APPENDIX VII

Einstein and 100 Years of Wisdom

Physicists will soon be celebrating the centenary of the birth of Einstein's Special Theory of Relativity and as news of such an event reaches the general public via the media, there may be those who ask what is meant by its underlying 'principle of relativity'.

In Einstein's own words it is:

> 'A generalisation when we express the tenet thus: If, relative to one Galilean co-ordinate reference system, another Galilean co-ordinate reference system is a uniformly moving co-ordinate system devoid of rotation, then natural phenomena run their course with respect to the second co-ordinate system according to exactly the same general laws as with respect to the first co-ordinate system. This statement is called the principle of relativity.

I think I know what this means but I doubt if there are many, even of the physics community, who really care as to its meaning. After all, it adds up to saying that whatever happens in the scientific and technological arena today will, if we repeat whatever we did to make that happen, have the same result tomorrow, even though we and our Earth have moved on through the cosmic background. However, I know that there will be those of you who question this because our frame of reference, Earth, is itself rotating. So it really is impossible here on Earth to test what Einstein claims as a 'principle' unless we can stop the Earth from rotating. Alternatively, we could go off in a spacecraft equipped with sensors and controls that preclude any

rotation. However, Einstein did not do that, nor could he 100 years ago.

There is also scope for misunderstanding because, in a sense, Einstein's wording is somewhat ambiguous. He refers to two frames of reference and natural phenomena, but there is doubt here as to whether the principle refers to a specific phenomenon or, rather, physical event or whether what is implied is physical phenomena in general. As an example of what I mean, consider the mechanics of a ball bouncing from a surface. The principles of motion governing that bouncing ball are, by one interpretation, the same if studied from the perspective of either reference frame. But if we think of two observers one in each of those two frames are we to understand that from their individual perspectives, looking at the same ball, their assessment of the physics governing the motion will be exactly the same?

On this latter interpretation the principle of relativity would fail because, should the ball bounce from a surface in that second reference frame with a certain velocity relative to that surface and that frame be moving at the same velocity relative to the first reference frame, one observer would see the ball bounce and the other would see it stop on impact.

On the first interpretation Einstein was on safe ground in postulating the so-called 'principle', subject to limiting conditions, because, relying on the teachings of classical mechanics and Isaac Newton, it is a direct consequence of the physical laws governing what happens in the mechanical world. Einstein was aware of this limitation, but claimed his notoriety by venturing beyond that boundary and asking us to accept the 'principle' without such a restriction.

On this he declared, after saying that in regard to classical mechanics 'there was no need to doubt the validity of this principle of relativity',:

> 'in view of the more recent development of electrodynamics and optics it became more evident that

> classical mechanics affords an insufficient foundation for the physical interpretation of all natural phenomena. At this juncture the question of the validity of the principle of relativity became ripe for discussion, and it did not appear impossible that the answer to this question might be in the negative.'

So, you see, here was Einstein himself weighing the validity of his 'principle' as a matter of probability, another word for 'uncertainty', owing to the physical phenomena that we encounter in electrodynamics, the motion and interaction of electric charges, rather than the physical phenomena that pertain to electrically neutral matter. A point of interest here is that electrodynamics and electromagnetic waves (light) require an electromagnetic frame of reference, whereas mechanics requires an inertial frame of reference and there is an implicit distinction between these akin to the distinction between v and dv/dt, velocity and acceleration.

Indeed, one might ask what Einstein had in mind as a basis for that qualifying remark in the last sentence of the above quotation. He does not reveal that. Instead he moves on by declaring that 'there are two general facts which favour the validity of the principle of relativity'. Here that word 'favour' has its implication, given that, in physics, one is expected to prove a proposition rather than judge its merits by speculating on chance.

As to the first of these 'facts', judge for yourself whether what he declares can be regarded as fact:

> 'The principle of relativity must apply with great accuracy in the domain of mechanics. But that a principle of such broad generality should hold with such exactness in one domain of phenomena, and yet should be invalid for another, is *a priori* not very probable.'

That is a factual statement in a semantic sense but far from logical in a scientific context.

As to his other 'fact', this is one he develops by reference to observations made from railway carriages moving relative to an embankment, a mechanical scenario, but one he sums up by saying that:

> 'In virtue of its motion round the sun, our Earth is comparable with a railway carriage travelling with a velocity of about 30 kilometres per second. If the principle of relativity were not valid we should therefore expect that the direction of motion of the Earth at any moment would enter into the laws of nature.'

Even though the theme so far was based essentially on what one could describe as mechanics, Einstein then rests his case by declaring that our observations on body Earth have never 'revealed such anisotropic properties of terrestrial physical space' and that 'This is a very powerful argument in favour of the principle of relativity.'

Now, of course, if aware of the famous experiment performed by Michelson and Morley one cannot fail to see that Einstein invented his 'principle of relativity' expressly as a way of justifying the observation that the speed of light reflected by mirrors is the same as the speed of light incident upon those mirrors, notwithstanding our Earth's motion through space. However, there are amongst us those, including myself, who cannot accept the way in which Einstein brushes aside that reference to electrodynamics. The reason is very simple.

It amounts to saying that we do not belong to a non-rotating world to which that principle enunciated by Einstein applies but recognizing that, as with that space craft or even in an Earth laboratory for the brief period needed for the test, we could create a non-rotating test laboratory in which to prove or disprove Einstein's principle of relativity.

On such a basis, that of electrodynamic interaction between electric charge in motion, one surely needs to challenge Einstein's doctrine. I tried some 50 years ago, half a century after the birth of Einstein's theory, only to be ignored but yet emerge from the fray with the knowledge on which this work is based. The physics community is not open to persuasion on this issue, possibly because no one is willing to pass judgement on a subject that they do not understand but assume is understood by their peers and so they stay aloof in their ignorance.

That said, I will now explain why I have been motivated to write this Appendix to 'The Physics of Creation'. Its first draft edition was completed in April 2003. It was shortly thereafter that I received a letter dated 15 May 2003 from a stranger to me, a person named S. I. Wells having an address in California, who explained that he had referenced a paper of mine in his own paper entitled 'Magnetic Interaction Reconsidered', that he had submitted to the American Journal of Physics for publication. It was rejected but the referee comments had implied that the latter portion of the paper posed a 'puzzle' that warranted publication and so resubmission was encouraged. In the event this latter submission was then rejected without consideration on the grounds that 'we no longer have a Questions & Answers section and thus will not be accepting your manuscript for publication'.

Now, to me, this is, as they say, 'par for the course' - thou shalt not challenge Einstein! So, what was it that Wells had offered for publication? It was brief but concise. After pointing out that special relativity was developed to preserve the equations of electrodynamics in all inertial frames, which makes it imperative that the principle of relativity applies in all possible situations, Wells draws attention to a 'seeming paradox'. He refers to two equal and like polarity electric charges separated by a straight, rigid and insulated rod, when viewed (a) in the rest frame of the rod and (b) in and relative to a laboratory frame which is in uniform relative motion in any direction neither

parallel nor perpendicular to the rod. Every physicist should be sufficiently familiar with standard theory governing how charge in motion produces a magnetic field and how that field exerts force on another moving charge, which means that he or she can easily verify that an observer in that rest frame will see that rod at rest, whereas an observer in that moving laboratory frame will see the same rod as subject to a torque which will cause it to turn to alter its orientation in space.

So, Einstein says that the rod cannot turn, but standard physics as taught universally says it will turn. Yet the American Journal of Physics, the major U.S. periodical for those who teach physics, decline to publish this observation.

One does not have to be a genius to stumble across this crack in the theory of relativity, a system which some refer to as 'The Einstein Myth', but one must wonder about the integrity of our scientific world, given this situation.

I was well aware of this paradox during my university research years over half a century ago, but my research discipline was the electrodynamics that govern the magnetic properties and energy anomalies found in steel as used in electrical power transformers. Challenging Einstein's philosophy was not on my career agenda as a research student. Philosophy is for those who are already established and secure in their way of life.

Yet I was intrigued in 1965 when I saw and purchased a newly published book by R. A. R. Tricker entitled *'Early Electrodynamics'* (Published by Pergamon Press). A topic similar to that raised by Wells is mentioned in the chapter entitled 'The Critics' by reference to the opinions of H. G. Grassmann (1809-1877). The debate concerned Ampere's electrodynamic force law, a law which is never used today but which, curiously enough would still not survive the test imposed by Einstein's principle of relativity.

Grassmann pointed out that Ampere's law would require the force acting between the two charges to be zero when their motion as

shared by the rod was inclined at a certain angle to the rod but change from an attraction to a repulsion as the rod turns around whilst having the same translational motion in the electromagnetic frame of reference. Concerning this Tricker states:

> 'For Grassmann this is too improbable to be acceptable. Grassmann can bring no experimental evidence whatever to support his view and there is not the slightest reason to suppose that nature was designed to satisfy the particular tastes of anybody.'

So you see, here is an author who expects proof by experiment, rather than argument based on taste and probability, but somehow Einstein's principle of relativity, which I see as unproven and as a mere philosophical notion, a matter of 'taste' in the sense used above, has governed the progress of energy science (retarding it!) for a century.

How can we emerge from this dilemma? The answer amounts to saying that all verifiable and proven electrodynamic technology as harnessed in our power industry is founded on electrodynamic action by electric charges flowing around closed circuits. The electrodynamic law used involves integration of action around such closed paths. Any differences in assumptions concerning those laws can only be tested by experiments involving interaction of electric charges that exhibit properties characteristic of an isolated state that is not smeared into the action of a uniform current flow around a closed circuit.

The dipole rod experiment implicit in the argument posed by Wells, if performed, would be such a test, but other such tests are those based on plasma discharges where the charge carriers have different charge/mass ratios and opposite charge polarity. This is the realm of energy anomalies that promise to tap energy from the space environment, as touched upon at the end of chapter 9 of this work.

Einstein's theory has obstructed progress in this field of technology by making it appear that all was well with our understanding of electrodynamics, whereas there are unanswered questions such as that posed by the paradox raised by Wells here in this 21st century, by me in the 20th century, as chapter 9 has shown, and by Grassmann in the 19th century. If only Einstein had conceived his principle in more general physical terms, as opposed to its restricted form! After all, a Galilean system of co-ordinates is an inertial system and one is thereby locked into the physical constraints that accompany inertia. By 'general' here I do not mean the extension adopted by Einstein in moving from his 'Special Theory of Relativity' to his 'General Theory of Relativity'. I will reword Einstein's statement as to the principle of relativity to show you what I mean:

> 'Space is a co-ordinate reference system having the electrical properties of a fluid medium in which a kind of crystal structure can form to define such a frame of reference. That crystal structure adapts to the presence of material bodies, locking onto atomic structure, and so shares the motion of such bodies but can dissolve as necessary to merge with the fluid before re-emerging as new structure. If, relative to one such co-ordinate reference system, another such co-ordinate reference system is a uniformly moving co-ordinate system devoid of rotation, then natural phenomena run their course with respect to the second co-ordinate system according to exactly the same general laws as with respect to the first co-ordinate system, but such phenomena are governed only by the local co-ordinate system, a constraint particularly evident in electromagnetic action which takes the local co-ordinate system as its sole frame of reference.'

My message here is that Einstein relied on the Galilean co-ordinate reference system as an inertial frame of reference but should have based his theory on a system of reference that itself had the necessary physical properties to adapt to the local presence of matter. The notion of a universal aether medium gave a physical foundation but provided only one frame of reference, whereas an aether that provides multiple frames of reference nucleated locally by the presence of matter but not overlapping is what is needed.

After a century of stubborn adherence to Einstein's doctrine it is unlikely that I shall, in my lifetime, see the physics community changing direction. I can but hope that what I now see as an ongoing quest to tap energy from the aether itself will trigger the reversal of opinion. As it is, however, I can but repeat the quotation that I presented on page 1 of my first publication on this subject, *'The Theory Gravitation'* , 1960. It was from pages 387-388 of a 1913 book by N. R. Campbell entitled: *'Modern Electrical Theory'*, (Cambridge University Press):

> "If we speak of 'aethers' and not 'the aether' all our experiments prove is that the particular aether with which we are concerned in any case is that which is at rest relatively to the source and may be regarded as forming part of it. This is the simple way out of the difficulties posed by the Michelson-Morley experiment. If from the beginning we had used a plural instead of a singular word to denote the (aether) system .... those difficulties would never have appeared. There has never been a better example of the danger of being deceived by an arbitrary choice of terminology. However, physicists, not recognizing the gratuitous assumptions made in the use of the words 'the aether', adopted the second alternative; they introduced new assumptions."

Having read these words, back in the year 1945, as a young university student, I was in no mood to be persuaded in Einstein's favour and, from then on could but study Einstein's theory with a critical eye and a desire to search for the truth as there to be found in the omnipresent aether. I was lucky to see a picture of the aether emerge as secondary spin-off from my theoretical efforts to understand the ferromagnetic properties of the atomic structure of iron. This book and its forerunners duly emerged and now, save for the point I make below, there is little more I can add. I hope a few readers will share my thoughts as we live through the Einstein centenary.

That 'point' is a reference to Einstein's technique of 'transformation', his theory not being one involving a simple and direct logical interpretation of his so-called 'principle of relativity'. It seems that when looking at physical phenomena occurring in one Galilean co-ordinate frame whilst sitting in another such frame, albeit moving uniformly and without rotation relative to the first, one must put on a pair of spectacles having a special prescription. This is necessary in order to distort what one sees to make it conform by looking the same as it would in that first frame whereas in fact it is actually different. That prescription is expressed in mathematical four-dimensional terms, obliging one to perceive the time dimension as a fourth space dimension, a curious notion and best avoided, given that we seek the truths of the real world and not a fantasy world that is mere illusion. Reverting to that problem posed by Wells, as mentioned above, it could well be that a 'relativist' wearing those spectacles formulated according to the mathematics of the Lorentz transformation might be able to avoid thinking there is any torque effect upon that electric dipole, but after close to 100 years one can but gasp and ask: "Oh Lord, why have we allowed Einstein to distort our vision of the aether of your Creation?'