of space it would show how the fourth quantum number is associated with quantum spin.

We take the size of space, say between an atom and a galaxy, for granted but it must be the consequence of something. It could be a consequence of the ball vortex of energy. If quantum spin is taken to be the three dimensional spin of energy into or out of a subatomic ball vortex then the size of space could be visualised as a feature of quantum spin. If the plus or minus half numbers associated with quantum spin were taken to denote the opposite directions of spin into or out of the vortex of energy then these opposite directions of spin could be associated with the positive or negative signs of electric charge- that is if vortex energy is taken to account for charge. There are a lot of 'ifs' but this line of enquiry could also resolve a problem that Pauli, Heisenberg and the other architects of quantum mechanics had in understanding electric charge. As Pauli put it, "The crux of the problem was that the concept of electric charge was foreign to both pre quantum and quantum physics. In both

theories the charge of the electron had to be introduced into equations- it did not emerge from them." ⁵



Vortices of energy are dynamic so when they overlap they would interact. Vortex interactions could be responsible for the fields of electric force extending from subatomic particles. At a distance from its centre a ball of wool tends to be more like concentric spheres than a spiral so vortex interactions would be more akin to spheres of energy pushing or pulling against each other than interwinding spirals. If concentric spheres of vortex energy push against each other in opposite direction they would set up repulsion or if they pull together in the same direction they would set up attraction. Plotted on a diagram these interactions reveal the classic lines of electric force.

Fig 3. Vortex interactions setting up repulsion and attraction between charged particles.

Three dimensional extension applies to space as well as to matter which suggests they could both be linked to the vortex of energy, which could be acting as the source of 3D extension in them both. It could be that matter is the vortex energy we perceive and space to be the vortex energy extending beyond our perception. Space is electrically neutral. That could be because there are an equal number of opposite spinning vortices of energy is existence cancelling out each other's distant effects.

In the vortex theory there is no absolute space. One vortex of energy is thought to exist as a system of motion relative to which another vortex is the extension of space in which it moves. This reciprocating interplay between space and motion provides a simple way of understanding Einstein's theories of relativity. If matter and space are just different ways we perceive vortex energy then they would be connected. Einstein believed that the unification of space and matter was the core of relativity This was clear from the way he responded to a reporter in New York

who asked him to put his theory of relativity in a single sentence. Einstein replied immediately with the cryptic remark, "If you remove matter from the universe you also remove space and time." ⁶

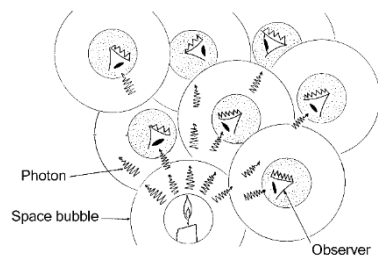


Fig 4. Space extending from bodies of matter

In his special theory of relativity Einstein predicted that the measured speed of light is independent of the movement of the Earth. That can be explained by the matter-space connection. If the space around the Earth is an extension of the Earth then the speed of light measured in the Earth's space would not be effected by the motion of the Earth because the Earth's space, in which the speed of light is being measured, would be moving with the planet. Every observer measuring the velocity of light in their own extension of space would experience the same effect.

In the vortex theory every body of matter is considered to be surrounded by concentric *shells of space* that are an extension of its shape. You can test this for yourself by swinging a pendulum along the edge of a table and watch it change direction to follow the contours of the table especially the corners. Following the lines of least resistance, it appears to track rather than cross the table's shells of space.

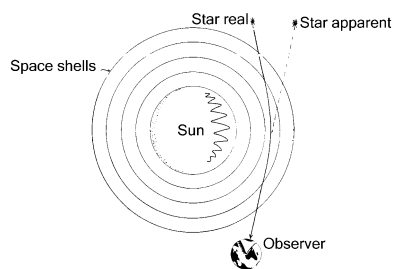


Fig 5. Curved space extending from the Sun

When a car encounters a roundabout the car goes round because it has to follow the contours of the road round the roundabout. Imagine the sun as a roundabout. Just as a car will follow the curvature of the road round a roundabout so starlight passing close to the sun would follow the contours of the concentric shells of space extending from the sun. This effect, illustrated in Fig.5 could explain the deflection of starlight round the sun observed by a Royal Society expedition during a solar eclipse.

In the 1919 eclipse, the Royal Society tested a prediction Albert Einstein made in his general theory of relativity published in 1915. In his theory he had suggested that time is a fourth dimension in continuum with space. He went on to suggest that this continuum could be distorted by mass and that the falling together of massive bodies

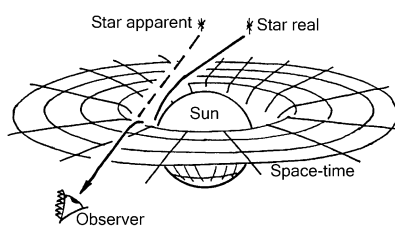


Fig 6. Effect of distorted spacetime on light

in the spacetime they contort was the cause of gravity. In his theory he predicted that the spacetime close to the sun would be distorted by its mass and that starlight passing through this distorted spacetime would appear to be deflected by the sun. This effect, he said, could be observed by comparing photographs of the stars around the sun during a solar eclipse with photographs of the same stars in the night sky.

The fact that Einstein predicted the apparent deflection of starlight around the sun doesn't prove he was right in assuming time is a fourth dimension in continuum with the three dimensions of space which is contorted by mass. The alternative account for space curvature around the sun, provided by the vortex theory, has less arbitrary assumptions than Einstein's theory and it is well known that Einstein's general theory of relativity is incompatible with quantum mechanics. Einstein may have declared that time is a fourth dimension associated with space but Pauli discovered quantum spin is linked to a fourth dimension space and his Nobel Prize winning exclusion principle depends on that. They can't both be right. The vortex model for space curvature aligns with Pauli's theory if the vortex of energy is accepted as quantum spin. The vortex depiction of quantum spin reveals the space around the Sun to be curved not because it is a spacetime continuum distorted by the mass of the sun but because it consists of concentric spheres of vortex energy extending from the Sun. The advantage of this model is there are less arbitrary assumptions in it than in the general theory of relativity and it is compatible with quantum mechanics.



The 3D spin of energy in or out of the vortex, setting up the fourth dimension as an expansion or contraction of space, is modelled in every moment of our lives as the inspiration and exhalation of the breath. In the vortex theory the fourth dimension of shrinking or growing space is called the *Alician* dimension after Alice in Wonderland. Alice shrank and entered a looking glass world and in the story she met the twins Tweedle Dum and Tweedle Dee. Therein lies the clue to understanding antimatter and the $+\frac{1}{2}h$ and $-\frac{1}{2}h$ features of quantum spin.

Fig 7. Alice through the looking glass

At Cambridge, in 1931, Paul Dirac saw in one of his equations the possibility of antimatter in a positively charged electron with a quantum spin value of $+\frac{1}{2}h$. It was opposite in charge but identical in mass to a normal electron, with its quantum spin value of $-\frac{1}{2}h$, so he dubbed it a *positron*. The electron and positron with their equal mass and opposite charge, appeared to be mirror symmetrical twin particles. How the plus and minus signs signifying opposite directions of quantum spin could relate to their opposite charge has been explained in the vortex theory.

But what was the $\frac{1}{2}h$ all about? That became clear a few months after Paul Dirac published his findings.

At the California Institute of Technology, a young experimenter called Carl Anderson was bombarding a thin sheet

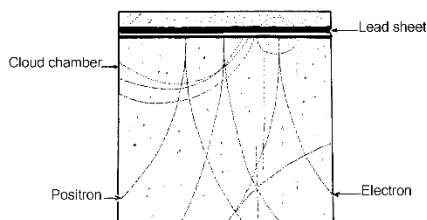


Fig 8. Discovery of matter and antimatter

of lead with gamma rays. In his experiments he spotted electron-positron pair particles emerging on the other side of the lead in his cloud chamber. His experiments confirmed that each pair was created from a single gamma ray photon. Because the energy in a photon is defined by Planck's constant, depicted by the symbol 'h', then obviously as each particle in the pair carries away half the energy of their parent gamma ray photon, their energy would be defined by $\frac{1}{2}h$.

The vortex theory account for the creation and annihilation of pair particles is illustrated in Fig.9. In the vortex theory two vibrating strings of energy in the gamma ray photon are forced from wave motion into spin as they

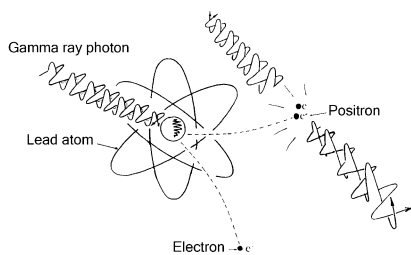


Fig 9. Creation and annihilation of matter and antimatter

pass through the vortex particles in the nucleus of a lead atom. These appear on the other side of the nucleus as a pair of vortices in which the string of energy forming each one is spinning in opposite direction. That accounts for their opposite charge. The positron is immediately attracted to a random electron and on encounter the two equal but opposite vortices counter spin one another to reverse the wave - vortex transition. Wave motion is thus restored in the form of the two gamma ray photons that fly off in opposite direction.

Matter and antimatter can provide an account for gravity in terms of vortex interactions, but first it is necessary to

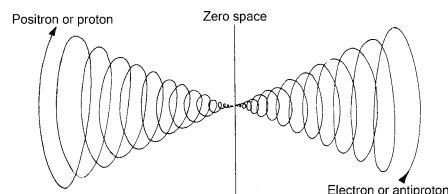
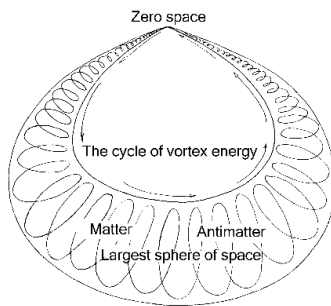


Fig 10. Vortex energy forming matter and antimatter

explain where the energy comes from and where it goes to in the vortex. In the vortex theory energy is thought to spin into the centre of a negative charge such as an electron in matter. It then passes through a zero space point at the centre of the particle and whirls out again as a positive charge to form an antimatter positron. This model suggests that every subatomic particle of matter in the universe would share a common point of singularity with a twin particle of antimatter. This is illustrated in Fig 10.

In the vortex cosmology the vortex energy emerging from a zero space point of singularity at the centre of a



positively charged particle expands out to a maximum sphere of space. From there it then contracts back toward singularity through a negatively charged particle of antimatter and passes through it to form the positively charged particle again. The reverse cycle occurs for a negative charge where the vortex energy contracts into zero space and passes through it to emerge as an expanding positive charge. As Fig. 11 illustrates, vortex energy could circulate endlessly in this way, through every particle of matter and antimatter, to form two separate, mirror symmetrical halves of the universe.

Fig 11. The universal cycle of vortex energy

If every vortex in matter is connected as a Siamese twin to a vortex in antimatter, then every form and action in matter would be faithfully duplicated in antimatter. If that were so there would be an antimatter version of you, beyond the centre of every particle of matter in you, and beyond the centre of the Earth there would be a mirror symmetrical planet Earth formed of antimatter.

Pauli saw the possibility of a mirror universe in 1954 when he was studying parity, the scientific term for mirror symmetry. To quote Arthur Miller from 137:

“The year was 1952...Pauli began his investigation into mirror symmetry by looking at time reversal...By the mid1930s physicists agreed that every charged particle must have a matching antiparticle...In 1954, two years after he began working on mirror images, Pauli decided to look deeper into the whole subject. Instead of exploring charge conjunction (C), parity (P), and time reversal (T) separately, he looked at all three together- the whole combined operation of CPT makes the astonishing assertion that a mirror universe- in which all matter is replaced with antimatter, all positions are their own reflections, and even time runs backwards so that all speeds are reversed- would actually be indistinguishable from our own.”⁷

Between matter and antimatter there is an electric force of attraction. This attraction would not be between you and your doppelgänger because you would be connected parts of the same whole. The attraction would be between you in matter and every other body in antimatter, including the antimatter Earth. This implies every body in or on Earth would be pulled by an accelerating force of attraction coming up from the antimatter Earth, acting effectively through the centre of the Earth. This centralising pull on matter, coming from antimatter, could account for the force of gravity. The centralising pull on matter, coming up from antimatter, could then be transmitted by the shells of space that extend out from every body throughout the universe. This is how gravity and its infinite extension is accounted for in the vortex theory.

At the other end of the spectrum of size there would be an accelerating force of attraction between matter and antimatter acting over the largest sphere of space. This would be the polar opposite of gravity – a decentralising force causing an apparent accelerating expansion of the universe. Gravity acts from the smallest realms of matter and antimatter whereas this opposite force would act from the largest and would affect the biggest things in space. It would cause galaxies to accelerate apart and race out into vaster space. The further they are from us the closer they would be to the largest sphere of space where the pull from antimatter would be coming from. So they would be accelerating fastest from us. This was the conclusion I published in 1995² that was confirmed in 1998.³

The theory of the quantum vortex succeeds where Einstein failed. He failed in his attempt to unify his theory for gravity with the electric force. By contrast in the vortex theory, stemming from yogi philosophy, gravity is unified with the electric force of attraction because they are both seen to be caused by a similar type of vortex interaction.

A scientific revolution came with Copernicus, Galileo and Newton and another was sparked by Einstein, Heisenberg and Pauli. The discovery that yogis in 400 B.C.E India visualised quantum spin has the potential to spark yet another scientific revolution, not only by bringing clarity and understanding to quantum mechanics but by the fact that clarity has come through a mystical tradition. If a complete theory, understandable in broad principle by everyone, is derived from the mystical tradition of yoga then the value of mysticism should be

appreciated in science and yoga should be respected in the Western religions. A significant role of future education may be to develop a greater awareness of this.

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