The Special Theory of Reality

Robert F. Beck

EINSTEIN'S REVOLUTION

17 LARCHWOOD ROAD
ST.JOHNS WOKING SURREY UK GU21 8XB

www.einsteins-revolution.com Email: robert@einsteins-revolution.com

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Preface

This book is written for all those people, whether scientists or just the curious, who are not comfortable with current theories and hope that there are more sensible, complete, and easier to understand explanations for everything in our Universe.

The real "Holy Grail" was, almost certainly, not a grand, ostentatious, complicated item. I think that many more than Indiana Jones would envisage it to be starkly simple. Can we hope, therefore, that the "holy grail" of physics will turn out to be much simpler than recent books would lead us to believe? The author is convinced, just like Einstein, that the answer is yes, as the very small size of this book suggests.

Is the reader getting poor value for money compared to the glossy, picturesque works by Stephen Hawking, or Roger Penrose's two-inch thick, monumental masterpiece of mathematical mysteries? If the following few pages contain the simple truth, then the entire future of mankind can be transformed. Current, apparently insoluble, ever more threatening problems can be turned into bright hope for the future, because this book contains the first ever clear and believable explanation for the precise mechanism by which gravity works and suggestions of ways to defeat it. This would be the greatest single advance in the history of mankind, which would set it on a completely new and exciting course.

If all this sounds improbable, consider the fact that I appear to also have logical, how and why answers to almost every other enigma or mystery of physics, including some paranormal phenomena. I even suggest what it is about the nature of light that makes its speed appear the same for all observers, without the illogical universal speed limit of c applying to all motion. So this book suggests that the future for mankind can be not only more hopeful than climate change and energy dominated politics suggest, it can be quite amazing, with inter-stellar exploration a real possibility.

It may seem to be a step of faith to hope that someone you have never heard of, who is not an established scientist, can really have such answers; but all it takes is faith that God exist and reveals truth at appropriate times to certain people (including patent clerks), because I am convinced that the most important ideas were revealed to me after a forty year personal battle to reconcile

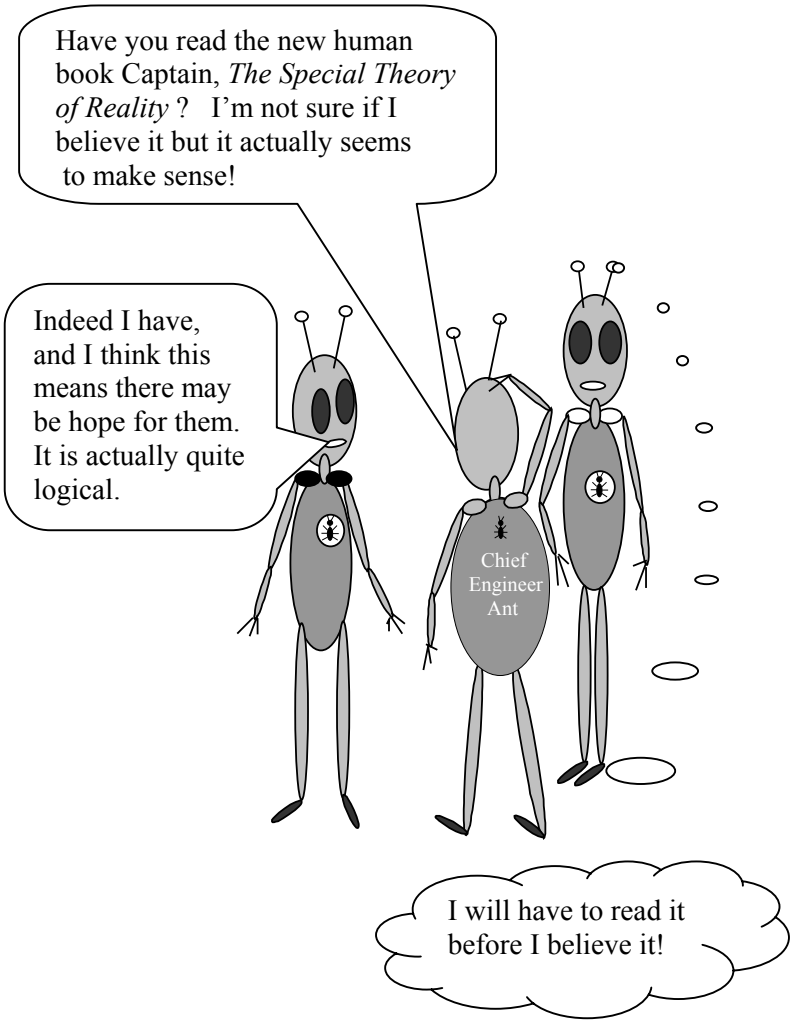
faith and science was finally resolved in a decision to trust God completely.

Unlike most books of a scientific nature this contains some humour to act as light relief to the inevitable heavy passages. It may be much easier to understand than most books on the subject, but no one can make Relativity "light reading". It is hoped, however, that many people will find that Relativity now begins to make sense to them, because I believe I have new insight to shed on this subject, which clarifies some aspects and challenges others, whilst confirming Einstein's dream of a unified field theory based on particles.

This book throws down the gauntlet to physicists, astro-physicists and cosmologists to re-examine everything from basic concepts to theories which are apparently "set in stone"; a highly unscientific approach, which repeats the mistakes of the past. The Human race, I believe, must find the open-minded humility to admit error before it will be permitted to travel the Universe.

Introducing Alien Ants

On a planet, not much different to ours, it was the ants that evolved into much larger, and more intelligent creatures than us, and decided to go where no ant had gone before. (Any similarity between any alien ants and any other characters, real or imaginary, is purely coincidental)



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Introduction

My interest in Relativity started at secondary school in the early sixties when I chose Einstein's book as a science prize. I tried to understand it whilst doing "A" levels at Brooklands College, where I received the second year prize for physics. I thought I did, in a slightly vague way; but it was not until I read in the library, one lunchtime, that time is not the fourth dimension, that I think I really started to understand the basic meaning of the General Theory.

Having eventually decided on an essentially non scientific career, in Town Planning, I ceased an engineering degree course and started as a lowly clerical officer, then trainee, but progressed rapidly to senior officer in five years; giving evidence as one of the Local Council's expert witnesses at public inquiries concerning all types of development, including the largest single development in Europe at the time. My training revealed, apparently, that I had a logical mind. This early grounding in science, together with the need to consider and choose words very carefully to defend under cross-examination, what I believe to be Divine inspiration, and possibly similar traits to both Einstein and Newton, are the only qualifications I have to write this book.

I continued to take a general interest in science, as reported in the media mostly, but with greatest interest in space exploration and the developing theories on the universe. I indulged in abstract thought as an occasional diversion (in addition to a little oil painting) and eventually started to feel uneasy about the way certain concepts were represented and certain theories were developing. About 25 years ago, whilst sitting in my car one lunchtime, I realised that my thoughts were crystallising and I scribbled down the following under the heading "How Einstein has misled us":-

> "Time and Energy are the Calx and Phlogiston
> of the 20th century....."

I went on to say that treating them as entities that can exist in their own right may be preventing a true understanding of the nature of the Universe, which Einstein and those since have made appear so complex. This may not be the fault of Einstein, but probably stems from misconceptions of his intended meanings. I suspect this is probably more to do with the way the media interpret science, but there is always a danger when theories are constructed that the limitation of the "bricks" may be overlooked. By "bricks" I mean the fundamental concepts which familiarity leads us to use without much thought as to what they are capable of supporting in terms of new ideas.

I always like mixing metaphors so here goes: maybe I can see the wood for the trees because I am outside the wood. This does not mean that I am convinced beyond all doubt that I am right in every way. I was taught scientific method well enough to know that all hypotheses must be tested and usually only accepted until a better explanation can be found. If, however, I forget for a moment the rigors of scientific discipline, I am very temped to say that surely this must be right in essence, especially as I am convinced that God is the source of the more important ideas.

My problem is that any maths I learnt, that is any way near up to the task, is mostly long forgotten. I am hoping that, with the help of my Daughter, who is doing a Ph.D. and research in digital communications at Imperial College, or others who may wish to collaborate, we might be able to develop this theory with more mathematical justifications eventually. But, because of the wide-ranging complex disciplines involved, I think that verification will be a process involving many minds.

As a town planner I could not be an expert in all the disciplines involved, but seeing that they all made sense as a whole was the main objective. I hope that one thing I will have achieved here is to pose some interesting and challenging questions and, who knows, maybe a lot of answers. I think one thing at least will become apparent, i.e. it is a pity that Einstein did not prefer merry-go-rounds to railway journeys.

"Reality" is a good word. Seven letters is all it takes to express exactly what science is all about. Science is a journey towards reality. The tricky bit is knowing when you have reached it. Perhaps the most important principle of science is that nothing can be known with absolute certainty. We are limited by our senses and by the very nature of our Universe, in which uncertainty seems to be inescapable. No matter how simple the matter under consideration, there is always some uncertainty.

Consider an imaginary situation where there are only two particles in the Universe. One of the particles moves past the other and disappears into the distance; or does it? How do we know that it is not actually stationary, and that the other one was moving in the opposite direction? How do we know that each particle does not have one of a whole range of possible speeds which could combine to give the same net result? If the Universe turned out to be a vast goldfish bowl in another Universe, inhabited by giants of unimaginable proportions, could those giants determine the absolute reality of the situation? If they were intelligent giants, and their universe were similar to ours, they would realise that their planet was moving around their sun which was moving around their galaxy, which could well be moving, perhaps faster than anyone had ever thought possible. So what, in reality, is the actual motion of each particle?

We have to say, of course, that the chances that we are, in fact, inside some sort of sphere as entertainment, experiment etc., are remote and so beyond our current ability to comprehend, that we might as well forget it for now. That is why, however, we can have no absolute theory of reality. All we can ever do is assemble all the current evidence, and suggest the most likely reality, which appears to fit the best; hence the word "special" in the title. What I have tried to do is assemble a theory that appears to me to fit better than those which seem to be accepted as virtually indisputable; a standpoint which history and logic suggest is likely to be wrong.

I started out expecting perhaps to raise some questions about current thinking on the nature of time and energy. My

autobiography "A Nutcase in the Universe" explains why I believe that God is the source of the most important ideas in my theory. Having struggled with faith for forty years, I am now convinced that God exists because I could never have worked it out on my own. It appears to me that I can explain gravity. The answer now seems obvious. When I realised it I said "Of course! What else?" The reason why I am so sure it comes from God, however, is that it leads to a whole list of probable answers that seem to tie together so well, and with such elegant simplicity, that I am personally convinced that it cannot be something I dreamt up.

The extent to which it is right must, however, be a matter for the most careful scrutiny for two reasons. Firstly, I suspect most strongly that both Einstein and Newton also had Divine guidance, and yet it seems that neither got it completely right. Indeed, if my most significant ideas are right, it has to mean that some of Einstein's ideas were wrong. The most likely reason for this is that God did not think that mankind was ready to have nuclear weapons and the ability to travel the Universe in the 20th century. Secondly, there is the possibility that I have not understood all that God was conveying. It appears to me that understanding is given or allowed us in appropriate steps.

It is possible, therefore, that I may be right about gravity, perhaps because we can then work out how to overcome it in time to avoid global catastrophe; but other ideas may be of no immediate consequence, so it does not matter if I am wrong. I have suggested two alternative explanations for red shift other than an expanding Universe. Both seem to me to be more plausible than the Big Bang.

One of these, a permanently rotating Universe, seems to fit very well, subject to observational evidence as yet unknown to me, but it is unscientific to suggest that anything has to be right. What if our Universe is a creation beyond our understanding, providing entertainment for beings whose experience of time is phenomenally out of scale with ours. Could "Big Bang" and "Big crunch" be just when their "set" is turned on and off? Do giant

children like to watch the white dot get smaller and disappear? (Only those old enough to have seen early TV sets will understand this).

In our journey towards reality, however, it makes no sense to delay, in pondering the imponderable for more than a moment. What fits best has to be our signpost until we discover that which fits better and leads us further on the journey. By the end of this book, which explains my own "voyage of discovery", it is for the reader to judge the "fit" and to consider how comfortable they are with other current theories.

Because I wish the reader to share this "voyage of discovery" with me, this book is very unusual as a work of science. If I have made mistakes, taken wrong turns, they are there as I made them, to be analysed. Maybe some will turn out not to be wrong after all. We often learn more from what we get wrong. My autobiography demonstrates this over and over again. Discovering and accepting fallibility is as important as any scientific discovery. I may show that Einstein was wrong in some respects, but in the broadest sense I think he is strongly vindicated, especially in his conviction that there would be a simple and beautifully elegant solution. The significance of my comment that it is a pity that he did not prefer merry-go-rounds to railway journeys will, I think, gradually become apparent.

I had hoped to include some feedback from other scientists. At the time of writing this I have written, Emailed or faxed material to over 40. I have also sent cards with a brief indication of my ideas and my web site to the Physics departments of many colleges. I have had only one reply which expresses any view. That was from probably the eldest, who seems to be the only one for whom courtesy is still held as a valid consideration and who may have the least reason to be anxious about his reputation; that is Professor Sir Hermann Bondi, KCB, FRS. He explained that he had not worked in this field for many years and so could not make detailed comment. What he did confirm, however, could be of crucial importance to the consideration of a rotating Universe. It is his view that Special Relativity does not say that nothing can

move faster than the speed of light (though he points out that many books claim this), only that nothing can be accelerated from a speed less than c to speed exceeding this value. He also mentioned the need to incorporate the uncertainty principle. This is analysed in Chapter 8.

It seems to me that there are still so many questions to answer in physics that new ideas must be considered and thoroughly debated. The purpose of this book is to stimulate such debate at all levels. If I am right in the conclusion I have reached that we have to be able to overcome gravity, the consequences for the future of mankind are enormous, and the sooner we achieve it the better. If I am right about mass and the nature of light, it means that inter-stellar travel will be possible without the limitation of the speed of light. Some may be disappointed that I rule out time travel, but this is surely more than compensated by the amazing future which the ideas put forward in this book suggest.

Chapter 1

Time, Energy, Mass, Gravity and Light Explained?

For most people I suspect that time is considered to be something which "flows" relentlessly and continuously; which you might be able to slow down if only you could move fast enough; but which you have to live with, and through, and the very existence of which, surely nobody can ever challenge. To me it is "the relativity of events" and with no events there can be no such thing as "time" ("event" here is, of course the general meaning of the word, not the relativistic definition. I could have said "the relativity of happenings" to avoid this confusion but it seems a little "quaint", but use this if it helps).

I also suspect that most people think of energy as a slightly mysterious entity that is vital to our very existence and without which we can do nothing; something which can be extracted from, or converted from, matter. I consider it to be no more than a useful concept, which helps in the formulation of laws and in calculation, and which can even be shown to be relative. This, together with the explanation I suggest for the constancy of the speed of light, would mean that relative speeds in excess of the speed of light, and relative "energy" vastly in excess of anything conceived before, may be theoretically possible.

Time is that concept which helps us consider and record the relativity of events. The way we do it is arbitrary. We choose a recurring "event" which we think we can rely on being always regular, e.g. the orbit of the Earth around the Sun. We then compare the frequency of that event with all other events. But we can only consider this to be relative until we are absolutely sure that the "time" taken by the orbit does not change. Given that this may depend on the rate of spin of the galaxy, and the motion of the galaxy through space, it would be a reckless man who claims to be confident that we can measure time absolutely.

What we need to be very sure about is precisely what we mean

by "time". Einstein clearly considered it to be relative and variable and it was not his "fourth dimension". It was Minkowski's, and Einstein said that the expression "four-dimensional space-time continuum" was a very "common place statement". His next words were "space is a three-dimensional continuum". He said that, according to General Relativity, the geometric properties of space are determined by matter (a statement which needs very careful consideration).

The motion of matter in space and the indisputable relativity of all motion, means that all locations must be considered in terms of four linear dimensions, the forth of which is the relative displacement within different reference systems. Curved space-time is an inevitable consequence of the nature of our universe, but as I am sure Einstein would confirm if he were here, space-time cannot exist or have any meaning without matter. It is very important to distinguish between the concept of completely empty space, which as Einstein said would be three dimensional, and space plus matter, which requires a four-dimensional approach for clear and accurate representation.

So the meaning of "time" needs very careful consideration. Einstein said "It appears to me, therefore, that the formation of the concept of the material object must precede our concepts of time and space". I think, therefore, that the best way is to consider a universe in which all motion has ceased. The temperature would be absolute zero. Without electrons spinning or orbiting nuclei, there can be no elements, without elements there can be no material and no life; not even the simplest event, such as the collision of two particles can occur. Comparison of events cannot happen so "time" has no meaning.

So the concept of time can only exist when there is motion. And all motion has to be relative. If there are only two particles in the universe, and one passes the other, which is moving? Try as you may, with no other reference point, motion can only be seen as relative. This is known as the principle of impotence, and in this case Viagra, or anything else, can do nothing about it. Energy, therefore, can only be considered in the same way, and it cannot

exist without motion. I suspect a few raised eyebrows at this point. What about chemical energy?! Well, can chemical energy exist without electrons spinning and orbiting? I hope that every expert on the various forms of energy will consider very carefully if it could exist without some form of motion.

If a particle is moving in otherwise completely empty space how can the concept of speed have any meaning? Speed is only the comparison of a change in position with the regularity of an event. We clearly need to have more particles before we can begin to think about speed. So what is the minimum number required? If we had one more, which happened to be spinning, we could define one revolution as one unit of time if only we could be sure that the rate of spin were not changing. But then there would be no standard by which to judge distance, apart from the particles themselves, which may change in size, perhaps as they move. What then if there were two particles spinning at different rates, at positions which we hope we can assume remain fixed relative to each other. If we compare the two rates of spin for long enough we might be tempted to assume that they must be regular and that one or other could be chosen as standard time.

We would, however, then be guilty of ignoring the possibility that the rate of spin of both might be changing at the same rate. The two spinning particles might also both be moving through space at the same indeterminate speed. We then see that it does not matter how many particles there are. We will always have the problem that time can only be a comparison of rates with no certainty of constancy; and speed is likewise just a comparison with whatever we gamble on to be fixed and regular. Time can thus only be one rate as compared with another; and that is why I define it as the relativity of events.

If rates of spin and speed can only be compared, the same must apply to energy. So to think of time and energy as though they have some sort of independent existence is clearly wrong. They were the "Calx" and "Phlogiston" of the 20th century. For those who do not know, before Priestly discovered oxygen it was thought that combustion was the giving off of "Phlogiston"

leaving “Calx”. It is tempting now to laugh at this idea, but it must have seemed logical. Consider a dry, heavy log; when burned the pile of ashes clearly weighs less. When Priestly said that combustion was combination with oxygen to give a net increase in weight, supporters of Phlogiston theory probably scoffed. The greatest danger in science is assuming that something has to be right. Should we assume that the Universe has to be expanding, or that the speed of light cannot be exceeded? Consider the ideas that follow and judge for yourselves.

When we see just how subjective the concepts of time and speed are, the idea of one particular universal limiting speed immediately seems incongruous. To me it is clearly illogical. There has to be another explanation for the speed of light seeming to be the same to all observers. It makes absolutely no sense to me that if all speed has to be considered as arbitrarily relative, any particular speed should be special.

There will be scientists at this point thinking that Einstein’s ideas in this respect have been proved to be right. With all due respect I say that nothing can be “proved”. We can only observe that something appears to be the case, accepting that we could be deceived. Does demonstrating that light has mass because it is bent by a gravitational field mean that mass has to increase with speed? What if the mass started as greater at the instant the photon was ejected and decreased to the value it has when it has stopped accelerating. Would not the phenomenal acceleration involved be then more easily explained? Mass and speed increasing simultaneously surely contravenes the law of conservation of mass and energy. Could there be a way of considering the whole question of mass and energy that makes more sense?

Supposing we start with a Universe consisting of fundamental particles (the smallest and most basic which can exist) which have no spin but only straight line motion of various speeds (individually indeterminate of course because there is no spin to give any concept of time) in any and all directions. There are a

finite number of identical particles so they must have a finite kinetic energy. Eventually there must be collisions, many of which will be oblique and thus imparting spin (assuming that the particles are not perfectly hard and smooth). In the vacuum of space no sound would be generated and the particles have no heat to gain or lose. Those particles now spinning have energy of spin in addition to their translational KE.

If Newton's Laws of motion are to hold, those particles not involved in any collisions must continue to move at the same speed, so conservation of energy demands that the particles now spinning must move more slowly and the faster they spin the slower they must move. It thus appears that mass, in terms of a tendency to stay put, and spin are equivalent, and that the convertibility of mass and translational kinetic energy is then just a natural consequence of conservation laws.

If the only way of judging time is by rate of spin, then it follows that time so defined must run more slowly as speed increases. So it would seem that Einstein was right on this point. I have, however, to warn the reader of just how easy it is to be misled by this, and why many, including Einstein himself, may have been misled. "Time" does not exist! We cannot make "it" run faster or slower. Time cannot have a shape, it cannot be warped, and it cannot be travelled through. All we have is a sequence of events and the way we judge the relativity of these events depends entirely on what we chose to compare them with. If we define time as the rate of spin of a particle, we have to be prepared to accept that the constancy of this standard will change with speed. It is not that the rate of flow of some mysterious entity is affected by speed, but rather that we can be misled about the relativity of events if we do not choose the means to compare them wisely.

It appears possible, therefore, that Einstein may have been right in some respects but wrong in others. Let us continue on the basis that Special Relativity is essentially correct, but that we must consider whether we can identify any logical source of error or confusion. It seems to me that rotation is essential to the concept of time as it would apply to a universe of only fundamental

particles. These cannot combine to form elements so we could not, for instance, make a candle or water clock, let alone anything more complicated. These would need an atmosphere or gravity to work. We have nothing but rotation to judge time by. If these fundamental particles were perfect and identically smooth and featureless spheres, it would be impossible to judge rotation; but we are considering an imaginary situation so it seems reasonable to imagine the rotation.

So what does Special Relativity tell us about rotation? This is explained by Einstein in the General theory, Chapter XX111. If Special Relativity is right, the value of π for a rotating body is increased (This may be very hard to come to terms with and I appreciate the problems the reader may have in accepting it. I shall, however, try to make sense of it later, but for now let us see where it leads). This means that a point on the edge of a rotating body must travel further in each revolution as rate of spin increases. Consider now Figure 1 (next page).

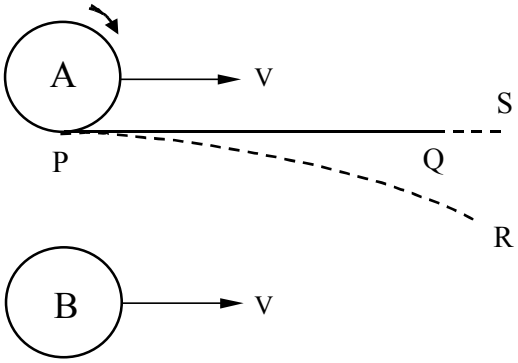


Fig. 1

Effect of spin and motion on massless discs

A & B are imaginary flat discs with no mass moving at the same uniform velocity on parallel courses in free empty space. A is now imagined to be spinning.

Line PQ is equal to πD so in one revolution of the spinning particle A must cover the greater distance represented by PS or PR. Newton would deduce either that there is a force acting on A but not B and that, if this force is gravity, A must have mass and B not; or that A and B both have mass and are attracted together by there own gravity. We know, however, that the apparent mass can be attributed to A only and is entirely due to its spin. So once again it appears that mass and spin are equivalent.

The reader may well question this analysis on the basis that the disc is not constrained in its motion by actually rolling along a line. Rather than try to expound the rather tricky abstract reasoning to explain that here, I would ask the reader to postpone judgement until after reading chapters 2 and 4.

Further examination of the above situation, however, as it would pertain to real particles with mass, leads to a further conclusion. We have already demonstrated that conservation of energy requires A to have less translational KE when it spins, so the acceleration represented by PS is ruled out. The only solution, therefore, is curved path PR such that the sum of rotational and translational KE remains the same. We can then see that high velocity and low spin will give slight curvature, but as spin increases and velocity decreases, the particle must move in ever tightening orbits. Point P will then follow hypercycloid paths rather than cycloids. As spin increases there must come a point where no orbit is possible and the particle will only oscillate or vibrate.

So it appears that we have demonstrated that when Einstein thought that heat has mass he appears to have been right. It would also seem, however, that in concluding that vibration was motion and so all motion means increased mass, he was mistaken. He was probably prompted to this view as what appeared to be the only explanation for the speed of light problem. Logic would thus seem to demand that there must be some other explanation for this very strange phenomena.

How is it that light always seems to go at the same speed? Is there any clue how this might be explained in a way that does not defy logic and the laws of physics? It occurred to me that the significance of rotation to ideas of time might provide a clue. Light is a matter of frequency and so is rotation. Could it be that the various frequencies of light (and all EMR) are dependent upon rotation, which we have shown must vary with speed? This implies perhaps that photons rotate, which I understand is believed to be the case. There are, however, two points to consider. The first is that the frequencies involved are very high; could photons spin that fast, and how would the eye detect such rotation? The second point is that the wave-like properties have to be explained including the way that photons seem to split and re-combine.

The most likely answer to both these points seemed to be that photons way well be comprised of a large number of smaller

particles. If these were spinning fast enough they would tend to return to the group and if spin were in the same direction they would bounce off each other. This idea was given greater credibility when I happened to see a Discovery Science programme about special effects. The particular item dealt with the computer animation of a flock of birds.

My attention was aroused when each representation of a bird was given a tendency to return to the flock but to keep within a minimum distance of other "birds". Interest turned to excitement as the animated "flock", when faced with an obstacle, split into two groups and then re-combined to form one "flock" after the obstacle. So if tiny spinning particles behaved in the way I had hypothesised, the ability of photons to split and re-combine could be explained.

In order to give a particular frequency, however, the photons would need to be spinning at a rate which would result in the tiny particles forming into rings so that frequency would register as a count of particles in unit time. The question then was in what plane would the photons be spinning? I considered each in turn, but as soon as I considered a ring moving face on, answers of amazing consequence hit me. The particles in the ring would then describe a helix with forward motion. A helix would have the properties of a wave; at right angles to the direction of travel would be a frequency of particles to give electro-magnetic field; and, if the particles were small enough to penetrate deeply (like neutrinos) the helix would give a "screw-in" effect which could explain gravity.

This was looking like an amazing bonus. Had I just stumbled onto an explanation that had been so much of a mystery for so long; that had defeated Einstein and everyone since? It seemed improbable but the more I thought about this way to explain gravity it seemed obvious. What else could pull in the opposite direction to motion but a screw?

If the idea was right in principle, however, there was still much to explain. If I was right, the idea would have to "fit" in many other ways and provide a much more complete explanation for the

nature of light and gravity, not least of which was not loosing site of the need to provide an alternative explanation for the constancy of the speed of light. The latter required my ideas of the precise nature of light to be further developed. It appeared that each helix could probably only give one frequency. Would the answer be something like DNA with intertwined helixes giving the whole range of frequencies? I was still pondering this idea when the mystery of spin ½ took over my thinking.

If you have read Stephen Hawking's amazing books you should be familiar with the way he uses playing cards to illustrate the general idea. "Spin" in this context is not just a rate of rotation; it is a means of classifying the way total angular momentum is manifest in different ways. I have not seen this clearly described anywhere, but it seems to me that it can only mean that, with spin ½, the net angular momentum of the particle is half the sum of all internal and external angular momentum; the strange result of which is that the particle does not appear the same if it is turned through 360 degrees, but it does if you turn it through another complete revolution. (note: since drafting this I have discovered that precession is considered to be the answer, which ties in well with what I have said below; but apparently quarks and electrons are thought to be indivisible point particles, which makes no sense to me. If radiation is emitted from these particles, this has to be explained by an internal construction).

The only thing I could think of which changed on turning was a gyroscope, because of precession. If rings of particles were likely answers to gravity and light, it seemed probable that quarks and electrons, which are spin ½ particles responsible for radiation, are comprised of rings within rings, essentially at right angles, to behave very much like gyroscopes.

This idea immediately suggested an explanation for radiation. If the internal rings had very high rates of rotation, which were then contained by the lower energy outer rings, disturbance could release the inner rings which would then have some of the rotational energy transformed into motion. Some mass would seem to be lost and energy created. More accurately, rotational

energy, which manifests as mass/energy would become lower mass and higher KE, in accordance with the laws of conservation. Light would, therefore, have mass and would be bent by gravitational fields, but the mass would be decreasing with speed.

The idea of rings within rings then seemed more likely to explain more about the nature of light than the intertwined helixes. An outer ring moving face on was clearly an essential component and then inner transverse rings at right angles would explain polarisation, would present to the eye in a way which made perception of frequency digitally, more straight forward, and would fit well with de Broglie's idea of an accompanying wave, related to some internal cyclical process in the photon; an idea which particularly impressed Einstein.

Obviously, gravity does not only work in the presence of light, so the outer rings are being exchanged all the time. This would probably be between bound quarks, where incoming helixes would have a "foothold". This two–way process of exchange would be necessary to maintain numbers of particles and to maintain rotational energy. Incoming helixes would act as worm gears, exchanging energy until replacing lost rings.

The probable way that quarks combine together to form neutrons and protons was then starting to become apparent. This is best shown diagrammatically as in Figure 2. I must emphasise that my drawing skills on the computer are limited and the purpose of the diagram is only to convey the basic idea, which almost certainly will need refinement. What I am trying to portray will become clearer if you take three one pound coins and stand two up at right angles, edge to edge, to represent the two down quarks, and then place a third laying flat in front, so that all three coins are nearly touching, and then imagine that the coins represent just the outer rings of gyroscope-like arrangements. It may, in fact, be that the right angles will turn out to be smaller angles to facilitate a better packing of hadrons in the nucleus, but the arrangement shown helps to visualise the way that the transformation of neutron to proton can occur.

I have made several assumptions which others with greater

knowledge of particle physics (and perhaps gyroscopes) may be able to correct. I have not shown any rings of tiny particles meshing with others. Bearing in mind that I think all the tiny particles, except maybe in the gluons, would all be spinning in the same direction, and thus bounce off if they touch, I do suspect that such meshing may well be possible. This may be necessary to fulfil the spin ½ requirement that the particle (quark or electron) will look the same if only turned around twice.

See Figure 2, next page

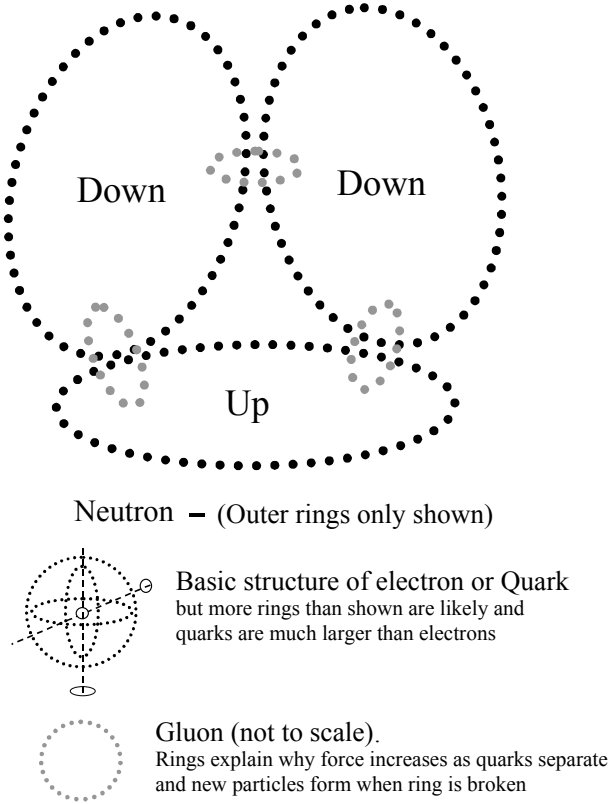


Fig. 2

Diagrammatic representation of a neutron

The number of rings and particles is only indicative of the general idea. The idea of gluons also being rings of particles provides two answers. It explains why the force holding quarks together increases with separation (the opposite of most forces).

It also suggests how new particles (electron and anti-neutrino) are liberated when a neutron becomes a proton.

If the ring holding the two down quarks is broken, allowing one of the down quarks to move round to a position opposite the other down quark, and the whole arrangement turns through 90 degrees, so that there are now two up quarks spinning on the same vertical axis, each still linked to one down quark (formerly the up quark), the net result is a proton and the particles from the gluon. Clearly the gluons would have to contain many more tiny particles than shown because an electron, being spin ½, would need a minimum of three rings. I would guess that these would have opposite spin (rotation) to the particles forming the rings of quarks in neutrons and protons. I must point out that quarks do not need to have up or down orientation relative to anything, e.g. the Earth, but only in the way they combine. I have only used "up" or "down", which I think is considered to relate to spin direction, as with electrons, in the way I have to ease visualisation.

Positive and negative charge and magnetism can then be explained by helixes emitted with appropriate direction of rotation. Those spinning in opposite directions can intertwine and pull whereas those spinning in the same direction would push apart, like springs compressing and recoiling back. The interaction of helixes with helixes or with rings bound together would then seem to provide an explanation for all force at a distance. So, if all this speculation turns out to be right, Einstein is vindicated in his view that a unified field theory based on particles was possible.

Much of this speculation fits well with some aspects of established particle physics but possibly contradicts others. For instance the helixes, which I suspect give rise to forces between particles, are clearly bosons. If, however, as I suspect, the tiny particles which make up the helixes are neutrinos, there is a problem because apparently, neutrinos are thought to also be spin ½ . But as far as I can gather, it would seem that spin ½ particles are thought to be elementary, indivisible point particles. To me this just does not make sense. Surely some internal process has to

be involved to explain spin ½ and especially radiation. Unfortunately so much of particle physics now depends upon complex, statistical maths that ideas which can be visualised play an ever lessening role. What worries me is the expression "lies, dammed lies and statistics". Clever use of math's, especially incorporating imaginary numbers, can demonstrate many ideas, which may or may not reflect reality. Some of these ideas involve negative energy, which makes no sense to me. The simple fact is that ideas in this field are frequently shown to be wrong, especially on the question of the indivisibility of particles. What is apparently known is that neutrinos can penetrate matter to very great distances, so they must be very small. They also come in three types, which may be interchangeable, some with more mass than others. Could this be just a question of rate of spin?

It may be, of course, that I am wrong in my guess that the tiny particles, which I suggest make up light, other EMR, and gravity, are neutrinos. Could they be particles as yet undiscovered and unnamed, perhaps even smaller than neutrinos? Whatever the case, the idea of rings of particles seems to offer many possible explanations. The most crucial, however, is still to be addressed. Can it provide an explanation for the seemingly illogical way that light always seems to go at the same speed, irrespective of the speed of the source or the observer?

If, as I believe I have shown logically from basic considerations of conservation of energy, rate of rotation must change with speed, then frequency, if dependent on rotation as I suggest, must change with speed. This is not to be confused with the Doppler effect because there is no real wave and thus no actual wavelength to alter. It is thus apparent that for light to appear as such, as opposed to say infra-red or ultra-violet, it has to be going at the speed which will give appropriate frequencies. This means that photons would obey the rule of additional velocities, but different photons would then manifest as that part of light, to the extent that any change in velocity would be cancelled out.

One of my ideas for demonstrating the change of apparent frequency is shown in figure 3.

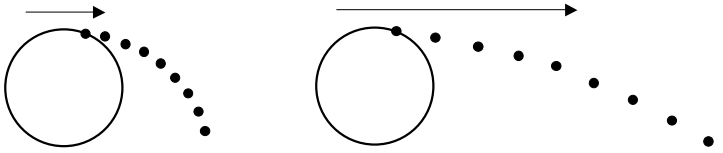


Fig 3

Effect of motion on a spinning ring of particles

I had supposed that a ring of particles spinning and moving, would be spread out in a cycloid, giving a perceived frequency dependent on the spacing of the particles. If the ring moves faster, the cycloid is extended and the perceived frequency is thus lower. This was, I think, one of my wrong turns. The path of each particle would, of course, be a cycloid (or perhaps in my theory, to be absolutely precise, always a hypercycloid, because with spin there must be some curvature of motion), but each particle would follow independent paths; so the net result would be more complex than indicated above.

What my theory indicates is that, as the ring of particles is released, some rotational energy is transformed into translation; so as the ring accelerates its rate of spin must decrease. At c the rate of spin (times the number of particles in each ring) is perceived as a particular frequency. If there is any variation from c the perceived frequency will change. The rate of spin will, of course determine the shape of the cycloid and thus the angle and speed that each individual tiny particle impinges on the eye, but it is the relative rate of spin which determines frequency.

The way I originally conceived EMR/gravity, based on the above slightly misleading approach is illustrated in Fig. 4. This is actually the conclusion I reached after discarding the idea that

light was a bit like DNA, with intertwining spirals, but with seven rather than two, assuming that each spiral could only represent one frequency. I could not see, however, how this would explain polarisation, satisfy quantum theory, or explain vision. The idea that "packets" of rings could be emitted also in the form of mini-gyroscopes, as opposed to individual rings, seemed to provide all the answers I was looking for. The direction of motion to give c is left to right and the suggested effect of relative motion in changing the perceived or received spacing of particles, and thus frequency is indicated (gravity is, of course, just the outer spiral). This indicated the basic ideas in a simple, diagrammatic way quite well, but it required clarification and revision to represent my theory more precisely and more clearly. The helical path shown represents the motion of each tiny, spinning particle. This is necessary for clarity and simplicity. The containing mechanism, which contains and guides the inner rings (de Broglie) can thus be seen to be the combined effect of all the particles in the outer ring, which I think would probably move forward at the same speed as the inner rings. The way I consider frequency to change with relative velocity is not adequately demonstrated in figure 4. Indeed cursory inspection without appreciating that rate of spin must change would lead to the opposite of what I am trying to get across, which would then be the Doppler effect. A clearer representation is therefore given in figure 4a.

The essential point to remember is that my analysis of the whole principle of conservation of energy and the mechanism by which light etc. is actually emitted, requires contained rotational energy to be transformed into translation; so as the photon accelerates the rotational energy must diminish. Whether the rate of rotation of all the rings must diminish to the same degree, is not yet something I can argue, but frequency reducing with speed appears to me to be a sound proposition in general. If then my proposition that the basic component of mass is spin, then the phenomenal acceleration of the photon, which is emitted rather than ejected with some force, is obvious.

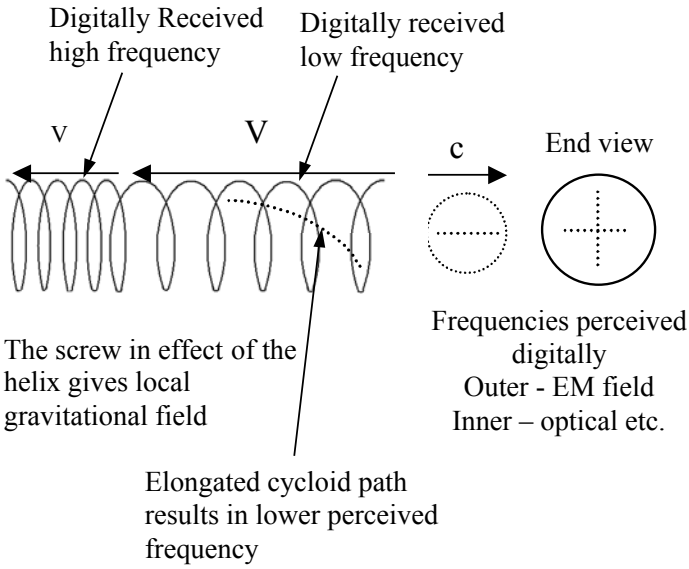


Fig. 4

Originally considered aspects of EMR and gravity

The highly diagrammatic nature of these drawings is again emphasised. The helical path in particular is as shown merely to convey the impression of a helix. It would, represented accurately, appear as a sine wave when viewed at right angles from the side. As I have drawn it the helix is as viewed at an angle.

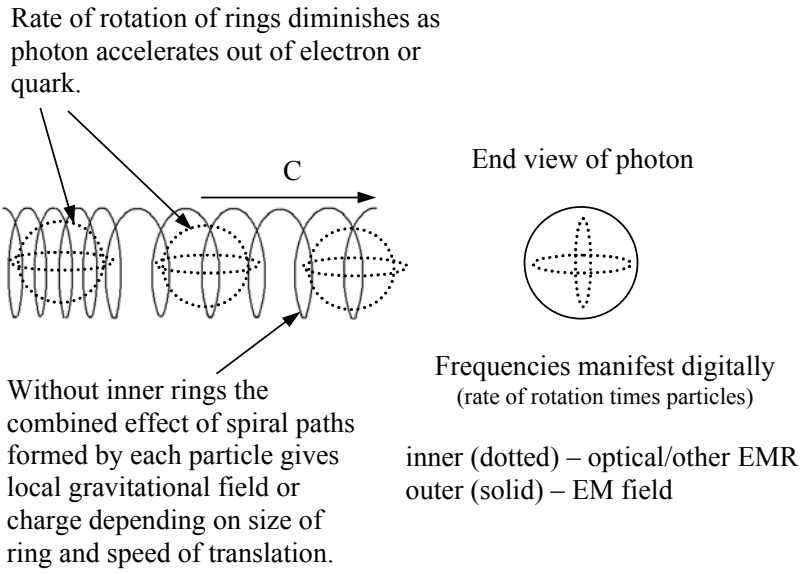


Fig. 4a

Revised considered aspects of EMR and gravity

I am still undecided as to whether each photon can contain rings to give one frequency or whether for white light, for instance, there would have to be seven internal rings. The former would seem to offer a clearer explanation for polarization and refraction of different colours at varying angles. It would also fit better with my ideas explaining the constancy of the speed of light, because it would allow photons of different frequency to arrive at slightly different times, which I understand has recently been theorised by others. I was prompted to consider the possibility of photons being able to contain all frequencies, depending on the source, by

what I think was a misunderstanding of the ideas of Heisenberg.

The diameter of the spiral would be very small; less than the diameter of an electron. For gravitational "waves" the inner transverse rings would be omitted, though I am not sure to what extent the destroyed momentum of these inner rings would actually counteract the pulling power of the helix; so maybe some EMR have some gravitational effect. I assume that gravitons must emanate from quarks, which must surely be larger than electrons. It may be, therefore, that the diameter of gravitational helixes is greater than for EMR.

The gyroscope-like arrangement also provides a possible physical explanation for exclusion principle and the wave-like behaviour of electrons. See Figure 5.

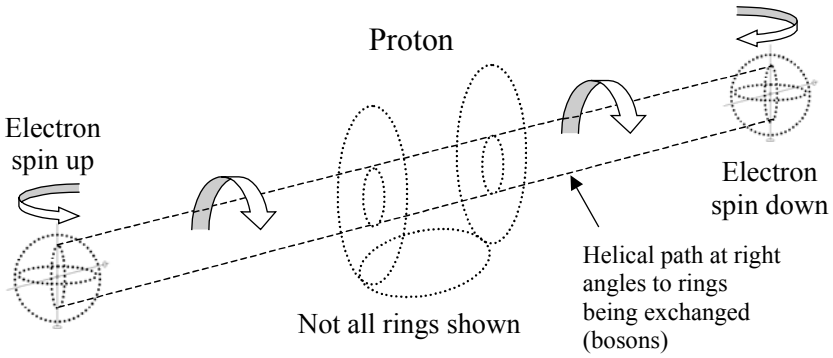


Fig. 5

Explanation of exclusion principle

The direction of rotation of the helix is clockwise to the left electron and anti-clockwise to the right. So the result, assuming consistency in the relationship of spins inside the electron, would

be the pairing of electrons with opposite spins along the axis of rotation of rings being exchanged. This illustration shows the basic principle in a diagrammatic way. One proton would have only one electron, as in hydrogen, but assuming the same direction of rotation within protons and orientation determined by linking with neutrons, the pairing of electrons with opposite spins can be visualised.

It seems very likely that the emission of helixes is not continuous but in bursts, as transverse rings tilt and lose containment. The effect of this would add to the long theorised, wave-like motion of the electrons, which is a consequence of the helix generated by motion.

In conclusion, therefore, the simple idea of particles forming into rings seems to provide potential answers to many things which have been very difficult to theorise in other ways. This may, of course, be just speculation, but the more questions that are answered, the more likely a hypothesis is to be correct. This is a matter of probability and it has to be said that the chances of me imagining a completely false scenario which appears to fit in so many ways, seems just as unlikely as coming up with something which may be essentially correct.

It also seems possible that my rings and helixes are the loops and cosmic strings of String theory. The crucial difference as far as I am concerned is that I have a very clear idea as to the precise nature of the energy involved. I have never been happy with the expression “strings of energy”. This implies that energy has some form of existence. This idea, which seems to assume that energy is some sort of magical substance, does appear more like alchemy than science to me. Scientists now seem to have adopted the science fiction concept of “pure energy”, which is a cop-out because it can be used as an apparently impressive way of seeming to explain anything, from healing to particle physics, without any real explanation at all. Perhaps most significantly, my tiny particles, spinning in the same direction, will feed off each other’s energy in a way which would be very hard to predict other than as probability, thus explaining quantum mechanics.

Chapter 2

The Question of Dimensions

In the War "Send reinforcements, we're going to advance", passed down the line, became "Send three and fourpence, we're going to a dance". In the same way that "energy", passed down the line of scientists, has distorted it from a concept into an entity, the idea of thinking in four dimensions has been passed down and distorted into what seems to be the idea that space is, in some mysterious way, something real with four, or even many more dimensions.

Confusion arises for various reasons. The worst culprit is probably the inadequacy of words and the casual, imprecise way they tend to be used. Consider the word "space". We would now tend to automatically think of "the final frontier" after this word. We would then, of course, be thinking of a whole lot more than the concept of complete nothingness.

When Einstein talked of "The geometric properties of space" I cannot imagine that he was implying that absolute nothing can be curved. "Space" in this context has to have the wider general meaning, which includes matter. In Chapter XV11, Einstein makes this clear in the short, unambiguous statement "Space is a three-dimensional continuum". Immediately before this he said:

> "..there is no more common-place statement than the world in which we live is a four-dimensional space-time continuum".

Wherever there is motion it is essential to include the implications of the time "dimension" for two reasons. Consider moving house. I can say that I used to live at 10, Tower Grove, Weybridge. The address amounts to a three dimensional location, but since I have moved, I can only specify it as my location on certain dates, so I am obviously describing my location in terms of four dimensions, the fourth of which is time. This is then the very common-place statement to which Einstein was referring.

But there is more to it than that. The Earth is moving, so while I was in bed at 10 Tower Grove, my position in space was constantly changing. So to my three linear dimensions relative to the Earth I have to add a forth, linear dimension. As I have shown, time is dependent upon, and relative to motion and has no meaning without motion. Also the need for specification of position in four linear dimensions is only necessary when there is motion. The idea of time and motion, however, are inextricably entwined, hence Einstein's curved, four-dimensional space-time continuum, which is clearly a more profound concept than Minkowski's.

This four dimensional space-time continuum only becomes "curved" because of the motion of matter. General Relativity does not say that empty space can be curved. The following is an extract from the Encyclopaedia Britannica 1961:

"….the curvature of space-time is caused by the masses and their motion. ……..Einstein's equations state essentially that the curvature of space-time at a given point in space-time is proportional to the amount of energy and momentum present."
(The underlining is mine.)

If we go back to my analysis of the way spin must affect the motion of particles, by giving curvature of motion dependant upon the relationship between spin (mass/energy) and velocity, it is apparent that what I was describing was an elementary form of General Relativity. When the masses become more complex the interaction becomes more complex, involving, I think, the interchange of helixes, but this still depends on the total mass/energy present. The latter was not understood by Einstein, who spent the rest of his life convinced that an explanation uniting all forces had to exist, but was unable to find it; probably I think because he was wrong in thinking that mass had to increase with speed.

What seems to have happened is that the expression "curved space-time" has been misinterpreted to mean that space-time can

be thought of to have some sort of independent existence which is affected some way when mass is added. This idea misses the whole point that time, motion and mass and energy are all inter-related. Space, in its meaning of complete nothingness is just the "stage" with the others as "players". The idea of a rubber sheet representing space-time, distorted by mass, has only served to compound this misconception. It was a useful way of conveying a complicated idea very simply; but, applied too literally, it conveys two aspects of the situation very badly. Firstly, a mass with no motion, if it could exist, would have no effect on space, time, or any combination of the two, if no other masses were involved. Secondly, it seems to have led some physicists to think that space-time has a "fabric". They now even talk of folding or tearing this fabric to permit time-travel. This is nonsense. Space is by definition, "nothing"; and, as I have shown, "time" does not exist. I have forgotten most of my math's but I do believe that $0 + 0 = 0$. What is in space, invisibly between planets, stars etc., may have a fabric, but this is material, which can occupy space but not change it. It is complete nonsense to talk about changing nothing. It may have saved a lot of confusion if Einstein had used the phrase "curved motion-time", which would have been more indicative of where the real interaction lay.

In recent TV quiz programmes the answer that time is Einstein's forth dimension has been declared correct. Books I read at Brooklands in the early 60's insisted that time was not the forth dimension of Relativity and I think that I have explained above why not. Even Stephen Hawking adds to this confusion. On page 35 of "The Universe in a Nutshell" he says "General relativity combines the time dimension with the three dimensions of space to form what is called spacetime".

I find it inconceivable that he actually conceives of General Relativity in terms which Einstein dismissed as a very common-place statement. It is more likely that it is just the casual use of words. But this is the way that false ideas are promulgated. He was, almost certainly, saving words for brevity and simplicity to introduce the idea of space-time without the long-winded and

rather confusing description necessary to convey "four-dimensional space-time continuum" as a scientific notion.

This is always the danger with words; do we confuse with brevity or complexity? I would, however, appeal to the compilers of quiz programmes to avoid this question, because there is no correct one-word answer. It will only serve to confuse and mislead many budding scientists if they become convinced that "time" is the correct answer. In his glossary Stephen Hawking improves on the description of space-time by saying it is "The four-dimensional space whose points are events", but even this implies that space alone can have four dimensions. The problem is you cannot give a brief description without risk of confusion.

I have also found that scientists, including Stephen Hawking, talk about warping space and time; implying that either can be warped. They may not mean this, but some are bound to infer that this is the case. I am, however, concerned that when they talk of time having a shape, they are simply wrong. I have no hesitation in agreeing 100% with Einstein in stating that time travel is not possible.

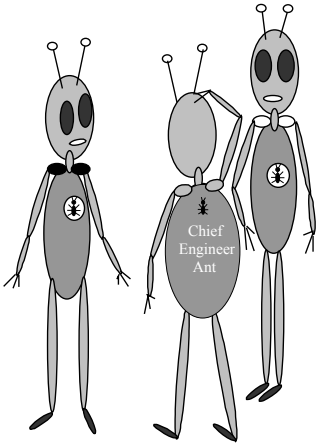
The illogical concept of time travel is a result of not seeing what "time" really is. Life is "time travel", that is a sequence of events. But an "event" is by definition "that which has happened" and "happened" means "done", "over", "completed", "that's it!", "forget it", "spilt milk", "finito", "there is no way to change it". Emotionally, we often want to change it so much that we hang on to the idea that past events exist in some way.

Time has no independent existence and so "it" cannot be travelled through. Events are not "beads" strung together on the "string" of time; they just happen and that's it. "Time" is just a word we give to the way events relate one with another; it is no more than "the relativity of events". Prediction of the future is a guess and nothing more. It may be a logical, well-reasoned guess, based on likelihood calculated from past experience, but a "guess" nevertheless. The future is, by definition, "that which has not happened". And, if you think you could observe the past by travelling faster than the speed if light, (which I do think is

possible), you will still be disappointed, because an image of the past is not recorded in one beam of light (unless done intentionally); the image will be so spread out that you would need to be in a thousand places at once to see just part of any event. So, this must remain science fiction; though I have no doubt that the idea will not be relinquished easily.

Something like the Bible Code may seem to imply pre-determination, but the end of "Back to the Future 3" was right. The future is not written. It is what we make it. The Bible Code, if genuine, is probability based on what may be almost unlimited past experience. We will, almost certainly, destroy ourselves if we do not find the open-minded humility to see other points of view. The future is very much in our own hands, and I think that if we take the right path, there is no limit to what can be achieved.

To some the concept of completely empty space seems to be a problem. The following conversation among our Alien Ants may help:-



Chief Engineer: "I think I should warn you Captain, that we seem to be heading straight toward....."
Captain: "What Sooty?! Towards what?"
Chief Engineer: "I can't make it out Captain, it's too far away,

but I don't think it's like anything we've encountered before!"

Captain: "First Officer, any ideas, what is it Spick?"

Spick: "Negative Captain. I am somewhat confused as to its dimensions and distance. It appears to have a core and a dense outer surface, below which there is something I cannot make out. It may be a strange sort of particle relatively close, or maybe even a small planet much further away. I suspect the latter; I am picking up some sort of biological component."

Communications Officer: "Getting it on screen Captain."

Captain: "Put it up.....my God Spick!.……it's an apple."

Spick: "Fascinating."

Later:

Communications Officer: "Captain! It's gone; the apple's gone!"

Chief Engineer: "Maybe somebody ate it."

Captain: "Sensible explanations please Spick."

Spick: "There are none Captain; where the apple was is now empty space."

Captain: "Not even a pip!?"

Spick: "Nothing at all Captain."

Captain: "This is serious Spick!"

Spick: "Serious Captain; why?"

Captain: "Indigestion."

Spick: "Indigestion?"

Captain: "Nobody will be able to eat another apple without laughing!"

Spick looks serious and raises an eyebrow.

(NB any similarity between these characters and any others, real or imaginary, is purely coincidental)

Forgive the diversion into humour and consider only "where the apple was is now empty space".

Imagine now a children's party with seven children. The mother brings in a bowl of apples but has miscounted and there are only six. Each child in turn takes an apple, but before the last one is taken, the seventh child says: "wait a minute! If he takes that one, there'll be nothing left for me." To a small child the concept of the empty bowl is a very easy one! "Never mind" says the mother, "you can have the bowl." "But that's boring, really boring! What use is a bowl!" "Well;" says the mother "you can put apples in it."

Now we can see that if we imagine that there are only seven objects in space, we can readily imagine the removal of one and the empty space it leaves. Similarly with the rest: why should the last one be any different to the others? What is the function of that, if anything that remains? To accommodate more objects of course; or apples.

The idea of space being created, as in the current Big Bang theory, has the insurmountable philosophic problem of what existed before space was created. If it was not nothing i.e. not empty space, then what was it? Something other than nothing has to be something. The desire to make space finite is more to do with the limitations and experience of our own minds than logic.

Some ideas seem to sit very uncomfortably in the human mind. For me one such idea is that the phenomenal amount of matter in the Universe, with a phenomenal level of energy, can have emanated from a singularity, set in something which is neither something nor nothing, with no indication of why it should be there in the first place. All this is assumed because nobody has considered that there might be an alternative explanation for red-shift. I shall propose two such possibilities later.

The question of dimensions seems to become even more confused in String Theory. There are several versions of this and, if I have understood what they are saying (mostly from TV programmes I confess) they require space (or space-time; this is not always made clear) to have many dimensions. If this is indeed what is being argued, it is ludicrous. It would seem to me that they are confusing degrees of freedom, which apply in three-

dimensional space, with Einstein's four dimensional continuum. There is a great temptation for scientists to want their ideas to appear more mysterious than they are, having seen the awe in which Einstein was held and the celebrity status he was given. This in itself, may have held science back, because few have been brave enough to challenge Relativity.

If it is, as I suspect, just degrees of freedom which they think will be required to achieve a unified field theory, my helix of spinning and orbiting particles, rotating and moving, with transverse rotating rings of similarly spinning and orbiting particles, may well fit the bill. This, of course, applies to EMR; I am assuming that the requirement for gravitational field alone would be less.

It also occurred to me, on seeing The Channel 4 programmes based on Brian Greene's "Elegant Universe" that if the rate of spin of the particles making up my helixes were variable, the idea that the loops and strings of String Theory contain energies of many frequencies would be satisfied. This idea led me to possible explanations for some paranormal phenomena, but I shall save these for later chapters.

To conclude this chapter I shall summarise what may still be confusing to some; that is what, exactly, is "a four dimensional, curved space-time continuum"? The answer is, just like time and energy, it does not exist; it is just an expression used to convey the fact that the nature and motion of matter are such that time, energy, mass, speed and dimension are inextricably linked, and governed by laws which mean that curvature of motion is a natural consequence. This is determined by spin and translation from individual particles to complex arrangements which produce gravitational fields. It is entirely determined by, and is a description of, the motion of matter. So the idea of an entity called "space-time", which could have a physical influence on motion, is misleading. Time and space cannot be combined in some way because neither have any physical existence. They are part of an idea and no more.

Chapter 3

Reality and The Principle of Equivalence

The significance of my premise "it is a pity that Einstein did not prefer merry-go-rounds...." has become even more apparent to me and I think it should to the reader. Can we say "in spinning, relativity comes to an end and reality begins?"

Let us consider our two disks in Chapter 1 to be two brand new, perfectly clean billiard balls, and not forget the principle of equivalence (this is similar to the principle of impotence but extends to forces and is thus the cornerstone of General Relativity in saying that you cannot tell which forces are real).

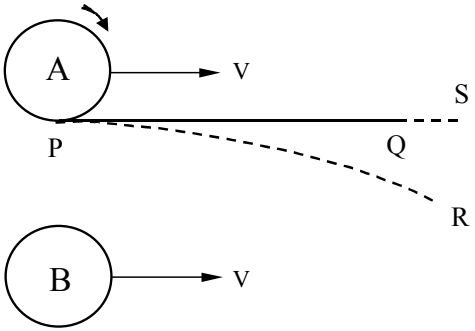


Fig.1

(repeated from Chapter 1)

Because there are no marks whatsoever, it is not possible to say which of the balls is spinning. The principle of equivalence means that we cannot say which of the two balls now has an acceleration relative to the uniform straight line motion of the

other. So relativity must still apply. But we have to remember that this is an imaginary situation. In reality, the spinning ball could be the "spot ball" and we would be able to tell that A was spinning. Could we be sure, however that B had no spin whatsoever? The answer has to be yes! In reality both balls could not be identical. They would have been manufactured by a process which could not ensure that every atom on the surface was exactly the same; and even if this were possible, the balls would have to be handled and moved. They would inevitably have tiny scratches, dust particles, fingerprints etc. which would reveal rotation. It would thus appear that spinning gives us a foothold on reality.

But then, maybe not? An observer may think he can conclude with certainty that A is now spinning and B not and conclude that the apparent force is entirely due to the spin of A. Those familiar with relativity are probably ahead of me here. What if it has not been realised that the two balls and the observer are at the centre of a huge rotating drum, with A at the precise centre, and which, surprise, surprise, turns out to be rotating in the same direction and with the same angular velocity as A? Relative to the drum it is now B that is spinning and A not!

At this point a smart realist (not the observer, but someone like you and I, imagining this situation) would say: "O.K., lets consider the same situation parallel to the axis of rotation of the drum". To which the apparently, even smarter, relativist says: "No! Lets consider A to be at the centre of a huge rotating sphere.....I think?" Luckily for the relativist, who realises that even a sphere can only rotate about one axis at a time, he anticipates the realists next question: " And, what if we move A & B?" The closer they get to the wall of the sphere, the more apparent will be the spin of A and the ever more straight line motion of both A & B relative to the wall of the sphere. And, of course, when the wall of the sphere is seen the reality of the situation becomes apparent also to the observer (unless, of course, that sphere is inside another sphere, which could be inside another sphere, which....).

I am sure that anyone familiar with quantum theory will have "latched on" to the uncertainty in determining which ball has acceleration and how we can determine with certainty their position, velocity and momentum. But what if the huge rotating sphere really did exist? B would now be spinning, but in addition to that it would be orbiting A which now appears not to be spinning. So, am I suggesting that we could be within a sphere, within a sphere, etc. possibly inhabited by immense giants? Well, yes! To be truly open-minded we should not rule even that out. But we do not have to be inside a sphere. If the universe is rotating relative to an imaginary giant sphere……..

So, although the human mind is capable of imagining an endless stream of possible realities, which could include immense giant life-forms, or going the other way, microscopic similar life-forms (making Gulliver's Travels seem insignificant in scale); is there any point?! I conclude, therefore, that we can indeed say that spin can be where relativity stops and reality begins, as far as it matters in this universe! And maybe Einstein was right when he said "God does not play dice…";……roulette, maybe?!

This means, of course, that there could be an absolute reality in the form of an overall governing rotation in which curved paths and orbit become standard rather than Newton's first law. What it also means is that, until we can eliminate the possibility that we are actually inside a sphere, there must still remain uncertainty about the true nature of reality. The Universe may be rotating or it may not. The evidence, insofar as I am aware of it is considered in Chapter 4.

The question of uncertainty is a key part of quantum mechanics. I have to admit that my knowledge of this subject is limited, but as I have shown, uncertainty is part of science. I think there is a danger, however, of taking this too far and maybe missing what may be reality. Einstein said "The conviction prevails that the experimentally assured duality of nature (corpuscular and wave structure) can be realised only by a weakening of the concept of reality. I think that such a far-reaching theoretical renunciation is not for the present justified by our actual knowledge…". I wish

to go further than that and say that reality is that which we head towards with determination and an open mind. Until we are sure there is no more to learn, reality has to be "that which fits best for now". I think Cinderella would love my helix. (no! don't even think it! I was trying to be philosophical! Any double meaning was quite unintentional) I should perhaps rephrase that! But, on the basis that humour aids remembrance, and that I do not anticipate any narrow-minded readers, I shall leave it in. It summarises the essence of my theory too well to delete.

With the greatest respect to Quantum Theorists, who I have to say I admire for their persistence and ingenuity, the analogy which follows is that they have been the "Ugly Sisters", desperately trying to make fit that which cannot. The "slipper" would not fit because mass does not increase with speed and energy is not an entity; and also perhaps, because the Universe is rotating.

The uncertainty principle, which states that you cannot know both a particle's position and its momentum at the same time, arose from Heisenberg's "discovery", in mathematically considering the energy of a particle in terms of momentum (p) and displacement (q) that pq did not equal qp. Could it be, however, that he got this strange result because he was assuming that Einstein had to be right about mass increasing with speed?

As far as I know he did not consider that Einstein could be wrong on this point and instead decided to use an imaginary number to make pq and qp equate. Maybe it is because I have never been comfortable with the idea of imaginary numbers, but this does seem to me to be treading on very dangerous ground. If something does not fit it seems far better to find out why than making it fit with a contrivance. Could this sort of approach be the reason why it seems necessary to invent ever more complicated math's in an attempt to describe "reality"? I understand that quantum mechanics, like Relativity, does seem to have provided some very good answers and I have no reason to suggest that it should be rubbished; indeed I think that my theory seems to agree well with the basic ideas; but it would be unscientific to assume that its apparent success means that it

cannot contain error or that it is incomplete.

The idea that energy has some independent existence has also not helped. I see recent theories as desperation rather than inspiration. Desperation, however, can lead to delusion, that highly dangerous self-confidence that has invariably delayed progress in the past. Imagine if Priestly had been ignored because it was perfectly obvious that ashes weighed less than that which was burned. Assuming that something has to be right is crime number one in science. When we say "this is 2004, it stands to reason that we have to be at the peak of knowledge", it represents a great step backwards in thinking.

Maybe not all scientists now think of energy as an entity, but it does appear that Stephen Hawking does. On Page 46 of "The Universe in a Nutshell" he says "Because energy density is, like matter, a source of gravity….". He seems to be clearly divorcing energy from matter in this statement. So do those who talk of "strings of energy". What I would like to know is exactly what these people consider "energy" to be. Do they really think that "pure energy" can exist? Do they anticipate that we might be able one day to isolate it? It is a pity that in neither "A Brief History of Time" nor "The Universe in a Nutshell" does Stephen Hawking include energy in his otherwise very helpful glossaries.

I think that Einstein's most famous equation has simply confused many people. An exception may be Richard A. Mould, the author of "Basic Relativity". On Page 117 he says:

"You can imagine that energy and mass are really the same thing, and that this thing simply manifests itself in different ways. In one form we recognise it as mass, and in another form we recognise it as energy. In one form it reflects the inertial properties of matter, and in the other form it is a measure of the work related activity of matter. You can think of $E = mc^2$ as representing a change of this things units as from feet to inches or, in this case, a change of dimension from kilograms to joules. Consequently, neither mass nor energy can be destroyed and the other created in its place. Total mass and total energy are

equivalent, not interchangeable in that way."
(The underlining of "matter" is mine, because this is fundamental to my theory.)

It is also interesting to note his comment in the preceding paragraph that "it is reasonable to speculate that the rest mass of an object is also a measure of some kind of internal energy." This accords with my conclusion that mass is dependent upon spin. The longer quote also seems to tie in well with my ideas, but I would go a little further and explain "thing" as motion in either of its two basic forms: spin and translation.

I have also noted recently that in the recent theory known as "Loop Quantum Gravity" it is suggested that matter exists at "nodes of spin". I have enquired if the authors agree that this is another way of saying that mass is spin but as yet I have no reply.

What is clear to me is that the realisation that energy requires something to be in motion has led logically to an idea which is simple and elegant, but which inevitably leads to that which is extremely difficult to predict or represent mathematically. So, although Einstein was right in essence he was doomed to failure in expecting mathematics alone to supply the answer without the knowledge we have gained since and without the insight which appears to have been revealed to me. This is, I am sure, a matter of God's perfect timing.

From my limited knowledge of Quantum mechanics and String theory it does appear likely that both may be clarified by adopting this approach.

Chapter 4

Is the Universe Rotating?

This was considered by Stephen Hawking in the seventies but ruled out because of background radiation. If, however, I am right about mass being dependent upon spin, and the way gravity works, it would mean that black holes would be self-regulating and of necessity emitting matter/energy in the form of gravitational "waves", much of which would not be "sucked back in". It may also mean that some light or other EMR is emitted.

So in a permanently existing Universe, where black holes could have come and gone, the net result could be exactly the background radiation which is assumed to come from the Big Bang. A rotating Universe might then be an alternative explanation for apparent expansion, which would then be an illusion. Uniform rotation would satisfy Hubble's law essentially, but there would obviously be anomalies near the axis of rotation. I have recently started enquiries as to whether there is any evidence of less than expected red-shift from any parts of the sky. It may well be that nobody has actually been looking for this effect. Figure 6 illustrates the illusion of expansion, which a rotating Universe would create.

Again I must ask the reader to bear in mind my less than perfect drawing skills and to be aware that Figure 6 is intended to be just a diagrammatic representation of the general idea. Details, such as the position of our galaxy, are not intended to be accurately represented. Indeed, there may be no point in trying to do so if the basis for our conclusions so far in this respect turn out to be the illusion that the diagram suggests.

It must also be appreciated that the curvature of light shown has nothing to do with the bending effect of gravitational fields, except insofar as it might be considered as another aspect of General Relativity. The reality would be that the light actually follows essentially the straight line determined but its gyroscope-

like construction but this would then appear as a curved path relative to everything that is rotating.

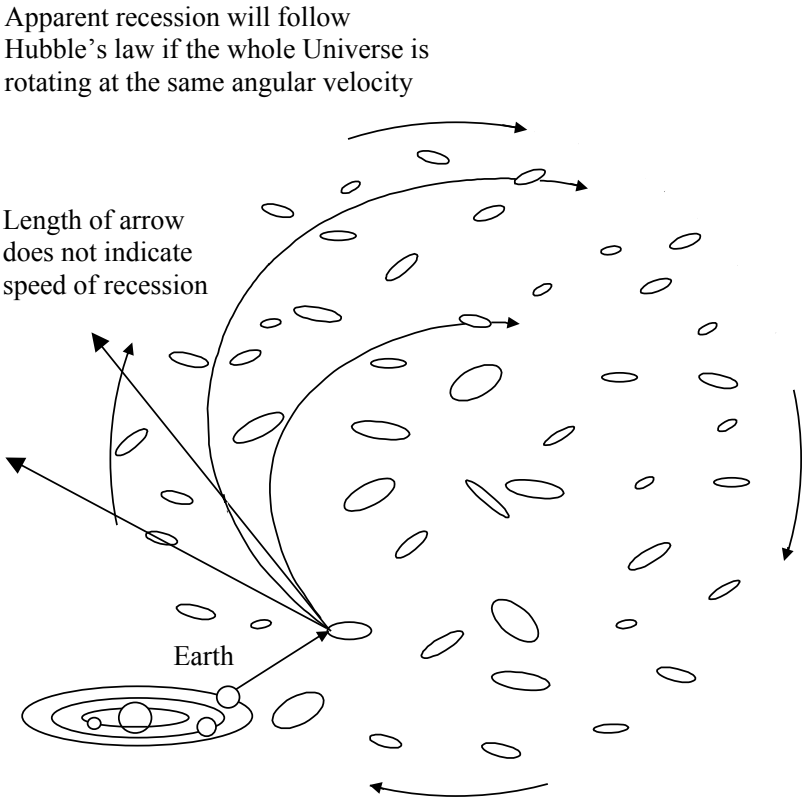


Fig. 6

Illusion of expansion in a rotating universe

In Chapter1 I suggested that a fundamental particle that spins must follow a curved path, with the degree of curvature dependent upon the rate of spin, so that only a particle with no spin would obey Newton's first law. So should the spinning photon then have to follow a curved path? The answer is that I am saying that the photon is not a fundamental particle but has a construction, the nature of which will tend to keep it on a straight path. The outer ring is then de Broglie's "pilot" wave, guiding the motion of the photon, and acting as rifling does in keeping the path of a bullet essentially straight (I do not rule out some inherent curvature of motion).

It is obvious that if the whole Universe has always been rotating at a constant uniform rate, the galaxies furthest away will appear to be receding the fastest, which accords with observation as encompassed in Hubble's Law. The attractiveness of this solution is obvious in dispensing with the huge philosophic problems associated with the Big Bang. Not only that; the Big Bang is not a straightforward theory apart from this. There are "cosmological problems" which have defied answers for some time. These are mentioned in a recent book entitled "Faster than the Speed of Light" by a cosmologist working at Imperial College, called João Magueijo.

It was very interesting to find this book in the library because the author was a research fellow at St. John's College, Cambridge, where my youngest Daughter has an MA, and he is now at Imperial College, where my eldest Daughter is doing a PhD and research in digital communications. We also seem to be both suggesting that light can go faster than the speed of light.

This requires some qualification because what I am suggesting is that photons, and the particles which I hypothesise make up photons, can travel faster than the speed of light, whereas perceived light must travel at c in order to appear as light. João Magueijo, however, is suggesting that light may have exceeded c in the early stages of the Universe. He, like almost all physicists now it seems, are desperate to solve the cosmological problems

associated with the Big Bang because they see the latter as established fact.

I have to say that I find this both puzzling and unscientific. How can something be considered so certain when it implies that nothing can have altered the nature and straight path of light over many millions of years of travel? This seems to me to be a huge and naïve assumption. A rotating Universe is just one possible alternative. Why is the possibility of frequency reducing during such an immense journey never mentioned? What means do we have of testing that this could not happen? We have only been considering the question of apparent expansion for a split second of cosmological time.

If my idea that frequency is related to rotation is right, it seems quite reasonable to assume that some reduction would be almost inevitable. Interaction with gravitational fields and radiation could well have this result, which would also be essentially proportional to the distance travelled. Maybe Einstein's greatest blunder was allowing Hubble to convince him that the Universe was expanding. I have no knowledge that Einstein ever considered the possibility of a rotating Universe other than Stephen Hawking seem to imply this. It does have obvious consequences for the idea of curved space-time, though obviously it could not be the sole cause or everything would orbit at the same rate.

It does, however, seem possible that it could provide a significant component. It is mentioned on page 150 of "The Universe in a Nutshell" but only in considering the possibility of time travel. Professor Hawking there says "The Einstein universe does not represent the universe we live in because it is not expanding" When something is considered to be indisputable fact the whole scientific process is in danger. Many, including Stephen Hawking apparently, will no doubt argue that the rate of rotation is severely limited by the inability of galaxies at the edge of the Universe to exceed the speed of light. Even before concluding that mass does not increase with speed, I have argued that relative speeds in excess of the speed of light have to be possible.

When doing "A" levels at Brooklands College in the early sixties I used to make the following argument: if a spaceship is travelling between two space ports at a considerable distance apart, such that its top speed at about the mid point of the journey is 0.75c; and a spaceship on the return journey pass on a slightly different trajectory at the mid point, both having identical propulsion systems, how would their relative speed at the mid point be calculated by space control at each port, if the two ports are known to have no relative velocity?

I suspect many students all over the World have asked similar questions and may have received similar replies about how time on each ship would be slowed down so that their perceived relative velocity could never exceed c. I was never happy with that argument because it seemed to me that one should be able to look at the whole system of ports and ships as one frame of reference. If the rule of additional velocities applies at some speeds and all speeds are relative, why should there be any philosophically acceptable reason to consider any relative velocity unattainable. I can see no reason why, knowing that "ship time" runs slower than "port time", space ships should not have devices regulating their clocks to port time, which can be standardised between the two ports. Also, if Newton's third law always applies, any relative velocity must be exceedable by any rocket (or other propulsion system) that has not run out of fuel.

It would seem that I am supported in this view by Professor Sir Hermann Bondi, KCB, FRS. In recent correspondence he confirmed to me the following: "Special Relativity does not say that nothing can move faster than light (though many books claim this), only that nothing can be accelerated from a speed less than 'c' to speed exceeding this value." The latter is, of course, because mass is considered to increase with speed, which I doubt. It would appear, however, that even if I am wrong about mass decreasing with speed, I am supported by Professor Bondi in seeing no reason why a Universe which has always rotated should have any limitation on the speed of individual galaxies. Even if the speed of light were a limiting factor, the illusion of an

expanding universe could be quite dramatic.

This is illustrated in figure 7. This shows three paths of light from a galaxy at the farthest extremity of the Universe, whose final destination would be a point at the centre of rotation. The first path assumes the distant galaxy to be moving at 0.98c, the second path assumes about 1.4c, and the third about 1.6c. We have, of course, to say relative to what? So I shall say relative to an imaginary sphere surrounding the Universe, which has no motion.

If we call the distance from the centre of the Universe to the distant galaxy R, path 1 is about 1.2R, during which the Universe rotates through 0.1875 of a complete revolution or 67.5degrees, giving a distance travelled by the galaxy of 1.17R in the time taken by light to travel 1.2R. Paths 2 and 3 represent 180 and 360 degree rotations respectively. (All path lengths are to the galaxy at the centre of rotation).

We then have to consider whether the position of our galaxy can be considered to be somewhere near the centre of rotation. Whilst I do understand the that local group is thought to be located quite close to the centre (of the observable Universe – see Appendix 6) I have considered different cases to allow for considerable margin for error. Apart from any other source of error I am suggesting that our observations could be illusions.

See figure 7, next page

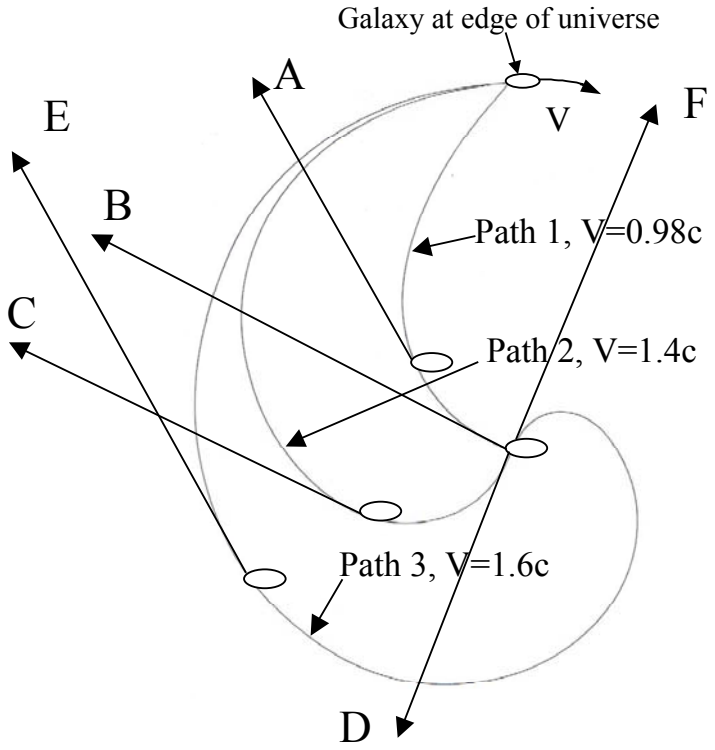


Fig. 7

Light paths across a rotating universe

Depending on the precise position of our galaxy, we could be a very long way out with the apparent sources A – F, but we would arrive at the same conclusion as Hubble. Even with the distant Galaxy moving at less than the speed of light (path 1), the extent

of the error in the position and motion of the galaxy is very significant. The above considerations are independent of the size of the Universe as these are proportions applicable to any circular rotation.

Some may be tempted to think that the rotation of the Universe would have some dire consequence or that we would be bound to notice it. This is exactly what people thought when the rotation of the Earth was suggested, but we do not notice it and we are not flung off. In the same way, the rotation of the Universe would be difficult to detect. The fact that it appears to be expanding could be the only clue, which could be verified if two opposite extremes could be found with less red shift becoming none to coincide with the axis of rotation. This, however, may be hard to find and we could not rule out the possibility of some galaxies rotating about different axes. We know that galaxies spin and my theory indicates that rotating bodies should follow curved paths. This does, however, present something of a chicken and egg situation as I will now try to describe.

If you remember in Chapter 1, I referred to Einstein's conclusion that Relativity results in increased values of π. For a flat disc it is possible to imagine distortion into a dish shape, which would decrease the value, but any distortion which could increase the value is inconceivable; this is even more obvious when we consider a sphere. I tried for a few moments to imagine if the effects of Relativity on atomic size and packing could account for it, but it is quite ridiculous. Any effect would have to be uniform; the edge of the sphere could not, for instance become corrugated. Any section through the plane of rotation would have to remain circular.

There is, however, a relativistic way in which increasing values of π can have a real meaning. This is most easily described with reference to the helix which I think explains EMR and gravity (see figure 8 below). Before considering figure 8, however, it is important to make absolutely clear what I mean by "relativistic" in this case. I am not, in this instance, applying the Lorentz transformation. What I am doing is considering the consequences

of relative motion in a very basic way in order to demonstrate one way to eliminate the error which would result from not being aware, or taking account, of relative motion. In order to understand my point here remember that I see radiation as rings of spinning particles rotating and moving, so each spinning particle in those rings which are moving face on will follow a helical path. It is just that aspect of EMR (and gravity in my theory) that is considered. What I am looking for is a way of compensating for the error that would result from not being aware of the forward motion of the ring.

The initial formula for arc length of a helix is from Kreyzig p.462. I have confidence in the derivation which follows, despite my own very rusty maths, because the formula is of the same form, without squares, which I derived by considering the point on the edge of a particle to move a greater distance than the circumference, which is just what happens when circular motion becomes helical, though the actual paths taken are of different form (see Appendix 3).

See Figure 8, next page

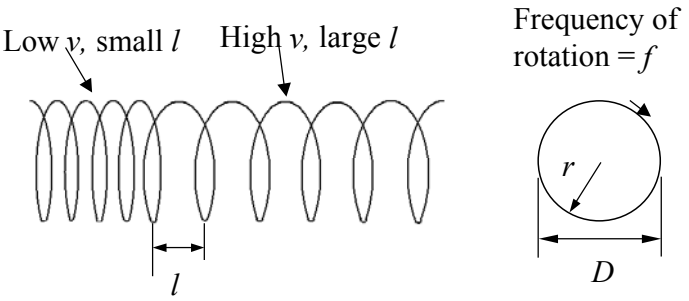


Fig. 8

Consideration of helical path

Arc length of helix (one complete turn) is given by:-

$$s = 2\pi\sqrt{r^2 + \left[\frac{l}{2\pi}\right]^2}$$

$$s = \sqrt{(2\pi r)^2 + l^2} \qquad s = \sqrt{(\pi D)^2 + l^2}$$

Therefore, s/D = $\pi_1 = \sqrt{\pi^2 + \frac{l^2}{D^2}}$

Inserting $l = v/f$ $\pi_1 = \sqrt{\pi^2 + \left(\frac{v}{fD}\right)^2}$

The new value of π derived has a real meaning as follows. If a ring of particles of diameter D is rotating with a frequency of rotation given by f, the distance travelled by each particle in one revolution is πD. Using f we can determine the speed of the particle and thus its energy if we know its mass. If, however, the ring starts to move face on, the particle will describe a helix. The distance travelled by the particle in one revolution will be $\pi_1 D$.

What we have shown is not that the value of π has changed, but that the assumption that it can be considered to have changed is useful in describing the relativity of events accurately. Clearly if a ring of particles is rotating and we are not aware of its other motion we will come to a conclusion about the kinetic energy involved which would be different relative to an observer who is aware of the motion. So again we have demonstrated that energy is just a concept, which must be considered as relative, and that relativity can be taken into account by assuming dimensions to change.

It is also interesting to note that my old "A" level physics text book from the sixties (Nelkon and Parker) tells me that the energy of a moving and rotating ring, rotating at a rate which would allow it to roll is given by:-

$$E = mv^2$$

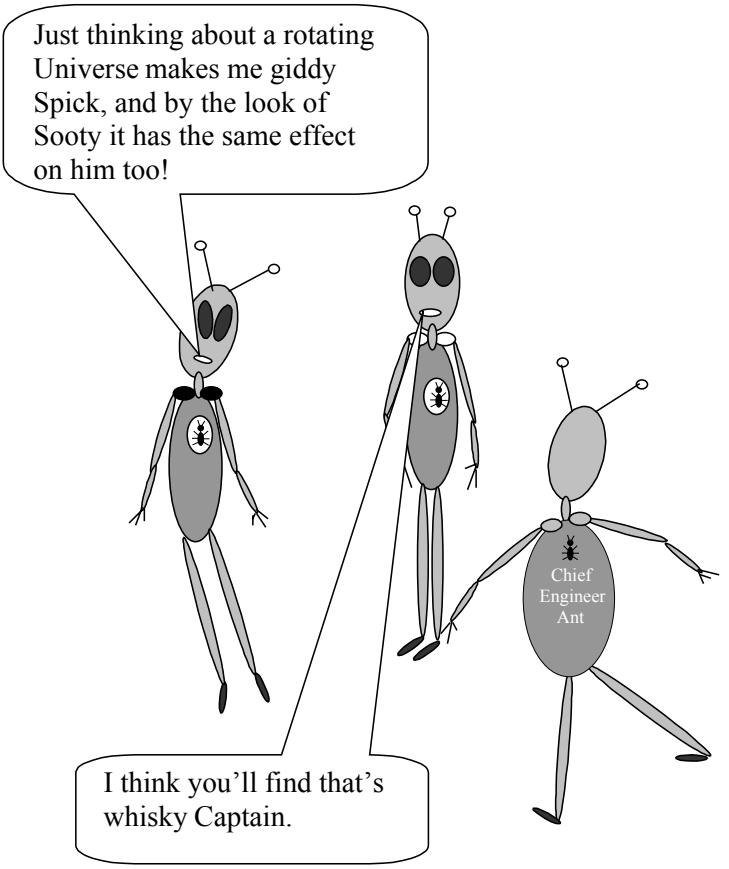
This would thus appear on first sight to confirm Einstein's famous equation, but I am saying that mass reduces with velocity and I cannot say that rotation would be of the right order. Also I think that mass needs to be considered in a different way to the current approach. It seems to me that the mass of particles which can actually be measured, protons, electrons etc., is not just caused by simple spin, but the effect of spin is then multiplied in the gyroscopes and groups of gyroscopes which I suggest comprise spin ½ particles and hadrons. So it is not just that hadrons are much larger than leptons, it is the grouping of gyroscopes which multiplies the effective mass (i.e. the resistance to motion).

Returning to the idea of increased values of π, in a rotating universe standard motion, where no forces act, would be curved. Points on the edges of particles would thus have to follow longer hypercycloid paths. The faster the speed of the particle the closer to a straight line would be its motion; the slower it moves the more curved would be its path and the greater its rate of spin in comparison with motion. So faster rate of spin would mean the point on the edge of the particle having a longer relative circular motion in space (or rather relative to everything else), as would be described by assuming π to have increased.

So the question arises: do dimensions actually change or is the assumption that they can be considered to have changed useful in describing the true relativity of events? Put another way, does change of dimension mean that anything that rotates must follow a curved path, or is the Universe rotating, which means that everything has to follow curved paths. The other alternative is that I am completely wrong, the Universe is expanding, and one day someone will be able to make sense of what seems to be nonsense. Personally I find huge difficulty reconciling the idea of conservation of mass and energy, which Hawking and everyone I think, including me, wish to uphold, with the idea that everything in the Universe emerged from a singularity.

As I have already indicated, the rotation of the Universe cannot be the sole cause of all curvature of motion or everything would orbit with the same angular velocity. It would, with the almost insignificant effect of the rotation of the Galaxy, be a component of all orbits in absolute terms, which Einstein showed in his General theory, would be indistinguishable from true gravitational field. The General theory seems to imply, or to have been interpreted by some to mean, that there are no gravitational forces. Einstein could not have been satisfied with this idea or he would not have spent the rest of his life trying to find a unified field theory. My helix suggests a way that gravity can be a real force, resulting from the exchange of momentum of real particles in a way that answers so many other questions that indicates a strong probability that it may well be correct.

The way I have suggested that the helix could form may be incomplete or I may have wrongly ruled out the possibility of relativity actually changing the value of π. The rotation of the Universe may be the deciding factor in whether a spinning particle follows a curved path, but the degree of curvature, dependent upon rate of spin, would seem to depend upon some change, relativistic or otherwise in the particle itself. Perhaps it is simply that the particle is flexible enough to be flattened by the centrifugal force of its spin, in the same way that the Earth's equatorial diameter is greater that the polar dimension. Such flexibility is implicit in my argument that spin would be imparted by oblique collisions. So I may have been looking for complicated answers and missed the most obvious: the faster the spin, the greater the circumference in the plane of spin. This does not, however, explain the change in the value of π. Further analysis in this respect is contained in Appendix 5.


Just thinking about a rotating Universe makes me giddy Spick, and by the look of Sooty it has the same effect on him too!
Chief Engineer Ant
I think you'll find that's whisky Captain.

Chapter 5

The State of Science

No one can deny the huge advances of the last century. This, however, seems to have given physics based scientists confidence that they are close to knowing all that there is to know. It is a common theme on TV science programmes about physics, where a frequently used phrase is "we are sure we are close to the truth".

I had what seemed to be an interminably long education. After "A" levels I did engineering for two years and then part-time town planning studies for several years, which covered many disciplines. The more I knew, the more I realised I did not know. When I hear "we are close to the truth" alarm bells start ringing in my mind. There is no greater danger to scientific progress than such a statement. It assumes that one's ideas so far have to be right. Whether it be science, religion, politics or journalism, there is great danger in this viewpoint.

When I finally finished with education I tried to total the number of teachers of various types that I had encountered. I cannot remember the figure now, other than it was considerable. One or two I remembered with huge respect and affection, and a few more who came close. I remember some lectures when I had to stop myself standing up and applauding at the end. At the opposite end of the scale, I had one lecturer in regional planning whose approach was to read long sections from the West midlands Regional Plan in such monotonous, hypnotic tone (and always late in the afternoon) that all one could concentrate on was staying awake, occasionally without success. One young, attractive maths teacher at West Ham College, in the 60's, when mini-skirts were a new "revelation", used to turn up late and then regularly drop the chalk; and one at Southampton College of Technology used to rush to the door to check if the Principle was listening and then confide that he did not know why he was there because he had nothing to teach.

This amazing spectrum left me with a pretty good view of what makes a good teacher. And the qualities, which always seemed to go with the best, were age and a sense of humour. The least effective were those with some sort of chip on their shoulder, because they seemed to alienate most of the class, which disappointed me because I had a thirst for knowledge.

About second, or third in my ranking of all time best, was Mr. Haydock, who I remember most for two very important lessons. The first was, always sit at the back when the master is about to ignite hydrogen, which has been dried by passing it through flasks of concentrated sulphuric acid! The second was the most important point, which no scientist should ever forget. He told us that nothing could ever be proved. We can only verify that, on a certain occasion, with a certain set of circumstances, something appears to be the case. It thus follows that the most essential attribute of any scientist is open-minded humility. The long and open discussions with fellow students at Brooklands College (of many nationalities) in the early 60's gave me both joy and encouragement that the future for mankind must be bright (I was young and naïve).

Many years later it seems to me that physics is still littered with "don't knows". Many things are accepted, considered, compared or evaluated with no really clear idea of their true nature. Amazing ingenuity has been used to make some sense of things mathematically, though not always correctly I suspect, but providing a picture of reality that can be visualised has proved very difficult.

What do particles actually look like? What is radiation? How and why is it emitted? Why does it go so fast? How do force-carrying particles actually work? How can some forces increase with separation whereas most do the opposite? How can spin ½ be visualised in reality? What is gravity? How does it actually operate? How do we explain mass? What is energy? What is time? Why do galaxies rotate? How can particles split and form new ones or re-combine?

These are all fundamental questions, which established science has had problems with for a long time. We then have questions it is just beginning to tackle. How does ESP work? Can rocks record and replay events? Do ghosts exist? How can levitation be explained? Is telekinesis possible? And then there are very new questions. How can blobs of plasma gas apparently "communicate, replicate and grow"? (Xmas 2003 New Scientist).

There are, of course, many more questions to be answered, and which may be answered as the fundamental ones become clear. As long as we try to describe things in vague terms, we will never get a clear picture. What are "strings of energy"? Has anyone got the slightest idea what this "energy" would look like? Can you keep some in a container? What scientists appear to have been embarked upon in the last few years is dreaming up ideas which are ever harder to visualise, as with M-theory or p-branes. It seems to be thought that the more complicated and obtuse an idea is, the more likely it is to be true. I tend towards the opposite viewpoint: the more simply and obviously everything fits together the more likely it is to be true.

There has to be a mechanism to explain everything where there is cause and effect. It is not enough to say "something" does this or that. Real phenomena require real explanations. My idea of rings of tiny particles is simple, easy to visualise, and provides potential answers to all of the above questions. I have not yet dealt with the paranormal but I will be providing logical explanations in a later chapter.

If I am right about the mechanism by which gravity works it seems very likely that it can be overcome. Evidence indicating that levitation is a very real phenomenon, which has been occurring for centuries, gives a very strong clue to how this might be achieved. This would be the greatest advance in the history of mankind. Long term implications for space travel are obvious; but it is the huge difference it would make to energy consumption and pollution that make it imperative to pursue the possibility. And yet I can get no response to my suggestions for experiments that could be carried out to test my theory. It is no more than

common sense that if there is the remotest chance that these experiments might work, they have to be carried out. We are not talking about an anti-wrinkle cream, or an improved detergent; we could well be talking about our very survival. But I cannot even get a reply to an e-mail.

I have, at the time of writing this, written, e-mailed or faxed my ideas to 45 scientists, mostly in the UK, several in the US, one in Canada and two in Germany. So far Professor Bondi is the only one to offer any opinion. Something is very wrong and I think it goes beyond the obvious lack of courtesy. I suspect that each is thinking along these lines: "If I give any credence to this nonsense I will be ridiculed; on the other hand if the author turns out to be the next Einstein and I have rubbished his ideas, I will never live it down; so the safe option is to wait for others to comment first."

A whole lot of other human emotions are also likely to be involved. Some may even be hoping that I just give up and forget the whole thing so that they can claim the idea as their own. They need to read my auto-biography and decide just how likely that is. I prefer to believe that this would represent a tiny minority, but until I can talk to any it is hard to judge.

My fears are, in fact, echoed by João Magueijo (an established theorist) in "Faster than the Speed of Light". Apparently there has been a very negative reaction to his ideas about light; even the word "heresy" was used. This worries me, because, as I keep saying, assuming that something has to be right is crime number one in science. It is the antithesis of science, which has to be based on the open mind. I would insist that Dr. Magueijo's ideas be discussed and evaluated, even though their purpose is in support of Big Bang theory, which I think is probably nonsense. The goal is truth. It is not to appear smarter than the rest or achieve celebrity status.

The whole issue is far too important to be left undiscussed, which is why I am writing this book. I expected the scientists of today to be just older versions of the open-minded, tolerant, seekers of truth that I shared my student days with. I have to say that it is not only in the field of science where there is now cause

for concern about sense, wisdom, attitudes and even honesty. I have had direct experience in the last few years of government departments and my local authority behaving in reprehensible ways, with no respect for logic, reason, consideration or truth. I am still holding out hope that science will set an example in a World where people are all too willing to inflict hurt on others on the basis that their viewpoint has to be right. Such people are generally lacking in intelligence and easily brainwashed. Is it not reasonable to expect that, of all people, scientists should have the intelligence to be completely open-minded?

Two things have happened which may be making this ever less likely to happen. Everybody now is subject to the phenomenal time pressures, which have been brought about, and the further compounded, by "progress". Secondly, especially in physics, communication has become a problem because the "language" (math's) has become fragmented and no longer universally intelligible. (I think that the complexity of math's in this field may stem from Heisenburg's failure to see Einstein's error about mass increasing with speed. Einstein had to be right – bad science). And then we have what I have come to realise over the past year is a "communications conundrum": now that communication is vastly more easy than ever before, people are so bothered by it that it is becoming self-defeating. Who has time to read all that is sent? Perhaps we should consider tossing bottles into the ocean instead of e-mails onto the e-sea!

So, factions seem to have their own "territories" which, maybe not entirely consciously, need to be defended. This probably applies most to those who have laboured for many years and believe that they must be "close to the truth".

We then have the Emperor's New Clothes syndrome. The illustration of General Relativity by a mass stretching a rubber sheet gives an incomplete, misleading, but comforting picture. It allows many to suppose that it makes sense to them. But the fact is, as João Magueijo points out, it is very hard to understand, and I say "bravo" to him for admitting it.

The truth is, it does not make complete sense as it stands, and the way that Einstein put things does not help. But there are so many who are content to believe that it must for two reasons: (a) they know that they do not understand it fully; and (b) they do not wish to open themselves to ridicule by being the only one to say "I do not think this makes sense"; and the subtlety that it can be correct in overall concept, but also in error or subject to misinterpretation, can only be appreciated by those who can see the logic of a slightly different approach.

All this conspires to make receptivity to new ideas, which may require substantial re-thinking, progressively less likely. As an outsider, it seems to me that science is thus actually heading backwards. It appears to be in great danger of repeating the type of error that I thought had been consigned to history. This may seem to be the almost hysterical ponderings of someone who has been outside of science for so long that I cannot possibly know what it is really like. The following quote from page 234 of "Faster than the Speed of Light" only served to reinforce my fears:-

"The two leading quantum gravity cults are called string theory and loop quantum gravity. Since they don't connect with experiment or observation at all, they have become fashion accessories at best, at worst a source of feudal warfare. Today, they constitute two enemy families, and if you work in loop quantum gravity and go to a string conference, the local tribe will look at you in amazement and ask what the hell you're doing there. Assuming you are not boiled in a cauldron, you then return home, only to be scolded by your horrified loop quantum colleagues, who think you are out of your mind……A mob mentality has developed, and being tagged "string" or "loop" opens or closes doors accordingly. If you acquire the loop label, don't even think of applying for a string job"

I would be greatly encouraged in finding a scientist like Dr. Magueijo, who clearly does not wish to be constrained by what

seem to be considered as established ideas, but even he says things which deny the correct approach. On page 79 he says of the Big Bang "….for we know that such a model cannot be disputed". But he also refers to the cosmological problems associated with it, which have defied resolution.

The current guess is that there must have been a period of very early rapid expansion, called inflation; but there are problems with that; hence the idea of variable speed of light, with 'c' exceedable. And he refers to the problems of finding alternative solutions. On page 139 he says "But if inflation was not the answer, what was? Andy (Albrecht) confessed that after all these years he felt at a loss. Everything he had tried either had not worked or had proved to be nothing but inflation in disguise, often a poorer realisation of inflation."

So we see that physics is at present a very long way from explaining all its mysteries. I am not claiming to have definitely solved them. What I am saying is that my ideas seem to fit so well, in so many ways, that it must be worthwhile examining them further. It is 37 years since I did maths of any way near the level needed and maths has moved on; so if everyone would prefer to wait for me to verify what I am saying in this way, it will remain just another crazy idea.

Let us just consider one of my ideas, electro-magnetic radiation (EMR which includes light). You need to know first that light has been very hard to fathom. Newton thought that it came in corpuscles, but it also behaved very much like a wave (which needs some sort of medium in which to move). To this day the dual nature of light has been a mystery hard to understand. At the start of the last Century Max Planck showed that it must be emitted in discreet amounts or "Quanta" and Einstein explained the photo-electric effect by particles called photons, but the wave like properties were still not explained by anything other than a vague notion of duality.

In 1923 Prince Louis de Broglie, a graduate student at the Sorbonne, suggested that photons could have an accompanying wave which was related in some way to an internal cyclic process

in the photon. Einstein liked this idea, saying "I believe de Broglie's hypothesis is the first feeble ray of light on the worst of our physics enigmas" and "de Broglie has lifted the great veil." Various people since have modified this idea but nobody has been able to explain the how and why of duality.

The whole point of a wave is that it is a travelling disturbance in a medium. Nobody has ever been able to show that such a medium exists. It was assumed for some time that an "Ether" must exist in space, but experiments to demonstrate this have all failed. So how do we explain this mystery, which has defied attempts to explain it for centuries, including the last century, when efforts have been particularly intense by some obviously very clever people?

My answer, which I think was revealed by God, is that particles move in such a way as to perfectly mimic a real wave, even though it can travel in a complete vacuum. A rotating ring of particles generate a helix when moving face on and a helix produces the same effects as a wave. If this rotating ring were the outer ring containing other internal transverse rings which together comprise photons, the idea of quanta is retained and the arrangement ties in exactly with de Broglie's accompanying wave, which he called a pilot wave guiding the particle in its motion. He showed that, as the wavelength of light is decreased (frequency increased) the momentum of the individual photons is increased. As I have shown that mass increases with rotation my idea of frequency being related to rotation agrees with de Broglie's conclusions. (On page 52, Fig. 2.14, of "The Universe in a Nutshell" Stephen Hawking confirms the same relationship of mass increasing with frequency).

This explanation then provides a whole lot of answers. Light travels in straight lines (locally at least) because it consists of moving gyroscopes. Electro-magnetic field at right angles to motion is obviously produced by the particles in the outer ring. The retina is stimulated by particles in transverse inner rings cutting across it at various amounts of separation depending on the rate of rotation, so that colour (frequency) is perceived digitally.

Polarisation is explained by transverse rings at right angles. Frequency dependent on rotation and speed suggests why the speed of light is always the same. Tiny spinning particles provide a possible explanation for photons splitting and re-combining (if I am right about orbit size). The spiral nature of gravitational waves I suggest would interact with the particles making up photons giving a real mechanism by which light is curved by gravitational fields; which would also explain red shift of light emerging from dense gravitational fields.

This is an impressive list of answers for one idea; and I have not yet mentioned that it provides the first ever description of a mechanism by which radiation is actually released, in suggesting that very high, contained rotational energy, when released reduces frequency and mass, permitting phenomenal acceleration. This mechanism contradicts one aspect of Special Relativity but agrees precisely with the nature of the mass/energy relationship as outlined in "Basic Relativity".

My theory also anticipates that photons and electrons are based on the same form of construction, which explains why they behave in a similar fashion. It is also entirely consistent with the view that electrons near the nucleus with higher energy are the source of higher energy emissions. As far as I am aware, with my limited knowledge of quantum physics, all of the above result in no significant conflict.

Also, very recently ideas have been suggested by others, or ideas have been "resurrected", which also suggest that the property of helicity can apply to photons. In New Scientist of 12th June 2004, in an article entitled "Twisted Light" on page 40, the author refers to the work of Les Allen in 1992 at the University of St. Andrews (UK), in showing that twisted light (which is not what I am saying exactly) carries angular momentum.

For singly twisted light, it works out at one quantum unit of angular momentum per photon, so Allen suggested that this "orbital angular momentum" is a property of the individual photons, which is exactly what I am saying about the outer ring. The Author then goes on to say that in 2001, Alois Mair, now at

Harvard University, working with Anton Zeilinger's group at the University of Vienna was able to "prove" this (I prefer "verify"). The group created entangled pairs of twisted photons and showed that the twist resides in each photon (*Nature*, vol 412, p313).

A twisted photon apparently appears to travel along a helical path, subject to the fact that its position at any point can only be inferred as a matter of probability in quantum mechanics, giving a spread-out quantum wave function, which the author says is exactly the same as the corkscrew of classical twisted light.

There is then Roger Penrose's Twister theory, recently resurrected in serious consideration being given by some String theorists, as mentioned in his recent monumental work "The Road to Reality". I was greatly encouraged to find that this great mathematician and physicist has concluded, just like me, that he is not comfortable with the idea of extra dimensions. His article in New Scientist "Strings with a Twist", 31 July 2004, p26, mentions that twister theory does not require more than 4 dimensions, which I have explained is in no way mysterious but is the natural consequence of motion. This is not a property of empty space but the simple, logical way to consider the motion of matter in space. Unfortunately many theorists seem to have this wrong!

My encouragement was slightly deflated by finding that, just like everybody else these days it seems, Roger Penrose is not able to give an account of the way that he sees things to work in a way that can be clearly visualised. His theory does seem to involve light having helicity, but what the precise mechanism is to explain this is not clear to me. Perhaps it is more clear to those who are able to understand the highly complex maths on which it all seems to depend, but then why not include an attempt a conveying what is actually visualised if it is possible, so that it will be apparent to those whose maths is not on the same level. But then I think that being able to visualise gradually "disappeared" in the last century as quantum theory itself manifest as an on-going mystery.

This is why my theory "stands out from the crowd". The main reason for this I think, is that I have looked for an explanation which does not see energy as an entity. I have looked for motion

and in doing so in a logical way, which considers solutions to otherwise insoluble enigmas, I (with only "A" level physics remember) appear to have hit on a clear picture of the way everything works which is uncannily similar to the vague notions that others are seeing in the "mists of their maths".

My analysis suggests that the standard model is incomplete, and Roger Penrose seems to agree in saying that it is not a "finite theory". It does not give finite answers and he says it contains something like 17 undetermined parameters. To me it is as clear as day that electrons and quarks have to be divisible and have a construction to account for the nature of radiation. Einstein confused everybody. Energy is not something you make from mass. When you take the view that energy is not a "thing" which can exist, and see it as motion, all becomes clear. I may not have all the details right yet but it has to be logical that whatever is in quarks and electrons comes out as radiation, to be constantly replaced in the presence of the Sun of course.

But what my theory provides, which I believe would have caused Einstein immense joy, is an explanation of that which dogged him for so long. The unpredictability and uncertainty of quantum mechanics is, I am quite sure, the quite natural and expected consequence of particles in each ring spinning in the same direction and, in touching and bouncing off, feeding off each other's energies. The net result of large numbers acting in this way could only be predicted, with our current abilities and perceptions, as matters of probability.

Fortunately the publication of this paperback version was set back by technical problems just long enough for me to find further reason for great concern at the current state of physics. Apparently funding for research is dominated by support for Big Bang theory. I urge the reader to visit cosmologystatement.org, which contains an open letter, with now over 250 signatures, setting out the case for doubting this theory and for changes in the way funding is allocated. There should be no place in science for the arrogant bullying to which this letter appears to attest. Frankly, this exceeds even my worst fears of the growth of dogma.

Chapter 6

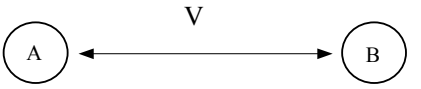
The Special Principle of Reality

For a book which purports to be a theory about reality there are many instances where I emphasise uncertainty. Whether you are a quantum physicist, a philosopher, the man in the street, or Schrödinger's cat, life if full of uncertainties. (Schrödinger's cat was not a real cat but one imagined by Schrödinger in a thought experiment to show that two alternative realities could not exist at the same time).

Probabilities give us a way of proceeding which seems to work quite well. When the man in the street decides that it is safe to cross it, he assesses the probability to be quite low that Thrust 2 is approaching at several hundred miles per hour. He may not always be conscious of this judgement of course. Quantum physicists, on the other hand, very consciously use probability. It seems to work for them pretty well, as it does for the man in the street. But whereas the latter would, if he thought about it logically, conclude that the actual chance of Thrust 2 attempting to break the World land speed record down the high street was zero, the quantum physicist would not be able to resist the urge to assign a miniscule mathematical value.

Stephen Hawking does this in respect of being able to go back in time and kill your own grandfather before your father was conceived. I am sorry to have to point it out, but they are nuts! (I am, of course, most definitely not implying that Stephen Hawking, nor any other scientist has a mental health problem, but just like João Magueijo, I can visualise considerable hilarity in the future about some ideas). There is no way that Thrust 2 is ever going to be zooming along any high street at very high speed; not in reality. Travelling back in time is just as ridiculous. Travelling forward in time is also not possible because "time" is not an entity; it is comparison of frequencies.

Time does not exist to travel through; there are only events, and events are reality. Reality is out there. Reality is happening. Being able to know reality is the problem; but we must not let difficulty get in the way of the obvious. Shrödinger's cat could not be both dead and alive; there cannot be more than one actual reality. Unfortunately, however, physics is a lot more complicated than the choice of one possible reality or another. Consider the simple case of two particles in space in a universe which may or may not be rotating or moving. How many possible realities do we have to choose from? This is analysed in Figure 9.



If two particles are moving apart at an imagined velocity V
How many possible realities can there be?

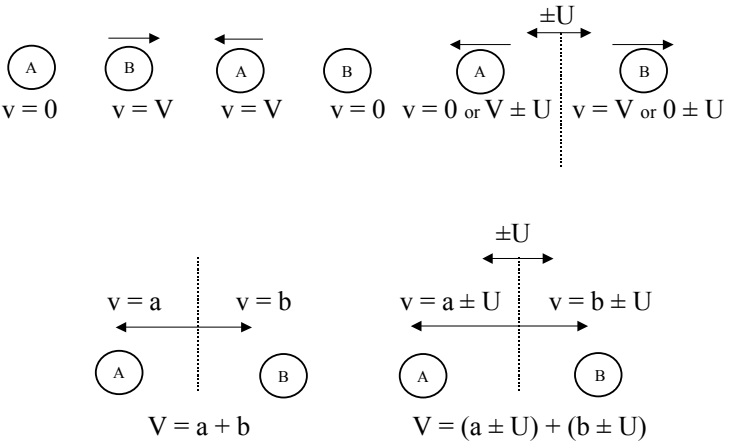


Fig. 9

Consideration of Possible Realities

It is thus clear that there are an infinite number of possible realities for A and B and an infinite combination of those possible realities if the Universe is either moving or rotating. So what is reality?!

When someone goes into a shoe shop with no idea of her shoe size, she is bewildered by the number of possible realities of what she will leave with. Unless she has more money than sense, she will probably end with just one pair: the pair that fit best. So reality is that which fits best (for now). This is the precise nature of theorisation and scientific method. If the shoes are not comfortable, we look for a pair which fit better. If we insist on wearing shoes that do not fit well because we like them, there could well be a price to pay.

We need to ask ourselves: how well does the Big Bang theory fit, and are we entirely comfortable with it? I have to say I am hobbling badly! My "feet" are bothered by conservation of mass and energy; they are positively suffering with what caused the Big Bang; and excruciated by what, if nothing and not nothing, was there for the "singularity" to exist in before. So, what possible reality can we imagine which seems to fit without breaching those laws which we feel obliged to adhere to, and provides us with an answer "why?" Cinderella would have to say that a rotating universe seems to fit better than the Big Bang for a whole lot of reasons as follows:-

1. It does not have the philosophic problems mentioned above. It could have always rotated or God could have set it in motion. A creator, for whom time does not exist, would then have created time (not as an entity but a means of comparison), which as I have shown depends on rotation.
2. The apparent expansion is explained as an illusion resulting from light seeming to follow curved paths relative to the curved motion of galaxies.
3. Curvature of motion becomes standard, though Newton's laws are obeyed for the Universe as a whole. General Relativity is then the natural consequence of conservation of energy right

down to the tiniest particle, where curvature of motion is a consequence of the manifestation of motion as mass/energy.

4. The idea of fast spinning particles moving in rings may depend upon a rotating Universe. The case for such rings is strong because it provides potential answers to a long list of mysteries as described in Chapter 1. The screw-in explanation for gravity alone would be of huge consequence if it proves to be right, but in addition to that, it could well answer all of the following:-

   (a) How and why light manifests as both particles and waves;
   (b) why the speed of light appears the same to all observers;
   (c) how radiation is actually released;
   (d) how frequencies are perceived;
   (e) how and why EM field is at right angles to EMR;
   (f) how polarisation works exactly;
   (g) how spin ½ operates;
   (h) why so many types of quark are possible;
   (i) why the force linking quarks increases with separation;
   (j) how particles split to form new ones;
   (k) how gamma radiation is so damaging;
   (l) how and why high energy particles give off high energy radiation;
   (m) how and why mass is lost with radiation;
   (n) why radiation travels in straight lines;
   (o) how neutrons can become protons;
   (p) how charge and magnetism operate.

To this long list I think that it is also possible to add suggestions for explanations of paranormal phenomena, which are covered in the next chapter.

Relativity does not depend on mass increasing to show that "time" runs slower as we move faster. As long as our measurement of "time" depends upon comparison of rates of rotation (the relativity of events) which I have shown must change

as curved paths become straighter and faster, the consequence of time running slower as speed increases cannot be avoided. As I found at the start of chapter 1, without rotation time has no meaning. It is just a comparison of frequencies, none of which can be assumed to be absolute and unchanging. This is why I use the word "special" in my principle of reality. Until we can determine the reality of the rotation of the Universe in terms of an assumed unchanging rate relative to some other possible reality, we have to be content to accept for now that this appears to be the reality that fits best. What would be unscientific is to say that because it seems to fit it has to be right. That would be as unscientific as assuming that the Big Bang is established fact. There should be no such thing unless we are prepared to live with the consequences of dogma. Surely we must have learned the dangers of that by now!

Or have we? The word "heresy" has been used by supposed scientists, not 500 years ago, not fifty years ago, but since the recent publication of "Faster than the Speed of Light" by João Magueijo. I think that a rotating Universe answers more questions than variable speed of light, but science progresses when we are prepared to consider all options. Dr. Magueijo and I seem to agree that the most important thing is an open mind. The greatest danger is when we insist that something has to be right.

In Chapter two of "The Universe in a Nutshell" Stephen Hawking says " Any sound scientific theory, whether of time or of any other concept, should in my opinion be based on the most workable philosophy of science: the positivist approach put forward by Karl Popper and others. According to this way of thinking, a scientific theory is a mathematical model that describes and codifies the observations we make. A good theory will describe a large range of phenomena on the basis of a few simple postulates and will make definite predictions that can be tested. If the predictions agree with the observations, the theory survives that test, though it can never be proved to be correct."

If Big Bang theory is based on the most workable philosophy of science, I would say that philosophy, science, or both are in a

sorry state. Whilst it is unscientific to rule anything out completely, in terms of common sense, Big Bang theory is stupifyingly ridiculous; it is pure "Alice in Wonderland". And what is the overwhelming observational evidence for this affront to reason? The light from distant galaxies is red-shifted. This light, the nature of which is still a mystery to science, has travelled vast distances through space, which, in terms of what it may contain, is also still a mystery; interactions of light with gravity could be the first of similar phenomena, still to be discovered; and yet scientists are convinced that red shift has to mean expansion. It seems to me that the certainty of the Big Bang depends on considerable assumptions, and a wholly unscientific approach.

My idea of rings of tiny particles is a very simple postulate which describes a whole range of phenomena in a way that goes way beyond the scope of most theories because it explains how and why things happen in a way that is easy to visualise. No mathematical model can do this. Visualising how a helix can pull is probably much easier than using equations to demonstrate it. The way that so many other answers fall into place suggests quite strongly that the idea could well be more than just a crazy notion.

Unlike string theory and its off-shoots, my theory can be tested. It predicts that mass is spin and that spinning particles (of any size) should follow curved paths (though I think curvature is more marked in the most fundamental particles). This may be tested by releasing spheres with various rates of spin and velocity in space, and observing their relative motion. I also predict that photons, gravitons and many other particles are comprised of large numbers of tiny particles, which may be neutrinos or some other as yet undiscovered particles. If they are neutrinos, the idea may provide an explanation for the solar neutrino problem, where it seems that less of these tiny particles are being emitted by the sun than expected. Observation of neutrinos is obviously no easy matter, but eventually we may find a better way. In fact, in New Scientist of 17/04/04, it is suggested that sapphire crystals can be used to detect neutrinos and that communications could be revolutionised by being able to send messages through the Earth.

Reading this prompted me to read up more on the theorised nature of neutrinos, and I appear to have found confirmation of my idea that neutrinos can travel in helixes. Page 162 of "Nuclear and Particle Physics" by Burcham and Jobes states the following:-

"…. it will be necessary to ascribe a new property of *helicity* to the neutrinos. This is a correlation between the spin direction of a particle with its linear momentum which makes it move like a screw."

The significance of this may not have been realised because it is thought that neutrinos have zero, or almost zero, mass, zero charge, and extremely small interaction with matter. If, however, my view of mass turns out to be correct, extremely fast spinning neutrinos would certainly have mass. This would still be tiny compared to hadrons (neutrons and protons), and even electrons, but multiplied by the huge numbers thought to be present, if they moved in unison in a helical path, the momentum destroyed in the opposite direction to travel in the screw-in effect could well be enough to account for the very weak force of gravity.

It has been thought, during about the last hundred years, that gravity waves travel at the speed of light, as opposed to instantaneously as thought by Newton. It seems to me that they may travel more slowly, perhaps significantly or even substantially. This would increase the angle between the helical path and the direction of travel (giving the "screw" a finer "thread") and thus allow more momentum to be transferred to the opposite direction.

The best way to test my theory of gravitation is probably in experiments I can suggest to see if gravity can be disrupted. These experiments stem from explanations of paranormal phenomena and are outlined in the next chapter. It is, of course, just possible that the new, very powerful particle accelerators will show that quarks are divisible, but I suspect that the particles released may just seem to disappear as they go straight through the walls of the apparatus, unless they quickly recombine into other particles.

On final editing of this text an article in New Scientist has drawn my attention to on-going observational evidence dating back to the 1950s of the effect of eclipses on Foucault's pendulum. I think that my theory of gravitation is the only one which would explain this. This is analysed in a further appendix, 7.

Returning to the question of reality, as I showed in the first chapter and as demonstrated above, the question of speed is by no means a straightforward notion. This is not new, of course, and it is what Special Relativity is all about. The Universal significance of any particular speed in absolute terms is incompatible with the relative nature of motion. We can say that relative to any observer, light must always seem to travel at 'c', but this has to be because of the nature of light. For us time is just a comparison with the regularity of the Earth's spin and orbit. This is not changed (or so we are forced to assume) by the motion of other things, such as rocket ships or light. (But, see Appendix 4, p135).

Devices which help us make comparisons with the Earth's spin (clocks etc.) may be susceptible to motion because they depend on vibration or oscillation (which is equivalent to rotation), but it makes no sense to think of time as an entity which can be affected in a real way.

The simple fact is that we cannot know what speed we are moving in absolute terms, given our current knowledge. It could be that the motion of our galaxy is such that it is very close to the speed of light and that the rotation of the galaxy is about to take the speed of the Earth in a particular direction up to 'c'. Would this mean that a rocket ship could take off from one side of the Earth but not the side facing in the same direction as the line of greatest motion through space? A limiting speed is much more likely to be a product of our illogical minds than reality.

Does this, therefore, mean that Relativity is wrong? My answer has to be yes and no. It is correct in some ways but not others. This needs careful explanation so I shall try to do so in a logical order. The first thing to be clear on is that time is not absolute but essentially just a matter of choice. We have chosen to compare events with the rotation of the Earth, but we could have chosen

many things. Similarly we choose standards for distance in an arbitrary way. We then use these to determine speed; but in the same way that time and distance are no more than comparisons, so speed also is just comparison; and our conception of whether it is fast or slow is dependent on what we chose to compare it with. We tend to think of no motion as relative to us on the surface of the planet, but from other points of view we are hurtling through space at immense speed.

Assumption is always involved. Supposing then, the basis of our assumptions is that light, or anything travelling with it, takes no time, i.e. its transmission, as far as it is concerned, is always instantaneous. We then judge time and speed as comparisons with this standard. Obviously then no matter how fast you manage to accelerate to, it will not seem possible to decelerate a beam of light, and light speed could never be exceeded because instantaneous cannot be beaten, even using phenomenal amounts of energy to give phenomenal acceleration.

We could, however, arrive at a finite value for the speed of light if we found that time varied with speed, so at lesser speeds, zero time would appear as zero plus x (i.e. a variable). In the same way that it is not actually wrong to describe your speed as 100 km. per hour driving on the motorway when you are orbiting the sun at over 100,000 km. per hour, it purely a matter of choice as to how we consider time and speed.

On this basis, however, we do not need mass to increase with speed to make attainment of the assumed infinite speed of light impossible. This will confuse you if you do not let go of the idea of time being independent of motion. Remember that time can only be a comparison of rotations, which conservation of energy requires to reduce with speed. So, if you imagine the rotation of a particle, as the basis for comparing all other rates, to have stopped completely at light speed, then our definition of time in this instance means that no time is passing at this speed. At lesser speeds, however, the particle can spin faster (with no change in its total energy) so time would then have to be defined as going faster.

So, as long as we wish to consider travelling at light speed to be equivalent to no time passing, the basic results as expressed in Special Relativity (excluding mass) are not wrong; but just as 0^0C is not absolute zero, if we judge time on another scale the speed of light could be exceeded. The crucial difference is that temperature is real but time is only a concept, which can set no actual extremes. So I am saying that Einstein was wrong to conclude that c represents a maximum (however you construe this) but that the relationships he demonstrated are otherwise sound. This is, however, subject to one further proviso. I remain unconvinced that dimensions actually change.

The pole in the barn paradox indicates that something is wrong here. The answer is, I think, that they do not actually change but that the assumption that they can be considered to change helps in describing the relativity of events accurately, as I showed with π. This is further analysed in Appendix 5.

Chapter 7

Paranormal Explanations

I do not like the term "paranormal". Phenomena classified as such are just not yet explainable. If they are real they have to be explainable. Indeed, even if some are imagined, if we can show that this is the case, they are then explained in this way and are normal in the sense that the reason for them is understood. Some phenomena, however, which science has been reluctant to tackle, must have a physical explanation. One of these is levitation. Consider the evidence contained in one book alone. In "The World Atlas of Mysteries" (1978), Francis Hitching records many instances of levitation throughout history and all over the World. The following is a quote of a report by the Editor of the Hartford Times, F. L. Burr of an incident in the Connecticut home of a silk manufacturer in 1852, relating to a 19 year old medium called Daniel Dunglas Home:-

"Suddenly, without any expectation on the part of the company, Home was taken up in the air. I had hold of his hand at the time and I felt his feet – they were lifted a foot from the floor. He palpitated from head to foot with the contending emotions of joy and fear which choked his utterances. Again and again he was taken from the floor, and the third time he was carried to the ceiling of the apartment, with which his hands and feet came into gentle contact."

D. D. Home levitated many times after that and performed the feat in front of large numbers of witnesses over 40 years. These included Thackeray, Emperor Napoleon III, Ruskin, Rossetti, Mark Twain and, most notably, William Crookes, one of the era's renowned scientists, later to be knighted and become president of the British Association for the Advancement of Science. He wrote in the *Quarterly Journal of Science*: 'The phenomena I am

prepared to attest are so extraordinary, and so directly oppose the most firmly – rooted articles of scientific belief – amongst others, the ubiquity and invariable action of the force of gravitation – that, even now, on recalling the details of what I witnessed, there is an antagonism in my mind between *reason,* which pronounces it to be scientifically impossible, and the consciousness that my senses, both touch and sight, are not lying witnesses.'

It is clear from Mr. Hitching's research that this is not just an isolated incident, which could be explained by something peculiar to Mr. Home. His "World Atlas of Mysteries" is aptly named, and the title could also be extended to include "History of Mysteries" in this case because he lists 20 cases of levitation in every continent except Australia from 300BC to 1936. The latter, in southern India, was in front of about 150 witnesses and was photographed by a local planter, P. T. Plunkett. The photographs, taken about mid-day, were published in the Illustrated London News on 6th June 1936 and are included in Mr. Hitching's book. They are still available from ILN if anyone is interested. They are quite impressive but I can suggest one way, perhaps involving self-hypnosis and some gadgetry, that the witnesses and the camera could have been fooled in this case. But then I was not there and Mr. Plunkett, who witnessed the performance with his fellow planters on several occasions, was convinced of the absence of tricking.

Assuming that the levitation could have been real, which has to be a possibility, bearing mind the extent of the evidence for other cases attested by many credible witnesses, there are details which may provide some clue as to the way this phenomenon could have a scientific explanation. In this case, unlike D. D. Home who levitated vertically (mainly), the fakir is almost horizontal, with his feet slightly lower than his head, and one open hand is rested lightly on the top of a stick, purely to maintain balance it seems.

After the performance Mr. Plunkett and others were invited to try to bend the fakir's limbs, which they could not. It took 5 minutes of massaging and cold-water douches before he returned to

normal. These facts are considered later when I analyse them in the light of my own theory of gravitation.

Apart from the recorded observations of William Crookes, which from a scientific viewpoint are very hard to dismiss, there are many of Christian origin, only a few of which are included in Mr. Hitching's list of 20. Apparently there were, at the time the Atlas of Mysteries was compiled, 230 Catholic saints who had levitated. Two such cases are mentioned in detail and are particularly compelling. They relate to St.Teresa of Avila, who recorded the sensations in her biography, and St.Joseph of Coppertino who levitated many times over a long period, and in front of many witnesses including the Pope, Princess Maria of Savoy and King Kasimir V of Poland. More than 100 such incidents were attested by scholars and for much of his life St. Joseph was required by his superiors to worship in private because his feats were so disruptive.

There are some clues in these accounts, which added to my idea of helixes screwing into nuclei, suggest a physical explanation. A common theme is a level of arousal through strong emotion or will power, which seems to result in a highly stimulated nervous system. We also see that subjects who levitate vertically seem to do so with no problems with balance, but horizontally a stick is required. If we consider the fact that the lower half of the skeleton is more clothed in muscle, in which nervous energy acts, there does seem some possibility that excitation of nuclei of atoms in muscles can disrupt the entry of my helixes more from below than above i.e. from the sun mainly but also from the moon. This may be why the performance in India was near mid-day. The stick is necessary to counter the torque of the upper body being pulled more, as is indicated by the slope of the body.

Having, as a carpenter, drilled many holes, I know how easy it is to break a drill if the work is allowed to move. Disruption of helixes by inducing appropriate excitation in nuclei seem a possibility but clearly it needs to be very specific or levitation would be very common if, for instance, getting hot had an effect. Having suffered for many years from nervous tension I know that

this can cause severe sweating as well as muscle stiffness. Perhaps in a few rare cases the frequency of induced vibration is either too high or too low to be manifest as heat but is just right for disrupting gravity waves.

There are, however, aspects of levitation that seem to require the emission of gravity cancelling waves, which take effect outside the body. This is because it also seems possible for levitational effects to be extended to material objects such as furniture. So perhaps the excitation at just the right frequency results in the emission of helixes (radiation) of precisely the right nature to cancel gravity waves. These may emanate from muscles or perhaps in some cases from the brain. Apparently there is a boulder in Shivapur, India, which is regularly levitated by a group chanting certain words in loud ringing tones. It seems extremely unlikely that the sound waves have any effect, but the activity in the brain associated with the chanting might cause appropriate emissions.

This brings us on naturally to the question of ESP and other paranormal phenomena. In considering any similarities between my theory and string theory, it seemed likely that my rings of tiny particles might be equivalent to the loops of string theory, and that, if my tiny particles could have variations within each ring of frequencies of rotation, the analogy would be closer. Each helix could then take on the particular characteristics of the source in terms of particular patterns of frequency of rotation of the individual particles. Helixes thus encoded could contain information that can pass through normal barriers to communication silently and invisibly. People or pets well attuned to each other could be able to decode the information, even over large distances, as appears to be the case with dogs anticipating the return of their masters.

The exchange of helixes could explain the way rocks and buildings appear to be able to record and replay images and sounds of past events thus explaining some ghostly events. Francis Hitching, on page 98 of “The World Atlas of Mysteries” refers to the ability of a Welsh dowser to detect energy in spiral

form that emerges from standing stones. To be detected such spirals must be immensely larger than I have been describing. This may be because standing stones are thought to act as amplifiers of energy from underground water.

The force, which apparently waxes and wanes with the lunar cycle and gathers strength as it rises through the stones, has been verified by Professor John Taylor of Kings College, London, in a careful series of measurements with a portable magnetometer, according to Mr. Hitching. He also mentions that more than 300 early Greek medical centres dedicated to the God Aesculapius, with a twin spiral as his symbol, were placed at water sources. Russian investigators of suspected UFO landing sites also say that they can detect spiral patterns of energy. I must emphasise that all these references to spirals were found by me after I had proposed the helical nature of light and gravity.

Further possible evidence of UFO activity in the form of those crop circles which do not appear to be hoaxes, may provide clues to possible anti-gravity devices. These show damage to the crops apparently resulting from microwaves, and iron particles that appear to have been subject to intense heat. My "O" level chemistry is all that is needed to suggest a drive system for UFOs in Earth's atmosphere, which may also be an anti-gravity device.

Water vapour in the atmosphere heated by microwaves to make steam reacts with heated iron, in a finely divided state to produce hydrogen and ferroso-ferric oxide (Fe_3O_4). The hydrogen, burning because of the presence of oxygen, produces heat and more water to maintain the process and superheat the steam, which can be used in jets and turbines for propulsion and control. All that is then needed is some carbon, which when heated in the presence of steam produces water gas (a mixture of carbon monoxide and hydrogen). This, when passed over ferroso-ferric oxide regains the iron. Water gas and water, in the presence of a catalyst (hot iron) produce carbon dioxide and more hydrogen.

Several ideas arise from this as to ways that entry of gravitational waves into the upper section of UFOs may be prevented or reduced. It may be any or all of a swirling mass of heated gases

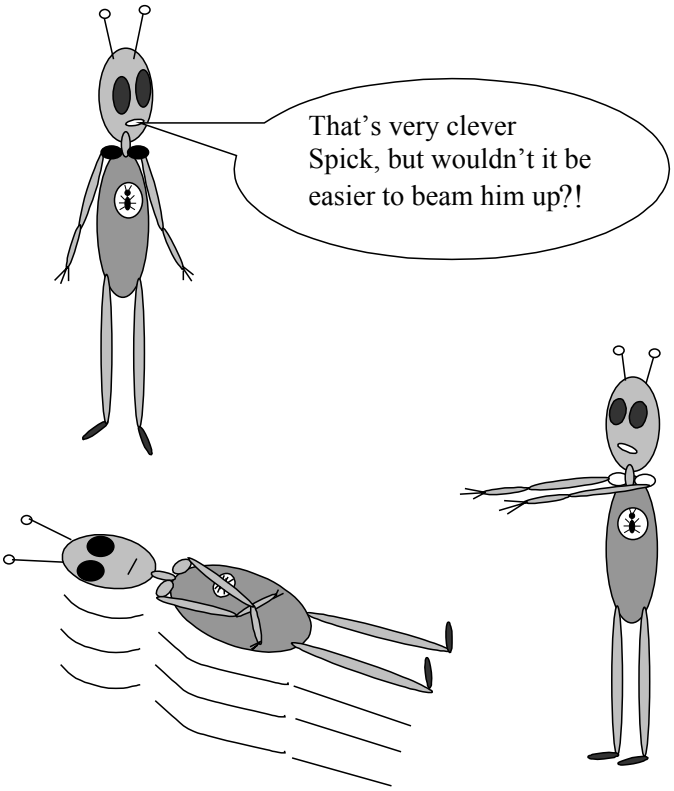
and particulates that absorb, deflect or disrupt sufficient helixes to enable those from above to provide lift. I suspect that one particular ingredient, perhaps the iron, will be found to have just the right effect, i.e. the appropriate degree of excitation of quarks to have the desired effect. I suspect this for two reasons. The first is the presence of iron in the blood, which could thus be a further clue to explaining levitation. The second reason is the Mössbauer effect. R. L. Mössbauer discovered that certain atomic nuclei, including the nucleus of iron, when they are excited, emit a very pure note (radiation of course, not sound), and in the case of iron the frequency is extremely high, exactly what I predict may be needed to disrupt or destroy the helical structure of gravitational waves in my theory.

Alternatively some of the hydrogen could be used in fuel cells, probably augmented by solar cells, for power to produce appropriate excitation in a separate gravity shield, which may be a light-weight membrane of material which can act in the same way that I imagine muscle, with appropriate nervous stimulation, may prevent or restrict the entry of helixes into the heavier skeleton. The simplest answer may be that microwaves of just the right frequency can themselves nullify gravity waves, but I have to say that this does not seem to answer levitation and I would definitely include iron particles, or some form of iron, in a first experiment. That is not to say, however, that a similar effect could not be synthesised in some way.

Several experiments are thus suggested which may help to verify the way I suspect that gravity works. But much more importantly, they could lead to anti-gravity devices, the significance of which cannot be overestimated, given the current state of the planet, diminishing energy resources and the political situation. Unlike UFOs, where a plentiful supply of iron may be a problem, we would not need to use carbon to reclaim iron for terrestrial journeys, so the unwanted and undesirable carbon dioxide need not be produced. It is an intriguing thought that UFOs may just be adding to global warming.

One has also to wonder if crop circles may be some Aliens' way of trying to tell us something. Is it a hint that the answer lies in rings? Is the microwave damage and release of iron particles deliberate, to give us further clues? This speculation, however, must not be allowed to detract from the much greater probability that gravity almost certainly can be overcome. I can imagine ways that the levitation shown in the photographs I describe could be faked but, despite this, the total weight of evidence in favour of levitation being a real phenomenon is so great that I have to conclude that the force of gravity can be overcome. The potential benefits for mankind are so great that the experiments I suggest have to be carried out. It would be the height of folly not to do so because initially they do not have to be elaborate or expensive.

I have heard a rumour that a non-scientist in America managed to levitate an object using apparatus put together from scrap electronic components, so it may be possible to achieve an appropriate level and frequency of excitation in this way. Unless, of course, he only managed some form of magnetic levitation, which is quite easy, using diamagnetic materials for instance. Apparently, if the rumour is to be believed, this person's apparatus was confiscated, never to be seen again. Could this be why I can get no reply from scientists, here and in the USA? Have the respective governments instructed them in this respect? I really do not want to start yet another conspiracy theory, but it is a complete mystery to me that no interest whatsoever has been expressed about an idea which appears to answer so many questions.


That's very clever Spick, but wouldn't it be easier to beam him up?!

Chapter 8

Analysis and Conclusions

João Magueijo's book, "Faster than the Speed of Light" is a self-proclaimed story of a scientific speculation. Some may say that it is easy to speculate but harder to demonstrate. Anyone can speculate. This is really all I have done. But speculation is the second step in the scientific process. The first has to be the acquisition of some facts, and obviously the more facts you have the better the chance of the speculation being correct. As a town planner I could assemble facts, such as number of dwellings per acre, road widths, availability of services etc.; analyse all the facts, consider opinion and reach a conclusion about the appropriateness of development. In science, however, considering fact is not so straightforward, as I have shown.

There are no facts in science but if we worry about this there is a danger that no progress will be made. So we tend to work on the basis that some things can be treated as fact for the purpose of further examination or conjecture. This necessity, however, always carries the risk that some assumed fact, upon which our argument depends, is wrong.

These considerations act in two opposing ways in my case. Firstly, having been out of science for so long, my knowledge of relevant information is very limited, so speculating on the basis of this would not appear to carry a high probability of success. On the other hand I am not burdened by a mass of specialised information, which could contain error hard to spot. I have the added advantage that, having not specialised in any particular field, as the vast majority of scientists now have to, I am able to take a fresh, overall view.

In normal circumstances, however, the odds would still be stacked very heavily against my finding solutions to problems which have defeated established science for so long. The circumstances are, however, highly unusual, certainly by every

day standards. It does, however, seem to me that in terms of the history of science they may not be that unusual. The truth of the matter is that I am convinced that God has revealed secrets of his creation to me, and I suspect very strongly that this applied to Einstein and Newton and probably many others. I do not know if God chooses people with particular characteristics or creates them that way, but I am aware of particular similarities between Newton, Einstein and myself which some may say make us all slightly crazy. My autobiography is entitled "A Nutcase in the Universe" for this reason, which just happens to contrast nicely with Stephen Hawking's "Universe in a Nutshell". I do not think that Newton, Einstein or I have been dangerously or illogically crazy, but we seem to share an excess of determination, which may not always have been in our own best interests. Newton even deliberately poked himself in the eye in his battle with the mysteries of light. I doubt that I would have done that, but I have frequently pushed myself to the limit of endurance to achieve what I considered important. It has even recently been suggested that both Newton and Einstein may have suffered slightly from Asperger's syndrome and the symptoms discussed appear to apply in my case also.

I suspect that I was destined to tackle gravity soon after or even before I was born. My first idea in this respect was formulated before I was 10. It would seem, however, that the time or circumstances have to be right before great truths are revealed. A year ago (from early 2004) the last thing on my mind was physics and I would have laughed at anyone who suggested this as a career move. It was not until my own decision to trust God completely that answers came to me, and then always and only after I felt led to pray in tongues. The answers came a step at a time, gradually building up an understanding of things I had long given up hope of understanding. I found myself saying "Yes, of course!" day after day, as the simplicity and elegance of the way all things fit together became apparent.

At first I thought that scientists would react in exactly the same way, but then it occurred to me that human failings were likely to

get in the way. Finding the open-minded humility to accept that this can, indeed, come from God may be part of the test that humanity has to pass before it is allowed to travel the Universe. There can be no doubt that mankind is at present far too willing to insist that it is right, and inflict harm on others as a consequence, to be allowed to use the weapons now at its disposal on any of God's other creatures. When we travel the Universe it has to be with an open mind, accepting that we may be the least intelligent with the least right to impose anything, change anything, or expect anything. We have to go in peace with both tolerance and caution sharing the same degree of importance. We have to resurrect the apparently dead concept of wisdom to take with us and make communication and understanding our prime objectives.

It may be more important that these views are accepted than the ideas I am suggesting about time, energy, mass, gravity, light and the Universe, but I suspect that they may be inextricably linked together. Something major has to happen to change energy dominated politics. If we can defeat gravity we can move on. When the Greek's efficient city-state system ensured a surplus of food, they could spend time on developing their civilisation, including the growth of philosophy. A World with no shortage of energy can similarly benefit mankind as a whole. By accepting fallibility the scientific community can not only set an example to governments, terrorists etc., it can, assuming that I am right about gravity, almost certainly find a way to defeat it and set humanity on a totally new course.

This may sound arrogant, and if I were claiming the ideas to be my own, this may be true. The only ideas, which I claim to be mine alone, are those which will probably turn out to be wrong. The ideas I received from God were simply that, i.e. ideas; there were no words; no clear instructions; just ideas which I am sure could not have come from my mind alone. But the extent to which these were correctly understood or intermixed with my own ideas is not certain; so I do not claim that all I have said has to be correct. The extent to which these ideas seem to fit together so well and answer so many questions, suggests to me very strongly

that the principle features cannot possibly be my own pipe dreams. I cannot even be sure if conclusions I reached 25 years ago, that time and energy do not exist, were not divinely implanted in my thoughts.

Let us consider the significance of what appears to have been revealed. Nobody, as far as I am aware, has ever been ably to suggest the way gravity actually works. Newton and Einstein only provided ways by which its effects could be accurately measured. Those who say that gravity works by curving space-time are either confused as to the nature of the latter or fail to see that something real has to be responsible. "Space-time" is an idea, not an entity. Total mass and energy are just a way of saying "motion in its various forms". So, not surprisingly, motion causes motion, the curvature of which depends on the nature and complexity of motion involved. What has been revealed to me is that curvature of motion can result from the simple relationship between translation and spin or from the complex interaction of helixes and connected rings of particles in the attractive force we call gravity (Einstein's "pure gravitational field") to which we then have to add the rotation of the galaxy and possibly the Universe (which Einstein showed would be indistinguishable from pure gravitational field).

The nature of local gravitational field and light revealed to me explains why the intensity of both are inversely proportional to the square of the distance between bodies and why total mass and energy present can also be used to compute the total effects. Newton and Einstein were thus both essentially right in predicting the effects of gravity, whereas the physical explanation of how this comes about has been revealed to me.

The extent to which this may be just a wild idea, which may or may not be correct, has to be weighed against what seems to be that the very same idea of helixes also provides a possible explanation for the greatest enigma of the 20th century if not several centuries.

That is the particle/wave duality of light. The rings of particles collectively form photons and the motion of the photon thus

generates a helix, with the properties of a wave when the outer ring moves face-on. The particle in motion, be it photon, electron, boson etc has wave like characteristics as de Broglie predicted, and light has an accompanying wave related to the internal cyclic process of the photon, also as suggested by de Broglie in an idea which impressed Einstein. Photons and electrons made up of many tiny particles provide an explanation for otherwise mysterious behaviour, which is impossible to understand in indivisible fundamental particles. Attributing such behaviour to wave motion is an incomplete notion unless some medium for the wave can be found and all attempts to do so have failed. There has to be something about the nature of these particles that mimics wave-like behaviour. All we need, as the constituents of these particles, are much smaller particles with a tendency to stay in the same position and return if disturbed, but also repel to some degree. Tiny particles, spinning very fast in the same direction, with no mass apart from that basic component of mass, which I theorise must result from spin, would I think have just these characteristics; the repulsion resulting from the assumption that spin in the same direction would make the tiny particles bounce off each other. Rotation of the whole group of tiny particles would result in the formation of rings.

This same idea then suggests exactly how and why radiation is released and how spin ½ can be explained. The idea of gluons also being rings explains how the force they exert increases as quarks move apart, and the orientation of rings limiting the direction of interaction between protons and electrons suggest an explanation for the Pauli exclusion principle. The relationship between the energy of the particle and the energy of radiation emitted from it is obvious, except that it has to be remembered that much of such energy is in the form of the rotational energy of inner rings.

The same screw-in effect that explains gravity can also explain force carrying particles. The huge difference in the force exerted will, I suspect, be found to be a combination of amplitude (diameter of the helix) and the huge extension of the helical path

resulting from the much greater speed of the graviton; though I suspect this may still be found to be less than the speed of light.
It is possible to imagine that internal force carrying particles (helixes) are large outer rings (though probably not extreme outer rings) whose resultant translational motion is relatively small; so that the helix is tightly coiled and thus able to impart more momentum in the opposite direction. Gravitation is then derived from inner rings where contained rotational energy is transformed into much greater translational motion thus extending the helix and making the force much weaker. Light and other EMR is then the result of sufficient disturbance to liberate groups of the fastest rotating inner rings.

There would, I think thus have to be many more rings, especially in quarks, than my simple diagrammatic representations might imply. We then see that gamma rays correspond to the fastest of all rotating inner rings and therein lies the reason why they are so damaging. They would act like circular saws slicing through nuclei.

The simple concept of rings within rings thus has the potential to unify all forces. This is considered to be the "Holy Grail" of physics. It defeated Einstein and everyone since. The primary reason for this is, I think, because mass and energy have not been properly understood. It seems that energy has been considered to be some sort of mysterious entity. This view has prevented a logical examination of the nature of the concept, which is all that it is. I thought that this misconception had developed quite recently, but having just started reading "The Feynman Lectures on Physics" it seems to go back to at least when I was doing "A" levels and concluded that energy was just a concept introduced to aid understanding and communication of ideas. In Volume 1(1963) Richard Feynman states:

> "It is important to realize that in physics today,
> we have no knowledge of what energy *is*".

This seems to imply that it has some sort of independent existence, which is going to be very hard to understand. Yet he then goes on to say that it is an "abstract thing", which apart from the two contradictory words is closer to what I am saying. A "thing" cannot be abstract if it is conceived to have some sort of existence. If something is abstract it is just an idea. This leads me to think that the consideration of energy has not been completely logical. If it is abstract we can say with confidence that it is just a useful idea. What, however, is an abstract thing which we do not understand? If it is some thing, which remains to be understood, it is not abstract. This confusion seems to have remained unrealised, even in great minds such as Stephen Hawking's and many others I suspect. How else can they talk of "strings of energy" and "pure energy".

In fact even as I check this text today 18/10/04, I read the following words in New Scientist (16 October, p35) "the extreme energy of their collision is turned into matter". The underlining is mine. The author is a science writer but I have to suspect that, clearly contrary to the views of Richard A, Mould, this "magical" turning of energy into matter is the generally held view of what is going on. This alchemistic-like interpretation is blinding their eyes to what is almost certainly happening. The article in question refers to work going on since 2000 at the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory in Upton New York. This involves sending beams of gold nuclei in opposite directions around a 4 kilometre track. The immense energy of the collision actually dislodges quarks, and it is when these collide that it is apparently thought that energy is turned into matter. Virtual particles apparently turn into real ones as jets of particles emerge. I have to say "come on you guys, think! Isn't it more likely that what is in the quarks is being released?"

It seems to me that considering mass and energy to be just different aspects of motion leads to a better understanding of the way Einstein showed them to be inextricably linked together. It fits precisely with the way Richard A. Mould describes the relationship in "Basic Relativity". It contradicts Einstein on the

question of mass increasing with translation, but then Einstein contradicts himself on the basis for this. He shows that all speed is relative but then implies that one speed, 'c', is absolute. He was right to say that the speed of light is the same to all observers, but not understanding why, suggested that mass must increase with speed to explain why it could go no faster, thus implying that nothing can be accelerated past 'c'.

This is contradictory when all speed must be considered only as relative. There has to be a more logical explanation for the constancy of the speed of light which permits 'c' to be exceeded. If frequency depends on rotation, which changes with speed, an answer is provided by which light only appears as such when its speed relative to the observer is the same. Mass, then reducing with translation, permits the huge acceleration to 'c' and beyond, but only at 'c' do we see the appropriate frequencies.

We then have an answer to the second greatest enigma of the 20th century (or was this actually the greatest?) and a return to logic because any speed, which is arbitrary by its relative nature, can be exceeded if you have a means of propulsion. Once again, if I am right, the consequences for the future of mankind are staggering, especially if the ability to overcome gravity and the abolition of a cosmic speed limit are brought together. If we can also go one step further, assuming that mass is spin and maybe can be cancelled by spin, in some overall sense or at atomic level, perhaps incorporating anti-matter, we (that is our space-ships) may be able to accelerate with little or no energy, in the same way that UFOs appear to be able.

Taking an overall view, therefore, the answers I appear to have been given are of enormous potential significance, not only to physics but to the future of mankind. It has to make sense, that they are subjected to the utmost scrutiny. I have only enough knowledge to see the potential and although my knowledge is growing, I recognise that the gap between that and the specialised knowledge now required in the many branches of physics is immense. So something I do not know may throw up a serious problem, which may rule out some or all of my arguments. This

is why I have tried to start a dialogue with as many scientists as possible (almost 50 now) but so far with almost no success. I am, therefore, hoping that this book, having set out the case as fully as I am able, will generate some interest and hopefully, some response.

Apart from the idea that mass decreases with speed I do not have any reason to think that anything I have suggested would be ruled out by Relativity or Quantum Theory. Some revisions or clarifications of either may be required but the essential principles of both remain valid as far as I am aware. What I hope can be shown is that both theories can be reconciled at the smallest level if the way I theorise the curvature of motion of the tiniest of particles can be verified in some way. What does appear to me is that quantum theory especially may be clarified rather than challenged in any way.

One very important aspect of this, which I think requires consideration here, is Heisenburg's uncertainty principle. This is about the difficulty of measuring the extremely small accurately. To measure you have to observe, which means using light or some phenomena which can be recorded. But this has an effect on that being observed. So Heisenburg showed that there is no way to pinpoint the exact position of a sub-atomic particle without a resultant degree of uncertainty about the particle's momentum (because the act of observing will have an effect on momentum). In the same way, there is no way to determine the particle's exact momentum without being uncertain about its position. More precisely Heisenburg's uncertainty principle states that the uncertainty in a simultaneous measurement of momentum and position is always greater than a fixed amount, approximately equal to Planck's constant. This is considered fundamental to Quantum theory because if you need energy to measure energy, which the theory assumes can only come in quanta, you cannot measure anything smaller than quanta. It is like having a tape measure which is only calibrated down to centimetres; you cannot measure millimetres with such a tape.

Heisenburg apparently reached this conclusion after finding, in his calculations of energy of particles, that the product of momentum (p) and the displacement from equilibrium, i.e. position (q) did not always equate with the reverse i.e. pq did not equal qp, which clearly is a very strange result. My first reaction to reading this, just after writing my first paper in November 2003, was that this could well be explained if Heisenburg was assuming mass to increase with speed, which I think is wrong. If not then he would certainly not have assumed the reverse, i.e. my recently formulated view that mass actually decreases with speed. Notwithstanding this the Uncertainty Principle would appear to be valid in concept, but I have to wonder if we can find a way round it.

It does, in any event, appear that my suggestions and uncertainty principle are compatible. Indeed I think that it can be said that what I am saying establishes aspects of the principle in other ways. Particles, as I visualise them, spread out as they accelerate, so their actual position is always a generalisation rather that a precise co-ordinate. Also, to determine momentum, bearing in mind that I agree with Einstein that mass changes with speed, albeit in the other direction, it is necessary to determine speed or change of speed, which can only be done by determining change of position with time. But then I am saying that the concept of speed cannot escape uncertainty anyway, because it can only be seen as relative and what we call time varies with it.

Having said that, I tend to agree with Einstein that a particular reality must exist, which only eludes us because of our inability (so far) to perceive it. On the question of observation and measurement, supposing we could use something like neutrinos to bounce off sub-atomic particles; very difficult of course, but already being attempted. It has been suggested recently that neutrinos could be used in communication, which could go through the Earth instead of using satellites. Attempts to detect these tiny particles using sapphires may have been successful. It has also been suggested that neutrinos can change their nature on their journey from the sun. If I am right about the fundamental

nature of the mass of indivisible particles being dependent upon spin, then neutrinos may have variable mass, or if they can exist with no spin, zero mass at appropriate speed. The problem with this is, could neutrinos with no mass (and no charge of course) be detected in any way? Also, if photons, electrons etc. are constructed as I hypothesise, we would be unsure about which part of the larger particle the neutrino was bouncing off; if, indeed it would bounce off at all with no spin and mass.

These difficulties may eventually be resolved but they are clearly, in both practical and theoretical terms, beyond our current ability. There is one aspect of my theory that has to be borne in mind if we were, for instance, trying to project neutrinos at a certain speed. I am only saying that mass decreases with speed where there is no input of energy to produce acceleration. The acceleration has to be at the expense of energy of spin. So in the case of radiation, huge, contained rotational energy is partly transformed into a combination of reduced rotational energy (responsible for frequency) and translational kinetic energy. So if we use a propulsion system our mass will not decrease (or increase, unless acceleration is prevented or limited in some way) with speed. If we propel neutrinos, therefore, we cannot make them lose mass.

What my theory suggests is that everything in the Universe is dependent upon spin. At the most fundamental level, time cannot be measured or have any meaning without rotation to give regularity some form. Mass/ energy also then have their origin in rotation. Rotations more complex in nature result in forces. Forces enable elements to form, which are the basis for all things. This is why the title of my first Paper (as yet unpublished) was "Everything in the Universe is Dependent upon Spin". What I have realised since is that the interaction of fast-spinning tiny particles is exactly the reason for the unpredictability of quantum mechanics. The Title of my second Paper, which is now incorporated into this book rather than produced separately, was to be "Is the Universe Rotating?". This idea was just "thrown in" as an idea which seemed to follow the same general concept and

could be a component or reason for "curved space-time". It was later that I realised that a consequence of a rotating universe was that it must appear to be expanding.

The philosophic difficulties and cosmological problems associated with Big Bang theories make the idea of a rotating Universe a very attractive alternative. If microwave background radiation can be explained in some other way, a permanently rotating Universe seems much more likely than an expanding one. There may prove to be other answers but it seems to me to be very likely that the answer lies in black holes. It always seemed likely to me that black holes would be found to have a limited life.

My theory implies that this must be so. If gravitational field operates by the emission of helixes (gravitons), which depend upon sufficient internal energy in quarks, collapsing matter must at some point be self-defeating. Energy, and matter have to be emitted for gravity to work, and they have to be emitted in proportion to the strength of the field.

Time can only cease within a black hole if there is no rotational energy, and without such energy gravity cannot work; unless that is you are happy to accept that space-time is a physical entity which can be warped by matter with no energy. Just like time and energy, I see space-time as just jargon; an expression used to convey a concept. The concept is that time, energy and motion are so inter-related that all must be considered together, with curvature of motion as the natural consequence.

Motion of particles is reality; time and space have no properties to change. We cannot even say that space is curved in a rotating universe and reason that light is curved simply by following this curvature. The reality of the situation is that light (in the absence of gravitational field) follows a straight line and everything else moves round, so the light only appears to follow curved paths relative to everything else. I do, however, later suggest that light may have some inherent curvature of motion in a permanently existing Universe.

Recently the word "fabric" has been used to describe space-time and I have even heard it applied to space. This implies a physical

reality, which may or may not be the intention of the speaker. It may be just casual use of words, but if it is intended literally I think that it represents a misinterpretation of General Relativity, especially the idea that space, in terms of the absence of matter, can have any sort of "fabric" or be curved. It is, as Einstein said, three-dimensional; only motion necessitates the concept of four dimensions. A physical effect must have a physical cause; a mechanism has to operate. So I have to argue that gravity cannot continue to get stronger without the limit imposed by the nature of its action.

These considerations suggest that a balance point must be reached where radiation and matter are emitted and absorbed until the local supply is eventually radiated away and the black hole decays. In a permanently existing universe this recycling process would, if I have understood Stephen Hawking correctly, result in exactly the kind of background radiation which has been detected. And guess what? As I edit this text on 18/10/04 an article in New Scientist (16 October, p11) tells me that NASA's Wilkinson Microwave Anisotropy Probe (WMAP) has detected a surplus of microwaves coming from the centre of the Galaxy where, of course, there is thought to be a black hole. That is not the explanation given, of course, because I think that I am the only person to suggest it, and nobody seem to be taking any notice. The controversial explanation given is that dark matter is annihilating.

If I am right, black holes would then act as cosmological "sponges", soaking up matter and radiation for later release. This idea does not, of course, rule out creation at an appropriate point, since when background radiation has been generated. This sort of idea, which assumes a creator with unfathomable power, in any event, cannot exclude the possibility that background radiation was part of the system originally created.

The idea that black holes "evaporate" in this way is probably the least controversial of my suggestions and, having been suggested by Stephen Hawking, is now a significant part of current thinking under the guise of such things as "hairy black holes" and "Fuzz-

balls". It is, therefore, surprising that alternatives to an expanding Universe are not considered. This need not be rotation of the Universe. It seems to be a huge assumption that light does not undergo some change in its vast journey from distant galaxies. If I am right that frequency depends on rotation, it seems highly likely that this would decay over very long periods. Naturally the longer the journey the greater the red-shift, so both this and a rotating Universe could give exactly the result seen by Hubble. Frankly I am astonished that the initial interpretation of expansion has not been considered with more caution.

I have also implied that a rotating Universe may be a part of the mechanism by which particles orbit as they spin, which I suggest may be partly why they could form into rings. Some may find my arguments in this respect tenuous. I have to admit to being undecided as to whether the relativistic increase in the value of π justifies the assumption that a point on the edge of a particle has to travel further (in space-time) or whether a rotating Universe plays a part in determining that a curved path must be followed, even though the curvature of path must vary with rate of spin. This problem may be the product of my lack of knowledge. I do not, for instance, understand why a neutrino, with particular motion and spin should have "helicity", but apparently it does, and my conclusion that neutrinos can form into helixes does not seem outrageous as a result. The idea has the potential to answer so many apparently insoluble enigmas that it must have a very good chance of being right.

I have to consider the possibility that God did not consider it necessary for me to understand every detail. This is, in fact, the nature of modern physics. It is accepted that Quantum mechanics is not really understood entirely, and I think the same applies to Relativity. People still ponder the nature of time and energy. I do not think that General Relativity makes complete sense unless "real" forces can be identified. I think this is what bothered Einstein and why he pursued a unified field theory to the very end of his life. String theorists have no idea how or why "strings or loops of energy" can form; the idea just seems to solve some

problems. This is then a good reason why my theory should be taken at least as seriously as String Theory, because it appears to solve many more problems of the greatest possible significance.

My ideas about light are also not that outrageous when considered in the context of other ideas put forward recently. Loop Quantum gravity, for instance seem to suggest ideas very close to mine. The following quotes are from an article by Lee Smolin in Scientific American, January 2004:-

"Calculations in loop quantum gravity, by Rudolfo Gambini of the University of the Republic of Uruguay, Jorge Pullin of Louisiana State University and others predict that photons of different energies should travel at slightly different speeds and therefore arrive at slightly different times……. The reader may ask if this result would mean that Einstein's theory of special relativity is wrong when it predicts a universal speed of light. Several people including Giovanni Amelino-Camelia of the University of Rome "La Sapienza" and João Magueijo of Imperial College London, as well as myself, have developed modified versions of Einstein's theory that will accommodate high energy photons travelling at different speeds. Our theories propose that the universal speed is the speed of very low energy photons or, equivalently, long wavelength light."

In the same article Lee Smolin suggests that "matter exists at the nodes of the spin network" I have asked by Email if he considers that this is equivalent to my view that mass is spin, but predictably, as with everyone else, it seems that getting an opinion is just not done. This is a pity because apart from the casual way he talks of space sometimes, when he must surely mean space-time or perhaps the way matter occupies space, I like the way space-time is described to fit with his theory. I also like his statement that "time advances by the discrete ticks of innumerable clocks", because the concept of time simply depends on whichever clock you choose, whether it be the frequency of a planet's orbit or rotation, or of atomic vibration, because time is

nothing but a comparison, one with another. I think that when he argues that "space is discontinuous" he really means that the way matter can exist in space is discontinuous. I would agree entirely with the latter because mass and energy have to relate to the motion of something real which has to come in discrete packages of some sort. I favour tiny spheres; some prefer strings. We all have problems with what this tiny entity would consist of. This may turn out to be the enigma which will challenge us for the rest of this century; what is the tiniest thing made of? Saying it is "energy" is saying nothing unless you have some idea of what this "energy" is.

It is now very close to a hundred years since Einstein started to enlighten us. It may be time for a further step forward in understanding. I think that my role is not to show that Einstein was wrong, but to clarify what he was shown to enable another step forward. Whether we have not been permitted knowledge for the reasons I have suggested, or whether it is a consequence of the limitations of the human mind, we can only conjecture.

It does, however, seem to me now that aspects of Einstein's ideas need to be clarified. The more I read of current interpretation, the stronger is my conclusion that this is so. The word "space" is used many times as though it has properties. Space has to be the absence of anything capable of having properties. Do these people mean space plus something and, if so, what? It is essential for logical analysis to be absolutely clear on this point.

The greatest error, however, seems to be the idea that "space-time" can have an independent existence upon which matter has some effect. This represents a fundamental misunderstanding of General Relativity and I am not entirely sure (subject to what I say below) that even Einstein may not have been confused on this point occasionally. I believe that I have demonstrated logically that time cannot have any meaning without the motion of matter, and that spin in particular is required before time can be considered.

Time is, in essence, no more than relative spin. Therefore, space-time is the motion of matter. So is energy, and I think we

can also say that mass is no more, in essence, than a particular aspect of motion, i.e. spin. We cannot consider speed, acceleration and force except as combinations and permutations of the two fundamental forms of motion, spin and translation. This is the essence of Relativity as has been revealed to me.

It is therefore, incomplete and misleading to explain gravity as the warping of space-time by mass. It is necessary to see how the motion of matter is the fundamental prerequisite and ingredient of space-time. It may have been clearer if Einstein had coined a different phrase. "Motion-time" might have been more appropriate, but it is expecting a lot to condense a difficult abstract idea into two words. The inadequacy of words is a source of confusion and misunderstanding all the time in our daily lives and this also applies to science. In fact it applies to religion, where it has been the source of much conflict. Can we tell from the words alone if plain fact is implied or analogy? Taking words in isolation is always risky. When Christ said "this is my body" is that what we should actually see bread to be, or is an analogy implied? We have to delve further and draw conclusions. Fortunately Einstein did clarify the position. In Appendix V he says "Space-time does not claim existence on its own, but only as a structural quality of the field". So it is clearly an over-simplification to speak of mass warping space-time. There is interaction, but not one "thing" affecting another "thing". It is rather a case of inter-dependence of time, mass, energy and motion.

Of these four, only motion is real. The other three are concepts of considered aspects of motion. The fundamental quantum condition, therefore, is the motion of the smallest particle. One revolution of this particle is then unit (quantum) time, unit mass and unit energy, the latter of which can be considered to increase in proportion to change of position per revolution. Considering this particle in isolation, the only way that either its spin or translation can change is at the expense of the other (if conservation of energy is to apply).

So change of speed cannot then be seen in the context of a notion of time flowing at a uniform rate, it has to be one of the variables, as Einstein was the first to point out. Acceleration is always, for such a particle, at a varying rate, or the motion can be considered to be curved. There is no way for straight line motion to be defined for a single particle. The degree of curvature of motion is thus determined by the relationship between spin and translation. So we can say that the curvature of motion of the particle is determined by its mass (spin) and total energy (spin and translation). We can call this quantum gravity or quantum general relativity.

It is now important that the title chosen for this book is explained clearly. My experience in town planning warns me that there is a high probability that what is actually said will be miss-reported. I can see the headline now: "Beck says Einstein was wrong and claims to have discovered true reality". This is one of the great problems with communication. Parts of what is said (generally easy concepts) are put together in a way that suggests ideas going beyond those actually stated. "Einstein was wrong" then tends to be interpreted in a general sense implying that everything he suggested should be doubted. It is like a referee in a soccer match who fails to give a penalty. He is immediately transformed in the eyes of many into a complete and utter moron and all subsequent decisions will be doubted. People like heroes or villains. It is important to resist this tendency and keep things in perspective. If Einstein does turn out to be wrong about mass increasing with speed it is, I think, a relatively minor point in terms of the huge step forward in thinking that Relativity provided. It is, of course, not a minor point when considering the possibility of space travel, but that is just one issue.

In purely scientific terms, it is far more significant that Einstein was right about a unified field theory, which seems to apply if gravity and other forces can be explained by the helical paths of tiny particles I suggest. This provides a <u>possible</u> reality, which seems to fit well for now. This is the essential qualification to any claims of discovery of "reality". We cannot know anything with

absolute certainty. There has to be a reality, however, irrespective of the difficulty in perceiving it. A particle, which is assumed incapable of sub-division, cannot be in two different places at the same time. If it manifests as such, the only logical conclusion is that it can indeed divide and re-combine.

The title of my theory is, therefore, intended rather to emphasise that science must persist in the objective of seeking reality and realising that which is not real, rather than suggesting that I have definitely found it (though I may have, at least in part). Its purpose is to draw attention to the futility of accepting that two or more mutually exclusive realities can be true. If we accept such a notion on the basis that quantum mechanics is somewhat mysterious, we might as well go back to the dark ages. We are already headed in that direction if we assume that energy is some sort of mysterious substance, beyond comprehension, or that everything in our immense Universe magically came from nothing. When ideas seem ludicrous it is time to consider alternatives that "fit" better.

The essence of my theory is, therefore, that reality is to be found in motion in its two basic forms. Time, energy and mass are no more than comparisons of motion. All things can be explained by the ever more complex interaction of spin and translation. The most likely realities at the two extremes of scale appear to me to be that the tiniest particles that can exist form rings when they spin in the same direction which may be determined by (or the reason for) the rotation of the Universe. Spin in the opposite direction (anti-matter) is, therefore, non-sustainable in general, though it can clearly be maintained in some situations, to explain charge for instance. This cannot be an absolute theory of reality because we still have no idea what the tiniest particle is comprised of, nor why it should exist, nor whether the rotation of the Universe is absolute or relative to some other unknown reality. Will some scientist in 2100 discover that this assumed "tiniest" particle is actually made up of many, much smaller ones?

We are now aware of such extremes of scale that this may not be as impossible as our emotionally influenced minds, which

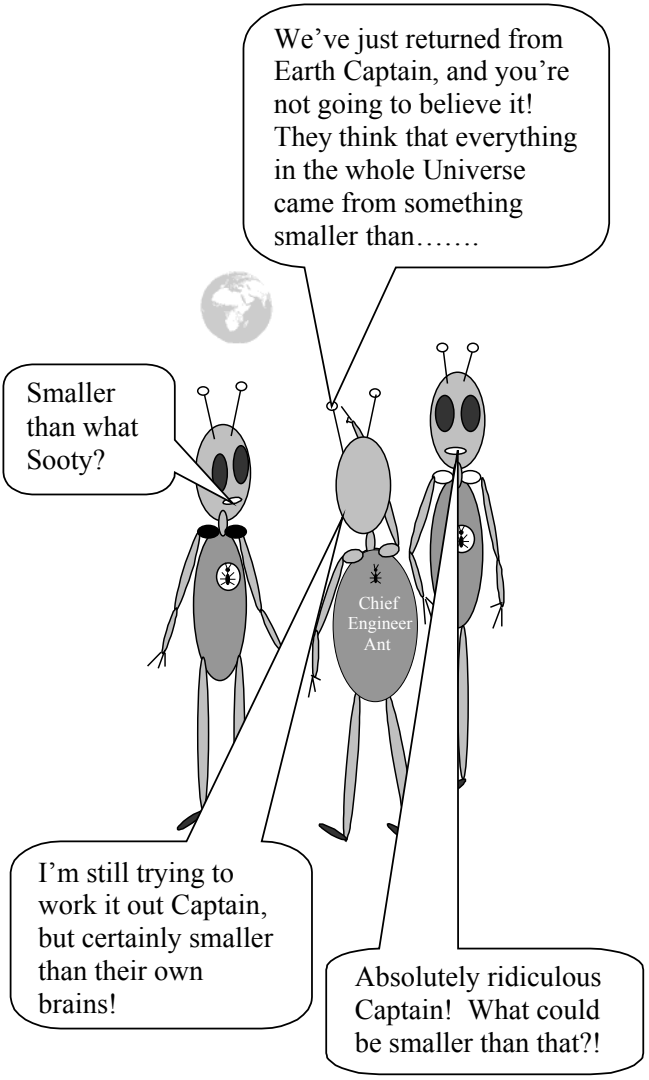
illogically insist that this has to stop somewhere, tend to limit. In the same way, the speed of light, which seems incredibly fast to us, is painfully slow on the universal scale. It may well be the same illogical emotion that leads us to think that nothing can possibly go faster.

My conclusions, which summarise what I call "The Special Theory of Reality", or which might alternatively be called "Ring theory" are as follows:-

1. Time has no independent reality, but is simply comparison of frequencies, which helps establish the relativity of events.
2. Energy has no independent reality; it is purely a concept defining aspects of motion.
3. Mass, in its most fundamental form, is also an aspect of motion, i.e. the spin of the tiniest particles. This effect is multiplied in the gyroscope-like arrangement of rings in large particles. Mass must then decrease where translation occurs at the expense of rotational energy.
4. As a consequence of 2., something material in nature has to exist and have motion, including both spin and translation, before concepts of time and energy can be formulated and matter, capable of interaction, can exist.
5. The relationship between spin and translation is determined by conservation of "mass" and "energy" which determines curvature of motion and thus the orbit of the tiniest particles (quantum general relativity).
6. Combinations of orbit and translation of the tiniest particles (probably) enable interactions in the form of all forces and radiation. This generates helixes with a "screw-in" action to explain charge, magnetism and gravity and a component of radiation, and linked rings to explain the strong and weak nuclear forces.
7. Spin ½ particles are thus comprised of rings within rings in a gyroscope-like arrangement providing containment for high rotational energy, the disturbance of which provides an

explanation for the mechanism by which radiation is released.

8. The wave-like motion of such particles and radiation is thus explained by the helixes so generated and the facility to split and re-combine.
9. Gravity then has an easily understood mechanism whereby helixes pull with a screw-in action into the rings forming other particles.
10. Black holes must, therefore, be self-limiting and possibly the source of background microwave radiation in a permanently existing, rotating universe (or as existing since creation).
11. Frequencies in EMR are dependent on the rate of rotation of rings and the number of particles in each ring and are thus experienced digitally. As I theorise that the rate of rotation diminishes with speed, each EMR e.g. light, only appears as such at c and thus must always travel at that speed relative to any observer. There is, therefore, no reason to consider c to be a limiting speed for all motion.
12. As a consequence of 10. and 11. the supposed expansion of the Universe may not be a reality but an illusion caused either by the decay in the rate of rotation of photons or by the rotation of the Universe.
13. Given the philosophical and cosmological problems involved with Big Bang theory and the sheer number of explanations which "Ring Theory" can potentially provide, either alternative suggested in 12. should be considered as a better fit to reality until observation or other evidence indicates to the contrary.
14. Particles in each ring spin in the same direction and thus bounce off each other, feeding off each other's energies in a way that would result in any line of them (string) having many frequencies of vibration. Although determinable in principle this is beyond our perception and maths to predict other than as a matter of probability. This idea is, therefore, consistent with, and an explanation for, quantum mechanics and aspects of String theory.


We've just returned from Earth Captain, and you're not going to believe it! They think that everything in the whole Universe came from something smaller than…….
Smaller than what Sooty?
Chief Engineer Ant
I'm still trying to work it out Captain, but certainly smaller than their own brains!
Absolutely ridiculous Captain! What could be smaller than that?!

Appendix 1

Further Considerations of Space

In Chapter 1, I gave a fairly thorough analysis of everything except "space", and whilst I have given my views very briefly and superficially (you might even say dismissively) in Chapter 2, I think that many will feel that I have not adequately covered this word. I say "word" rather than "concept" because, as a starting point that is all we have and we cannot be sure that everyone is interpreting this word in the same way.

I touched on this problem in my reference near the start of Chapter 2 to Star Trek and the phrase "the final frontier". To some the word "space" will mean all that is "out there", beyond our own atmosphere, including the moon, planets and what we now know is an awful lot more. Others will be thinking of just the apparent emptiness between the bodies we observe. Deeper thinkers may be wrestling with the problem of whether we can consider absolute nothing to have an "existence" as Einstein refers to the views of Descartes. Some may be thinking in small scale of what would be left inside a box if everything inside it were taken out; or in microscopic terms of the space inside an atom; or perhaps the most brain-stretching, on the largest scale possible, of just how far space without matter might extend. The latter is something which I and my fellow students discussed at Brooklands and I think that we agreed that the problem of the human mind dealing with this is simply a question of experience. Everything in our own experience has limits. Life itself has a start and an end as does all that we do and experience. I am afraid to say that "size matters". We have to measure everything and until we do so we are not happy that we have understood it. Should we, however, say that something is not possible simply because it goes beyond what might be our own narrow experience?

We must, therefore, decide which of these concepts is to be analysed before adopting a scientific approach. Unfortunately this

tends not to happen and, although it is understandable (life is too short to define every word we use) it can be a source of confusion. People say "space is four-dimensional" or now even "space can have many dimensions", and I am not sure that they have an entirely clear idea of what the word "space" is always intended to imply. As beings I think humans are very poor communicators. Maybe when we learn telepathy the speed of communication will be so much faster that ideas can be clarified much better as we go. In my autobiography I analyse this in much wider terms, from personal relationships to politics, and I conclude that the communication skills of humans are not only primitive, they are positively dangerous. But then this has as much to do with the reluctance to listen as the ability to transmit thought clearly.

So what I must do here is to try to convey exactly what I am thinking to avoid unnecessary argument and confusion. This is absolutely necessary because I can see that where I have quoted Einstein it is possible to quote other things he said in apparent contradiction. I have indicated that the concept of empty space is something I am entirely happy with, whereas Einstein seemed happy that he was able to resolve Descartes' dilemma in concluding "There is no such thing as an empty space" (page 155). But it is essential to read the next words "i.e. a space without field", because he then goes on to say that "Space-time does not claim an existence on its own, but only as a structural quality of the field." So what Einstein was saying, and what I agree with and I think I have demonstrated, is that what we might once have considered to be empty space between planets and within atoms is actually full of invisible "field", which I think is actually invisible matter, the action of which causes the field.

In his Note to the Fifteenth Edition (June 9th 1952), which I have, he says " I wish to show that space-time is not necessarily something to which one can ascribe a separate existence, independently of the actual objects of physical reality. Physical objects are not *in space*, but these objects are *spacially extended*. In this way the concept of "empty space" loses its meaning."

This is where our views may appear to diverge but careful

analysis reveals that this is not necessarily so, or at least not to a very significant degree. I think that I now have an advantage over Einstein in considering that I have discovered the precise mechanism by which gravity works. Einstein could not be so specific and he was, I suspect, just struggling a little to convey the complete action of gravity. I do consider that he should have said "it is as though an imaginary entity we can call space-time is curved and matter just follows this curvature" but I think he was having problems with exactly how gravity works locally and resolving the question of whether "space" can be thought of as having existence, contrary to the philosophy of people like Descartes. But he makes it absolutely clear that it is the motion and interaction of matter which gives rise to the concept of space-time and he went on searching for a more complete understanding of the detailed processes involved.

What I wish to make clear is that I agree with Einstein's words, in the book that I have, up to a point. In our Universe, if we take that to mean "as far as we have observed", it is right to say, but not without qualification, that there is no space "empty of field" and therefore you can say "there is no empty space"; but it is important to see that you cannot use these words without further qualification. If I have a box full of matches it is right to say that the box is not empty, but it is also wrong to say that there is not space within the box not occupied by matches, because it is impossible to pack them that efficiently.

So we see that the concept of the empty space is apparently inescapable. The argument that air occupies the spaces is clearly futile because it can be removed. Removing the matter which I say constitutes the "waves" associated with all observable matter may be a lot more difficult, but the essence of my philosophy in this respect is that, if something is real and causing an effect, we have to be able to envisage the removal of the effect and thus that which causes it. For the effect to work there has to be space to move in, and to quantify the motion we have to work on the basis that this is so.

Our Universe may be teeming with matter smaller than dreamed

possible at the time of Descartes, and my theory argues exactly that; but to work, each of the tiniest particles which my theory envisages, must be free to move and this absolutely demands space (empty of matter). We may, of course, eventually discover the presence of something beyond our current ability to understand in this emptiness, but for now our concept of matter makes no sense without the concept of empty space.

Descartes' error (or maybe the error of those who have interpreted what he said), of course, was in not seeing that the word "existence" is simply inappropriate to the concept of completely empty space, which has to be the absence of anything which exists. Space cannot "exist"; this is a contradiction; but existence only has meaning together with its opposite. You cannot have a droplet of water in the ocean; it can only have the form determined by surface tension outside of a body of water; and though you might be ably to imagine the shape of the droplet its boundaries are not real. So the concept of the material object necessitates the "backdrop" of space. "Extent" can, therefore, have meaning; and that is why it is illogical and inconsistent to contemplate the extent of space. It is only the limitation of the function and experience of the human mind that leads us to ponder this futile and meaningless question.

We can, however, contemplate the extent of our Universe; that is the extent of material objects, which my theory suggests must include radiation of types known and also as yet undetected. This can be finite and yet unbounded if everything has spin and thus follows curved paths (according to the fundamentals of my theory). I have, however, suggested that despite the spin of the photon it probably follows straight lines. This does, of course, contradict the idea of a permanently existing Universe. Whether or not the Universe is rotating, photons would have to be lost and the Universe would eventually dissipate. This may be what is happening, in which case it will not exist for ever but there are various options to consider as follows:-

- Photons may, even in the absence of gravitational fields strong enough to have any effect, follow curved paths, the extent of which is only apparent over huge distances on the cosmological scale.

- The Universe may have existed long enough for radiation to have been recycled by black holes to give the background radiation we have assumed came from the big bang, but it has a finite life as we know it.

- The Universe was created either with background radiation or long enough ago for it to emanate from black holes eventually, but has a limited life.

- The Universe was created more recently and black holes emit microwave radiation, which is either as detected or which, as I suggest for light, reduces in frequency as it travels. In either this or the previous case some form of continuous creation could be happening to replace that which is lost.

- Our Universe really is surrounded by a giant sphere which reflects everything back in.

- Completely empty space can be bent. Though I have to say that this seems to me to be harder to believe than the preceding point.

Some may say that I am ruling out the existence of God by suggesting that the Universe may have a permanent existence (which must, of course, involve the death and replacement of stars; it cannot remain permanently as it is). For many years I have considered the most likely option to be that we, and maybe our planet, solar system or more, could be the creation of beings who have evolved to a state far superior to us. This view makes more sense of "let us create man in our own image", because why

would “God” require a nose, mouth and ears, except to exist in an environment similar to ours. The need to survive in such an environment may have long since been eliminated but retention of the same visual identity may well have been seen as desirable.

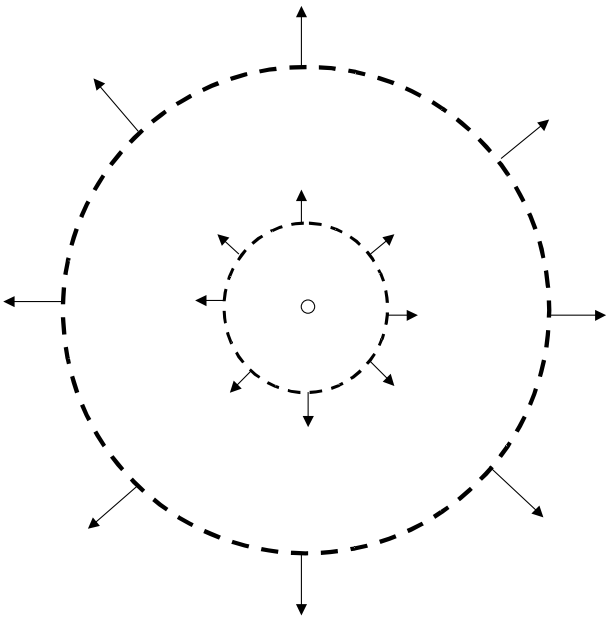
The possibility that the entire Universe is a creation has, however, been in my thoughts since the way everything fits together has been revealed to me. I have been an arbiter of good and bad design as both town planner and repair man and in my own personal appreciation of beauty in nature and mans own achievements. The way such a simple idea of rings within rings can achieve so much is shouting “superb design” at me. Perhaps God is the real “Lord of the Rings”.

Appendix 2

Further Considerations of The Big Bang

I have made my own views about this very clear. The reader can be in little doubt that I am unable to give it hardly any credence. This, however, is based on essentially philosophic considerations and the possibility of alternatives, as opposed to considering the practical possibilities of the big bang itself. There is one aspect of this which has bothered me for many years which, so far, I have not mentioned at all. It has always been a puzzle to me how radiation from the early moments in creation, which is thought to travel at the speed of light, can still be around when the matter thought to be forming has to be moving at less than c. This dilemma is illustrated in Figure 10.

See Figure 10, next page



Outer - microwave radiation moving at c

Inner - matter expanding at less than c

Fig. 10

Expansion and background radiation

The microwave radiation first detected by Penzias and Wilson in 1965 appeared to be coming in an even distribution from all parts of the Universe. To me this only makes sense if it originates from matter which continues to emit the radiation as it moves outward (If it moves outward at all that is). It also puzzles me how astronomers can be claiming to be looking back at the early stages of the Universe when they manage to see galaxies which they also claim to be at the far extremities. If we can see galaxies so far back in time in an expanding Universe, why do we not see the light coming from points closer to the centre of the Universe, if indeed that would be possible. It would be possible, of course, if light does follow curved paths, but then just as in a rotating Universe, we would be seeing illusions and the entire observational evidence for expansion would be in error.

Paradoxically my own theory, which suggests that matter can go at any speed and supposes that light may travel in curved paths, might seem to overcome some of these difficulties, but if matter could have moved faster than c at some point, and the radiation is now "catching up", it would not seem to be coming from all points in the sky but from the centre of the Universe, or a region around the centre corresponding to the period during which it was emitted.

If there were absolutely no other possible source of microwave radiation other than the big bang I should remain confused, but just like the sub-division of electrons and quarks, the answer seems fairly obvious. Light from dense gravitational fields is red shifted and microwaves are just light which is extremely red shifted. It is now accepted that "black holes" need not be completely "black" but emit some radiation and their temperature and degree of radiation is dependent upon their size. My own theory of gravitation supports this view. It seems very likely that all galaxies will contain some black holes and perhaps many. So there must be a reasonable chance that the Universe has a large number of "grey" holes emitting microwave radiation, which

either reaches us directly or is relayed many times over by different grey holes in different galaxies.

If this had been proposed before NASA's Wilkinson Microwave Anisotropy probe revealed a surplus of microwaves coming from the galaxy's centre (New Scientist 16 October, p11), there would be considerable excitement that a very significant discovery had been made. Unfortunately everyone is so committed to the idea of the big bang that the only explanation that has been suggested, to my knowledge so far, is that the annihilation of dark matter, more densely concentrated at the centre of the galaxy, could be responsible. Apparently these microwaves are typical of those generated when high energy electrons and positrons spiral around magnetic fields, which immediately made me think of Stephen Hawking's description of supermassive black holes at the centre of galaxies (The Illustrated Brief History of Time-updated and expanded edition, page 125).

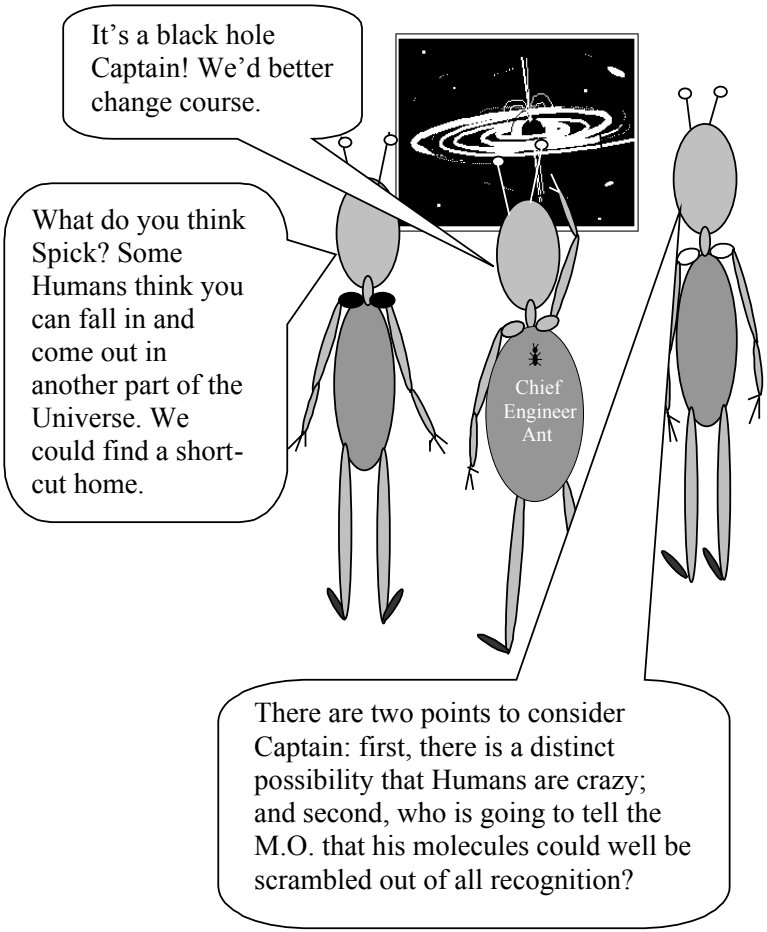
What has to be remembered, of course, is that we have not been able to confirm that black holes actually exist. Observation is an obvious difficulty in this respect. So they remain at present as just theoretical entities. Having said that I think that it is very widely accepted that, almost certainly, they must exist; and there is indirect observational evidence which is fairly strong. Stephen Hawking claims to have proved that they must, and he probably has very good reason to be confident, and I am pleased that this is so because it provides an alternative to the nonsense of the big bang; but I must take exception with him for his regular use of the word "proof" in his books. This does not encourage the correct scientific approach, which must always recognise that nothing can be "proved".

We can only verify that something appears to be the case. He does accept this in his description of a good theory, but budding scientists might not read every page and they may not have science teachers as good as mine. At a time when we seem to have slipped back into the same old pitfall of considering some thing to be certain, it is absolutely essential to maintain the correct approach.

Certainly the probability that black holes exist seems to me to be far greater than the likelihood that everything in our vast Universe came from a singularity and I think the chances that some black (or grey) holes are the real source of background radiation are also greater. This will probably be greeted with incredulity, but guess what? That was exactly the reception to Stephen Hawking's first announcement that black holes emit some radiation. We always have to be aware of the dangers of assuming that something has to be the case. This is why I have to insist that the case for the big bang be re-examined.

I am not sure if anyone has ever considered the possibility that black holes could be the source of background microwave radiation. If not it has to be worth spending some time on. If it can be shown to be possible mathematically then surely the idea of the big bang must be doubted even by its strongest protagonists. The possibility of a rotating Universe must then be worthy of reconsideration. I would hope also that so would my idea that the frequency of light etc. depends upon rotation, because not only would this explain the illusion of expansion, it can I think, suggest why the speed of light appears the same to all observers. Surely something with the potential to solve such great riddles has to be worthy of thorough consideration. (Incidentally, this is very similar to an idea which Descartes also claimed was from God; but, perhaps just like me, he had other ideas of his own, which Newton showed to be wrong, so not much notice has been taken of this idea.)

Also to be considered, along with the possibility that it is the nature of light which explains these riddles, is the possibility that this same nature could also provide yet another explanation for background microwave radiation (as very briefly mentioned in Appendix 1). If light can be red shifted as rotation decays then it may be that the microwaves detected by Penzias and Wilson were actually emitted at higher frequency and in the vast distances they have travelled they have their frequency reduced to manifest to us at the frequency detected. This may, therefore, have been emitted as light from objects at extreme distance or as lower frequencies (e.g. infra-red) by objects not so far away.


It's a black hole Captain! We'd better change course.
What do you think Spick? Some Humans think you can fall in and come out in another part of the Universe. We could find a short-cut home.
Chief Engineer Ant
There are two points to consider Captain: first, there is a distinct possibility that Humans are crazy; and second, who is going to tell the M.O. that his molecules could well be scrambled out of all recognition?

Appendix 3

Derivation of Formulas and Consideration of Orbits

In Chapter 4 I indicated that the formula for calculating the distance moved on the edge of a rotating ring moving face-on was of similar form to that which I had derived for calculating the distance travelled on the edge of a particle. This can be approached in the same way as I showed that the extra distance travelled in a spiral path, as opposed to purely circular motion, can be considered as a function of an increased value of π. It has to be remembered that this is just a contrivance to represent an additional distance travelled. We are just looking for a useful way of relating speed, diameter and rate of spin. It also has to be borne in mind that the new value of π in this case is entirely different to Einstein's relativistic increase. In our case we have just created the useful tool in that $\pi_1 D$ represents total distance travelled as a consequence of both V and f in the same way that the distance in a spiral path as opposed to a circle were shown to be related in Figure 8, chapter 4. In figure 11 the extra distance travelled is represented by d.

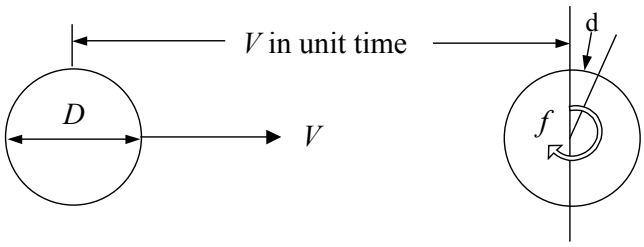


Fig. 11

Distance travelled by a point on the edge of a particle

We can see that in unit time, the distance travelled will be more than V by a distance d, resulting from rotation at frequency f, where d = πfD.

In unit time d +V = $\pi_1 D$ = total distance travelled

$$\pi_1 D = \pi fD + V \qquad \frac{\pi_1 D}{\pi fD} = 1 + \frac{V}{\pi fD}$$

$$\frac{\pi_1}{f} = \pi + \frac{V}{fD} \qquad \pi_1 = f\left(\pi + \frac{V}{fd}\right)$$

Therefore, for 1 revolution:-

$$\pi_1 = \pi + \frac{V}{fD}$$

Which we can then compare with the formula relating to a helix:-

$$\pi_1 = \sqrt{\pi^2 + \left(\frac{v}{fD}\right)^2}$$

The similarity is to be expected because in both cases the extra distance must be a function of velocity spin and diameter, but there has to be a difference because the actual paths followed are different.

If the extra distance travelled in space is a consequence of the particle following a curved path (or orbit), it occurred to me that we might be able to use the first formula in some way in the calculation of orbit. Purely as a matter of casual interest, and not really expecting it to fit, I tried to see if inserting the values of $V f$ &D for the Earth to see the size of orbit given. This required some manipulation of the formula to give the diameter of a circular orbit whose circumference would have the same length as the actual slightly elliptical orbit, and then take approximate account of eccentricity to see if at least the answer was of the right order.

Starting with the formula for one revolution (day):-

$$\pi_1 = \pi + \frac{V}{fD}$$

$$\pi_1 D = \pi D + \frac{V}{f}$$

So, total orbital distance:-

$$N\pi_1 D = N\left(\pi D + \frac{V}{f}\right)$$

Where N is the number of revolutions in each orbit (year)

therefore, equivalent circle (with circumference = length of slightly elliptical orbit):-

Diameter of orbit

$$D_o = \frac{N}{\pi}\left(\pi D + \frac{V}{f}\right) \qquad \text{.....(1)}$$

or

$$D_o = N\left(D + \frac{V}{f\pi}\right)$$

For Earth:
N = sidereal period = 365.2564
D = 12756 km
V = 107208 km/hr
F = 1/ 23h 56m = 0.0417827 rev/hr
mean distance (a) = 149.598 M km

therefore, substituting in (1)

D_o = 365.2564/π(12756* π + 107208/ 0.0417827)

= 951.83 M km/ π = 302.979 M km

therefore, radius = 151.4895 M km

Taking account of eccentricity, I estimate that the correct figure should be very close to 150 M km, so the error is about 1%. At first I was really quite surprised to find a result that close, but careful examination of the result and the formula showed that all I had in fact done was add the sum of all circumferences of the Earth through which the point travels in a year. I would have needed to input values of V or f which would combine to give the actual values. It would thus appear that the exercise was pointless. But then, again just out of casual interest, I wondered what result would be obtained using the formula found in Chapter 4 and comparing just total orbital distance, to rule out the estimate involved regarding eccentricity. I was then really surprised to find that this gives 937.306M km, which is much nearer the correct figure, which I calculate to be 937.192 M km.

Why should orbital path and helix appear to be governed by the same formula? Perhaps there is a clue to this in "Faster than the Speed of Light". In Figure 3.1 on page 52 João Magueijo points out that the Earth's space-time trajectory is actually a spiral with a very long turn. Of course, the Earth's orbit is not just governed by velocity spin and diameter. The effect of the Sun (or anything else which might result in curvature of motion) is seen in the fact that we have to multiply by the number of days in a year, which clearly plays the major role in determining the actual size of the orbit.

The question which arises is the actual extent to which a component of the orbit might be the curvature of motion which I suggested in Chapter 1 was a consequence of the relationship between spin and velocity governed by conservation of energy. Would it, for instance, be possible to alter the Earth's orbit by changing the rate of spin in a way that maintained total energy to change the kinetic energy of translation? Would a series of powerful propulsion systems attached to the planet to slow down its rotation make the planet move faster, because the rotation had not been affected by some external source, which must involve an input of energy; or would this be impossible without radiating energy away?

This may seem to be a rather pointless and almost certainly impractical conjecture. If, however, it seemed certain that we would be hit by a comet or asteroid of such size that total extinction could otherwise not be avoided, it would probably be considered worthwhile to give it a try. If we could predict far enough in advance, the very slight change in orbit, which might be affected in this way, could make the difference between total disaster and a near miss.

I doubt that I would have really given this idea much credence at all but for the research of one man also mentioned in Francis Hitching's World Atlas of Mysteries. His name is Immanuel Velikovsky and he is described as follows:

"By any standards, he was always an extraordinary man. Born in Vitebsk, Russia, on 10th June 1895, he learned several languages as a child, travelled widely for his studies, which included law and ancient history, before graduating in medicine in 1921. A distinguished European and Israeli academic and medical career, particularly in psychoanalysis, brought him to America in 1939. Here, during researches into early Israelite history, he became convinced that certain sections of the Old Testament of the Bible were literally true; they described the catastrophic events caused by Earth's near collision with another heavenly body. Either the Earth's rotation stopped briefly, or its axis tilted, causing floods and disasters. Joshua was reporting the accurate truth when he said "The Sun stood still in the midst of Heaven and did not go down the whole day." For this to be proved he had to find similar legends elsewhere, except that on the other side of the globe these would logically be about a time when the Sun failed to rise. And find them he did, in ancient documents from pre-Columbian America, China, India, Iran, Babylon, Iceland, Finland, Greece and Rome. Mexican manuscripts told how the Sun did not appear for a four-fold night."

Velikovsky had linked these events to strange descriptions of the planet Venus. In an account from China, in the reign of Emperor

Yao, the Sun did not set for ten days. In Yoa's reign "a brilliant star issued from the constellation Yin". Velikovsky's conclusion was that Venus was a new addition to the Solar system, having spun off from Jupiter, had near misses with Earth and Mars between the 15th and 8th/9th centuries BC, and finally settled in its present orbit only 4000 years ago.

He predicted that Venus would be very hot, have a dense atmosphere, with hydro-carbons, and probably an anomalous rotation. Apart from the presence of hydrocarbons all these predictions were later shown to be true. Venus is the only planet with a clockwise rotation (as seen from above) and it rotates very slowly, only once in 243 Earth days.

These predictions were just a few of many that Velikovsky made, most of which have been shown to be true, including such things as the extent of the Earth's magnetosphere, geomagnetic reversals, the electric charge of the sun, radio noise from Jupiter, hydrocarbons on the Moon and Mars, gross bronze age climate change, and many others in a long list compiled and analysed by Mr. Hitching. He also lists many early descriptions of the planet Venus from civilizations all over the World, which lead to the conclusion that it must have had a much more dramatic, comet-like appearance in these times. A further prediction made by Velikovsky, that Saturn emits x-rays may have recently been confirmed (New Scientist, 20/3/04, p19).

But when he made these predictions he was vilified by his contemporaries, but his fiercest critics had not even read his book and made a point of saying so. I have to wonder just how much of my work has actually been read. In his General Introduction Francis Hitching says: "There are a number of examples in the Atlas of how innovative thinking on a subject has been rejected by the scientists or historians in the disciplines concerned simply because the suggestion was made by an outsider."

The difference now is that we know that we are quite definitely at risk, not only of being hit by an asteroid or comet, but from our own misuse of the planet's resources. If we do not wish to pin all our hopes on the above suggestion, then we need to work on

technology which will give us the option of preserving this planet or finding another home in the Universe. Therefore, to ignore my claim that gravity can be defeated, which would also facilitate a huge reduction in the rate we are using fossil fuels, is just about the most idiotic omission in the entire history of the human race. To not be working flat out towards the attainment of this objective is both stupid and illogical. But then to quote from Star Trek "Whoever said that the Human Race is logical?"

Appendix 4

Further Considerations of Time

I showed in Chapter 1 that it is wrong to think of time as an entity that can be measured. We do not "measure" time; all we do is compare frequencies. Time does not exist. This should have been apparent when Einstein showed that it was relative, but instead the view prevailed that by travelling at different speeds you change the rate at which this mysterious entity "flows". This idea results in paradoxes and when this happens the most likely answer is that we are not looking at the problem in quite the right way.

There is a good reason why we find it difficult to recognise the true nature of time. Time is the relativity of events and without events time has no meaning. Our very existence is, however, dominated by events, even when we might think that we are doing nothing. If we imagine ourselves motionless in otherwise completely empty space, we still find it difficult to rid ourselves of the idea that time is still passing because events are still occurring. Even if we imagine bodily functions to stop, such as breathing, the very act of doing so and being conscious of it, involves chemical and electrical activity in the brain. Such activity is a stream of events, the relativity of which is our own personal record of "time". We can compare our rate of breathing with our pulse, and we may then be tempted to think that we have a good measure of the rate of each breath; but if we let the enormity of this achievement go to our head and get a little excited, our "clock" may start to run faster.

As I have showed, being sure that something maintains a constant rate in absolute terms is very difficult. It is effectively impossible for us; so all we can do is compare rates one with another. You could call this Beck's uncertainty (time) principle. We then see that Lee Smolin was close when he said that "time advances by the discrete ticks of innumerable clocks" (Scientific American, Jan 2004, p.62). It is simply a matter of choice. If we choose to compare everything to the rate of spin of a tiny particle,

or rotation/vibration of some form, we have to be aware that this constant will change with speed. Unfortunately Lee Smolin spoils it by still implying that time "flows", albeit by discrete ticks rather than smoothly, but this still gives time an independent existence.

What then is the best way of recording the relativity of events ("time" if you like) to minimise this effect? If the essence of the problem, as I have explained it, is a question of conservation of energy, then clearly the rate of spin of a small particle, with energy of spin dependent upon mass, dimension and rate of spin ($E = 1/5^{th}\ mv^2$, where $v = \pi Df$), will have to reduce significantly if speed of translation, relative to its size and rate of rotation (or oscillation), is great. You may ask why we should be bothered about how fast a tiny particle is spinning if we move away from it at high speed.

The answer lies in the principles of impotence and equivalence. We cannot move away from a particle without assuming it to equally valid to consider it to be moving away from us. So in the absence of any force which propelled the particle, we have to assume that the particle has lost rotational energy in gaining speed of translation. Leaving aside for now the question of whether mass increases or decreases with speed, which should be insignificant at this scale, we are forced to conclude that the particle is now spinning more slowly relative to us and that our measure of time has changed significantly.

So perhaps we have chosen quite wisely in having the rate of rotation of the planet as the basis for comparison. You have to move pretty fast to make much difference. This was fine while we were considering our small-scale motion on the planet; but what if we start considering motion which is much faster by comparison? As Einstein showed, time as we measure it, must be considered variable when relative speed is significant. But if we chose something either spinning very fast or something much larger than the Earth, we would have a measure of time which is less affected by relative motion. Perhaps then, if we travel the Universe, we should adopt the rotation of something like a fast rotating star as our new standard.

I am, however, suggesting that there is no limit to how fast we can go. So what if we were travelling at several times the speed of light? Perhaps then we need to use something really large such as the whole galaxy; but then ours rotates very slowly. The ultimate solution would, therefore, be the rotation of the Universe; if we can ever detect it. Observing such rotation is, however, difficult. I have suggested that the only way we could be aware of such rotation would be by the very fact that the Universe appears to be expanding, because of the apparent curvature of light relative to everything else. This is not quite right and, as I have said, if everything is rotating about one axis, the illusion of motion away from us would be less significant for galaxies near the axis of rotation.

Illusions, however, can be very tricky. Our whole concept of the scale of the Universe and distribution of objects within it would need re-thinking. The galaxies which appear to be the furthest away (and apparently receding the fastest) would actually be much closer; and those with much less red-shift, which are actually near the axis of rotation, and have been assumed to be much closer, could be as far away. It is thus clear why we have not observed the tell-tale signs of rotation; they are neatly disguised in our glib assumption of expansion. So until we make observations on the basis that the Universe may be rotating, we may never discover this possible reality.

One aspect of time, which I have not yet mentioned, and which is given much attention in Relativity, is the question of simultaneity. This is a very interesting question, and one which may be very confusing. It confused me in my teens because I see that I had pencilled in the word “no” next to Einstein’s conclusion that two lightening strikes which are simultaneous relative to the embankment are not simultaneous relative to the train.

I cannot remember my precise reasoning now for sure, but I think that it was a question of cause and effect. If, for instance, the train were longer than the platform, and the two strikes were actually experienced as damage (including two clocks known to be synchronised precisely) at each end of the platform, then there

would be simultaneous damage to the train at precisely the same distance apart. So the only conclusion that could be reached, from a subsequent investigation of the damage, would be that it was the same two lightening strikes which caused damage to the platform and the train at *precisely the same time* (when both clocks stopped).

What we have to think about, of course, is exactly what we mean by the words "precisely the same time". My pencilled note was about fifteen years before I concluded that "time" does not exist. Clearly, from this new standpoint, "precisely the same time" needs re-thinking. If time is not something we can consider to "flow" steadily and consistently, relative to which points in "time" can be marked, can the statement "the same point in time" have any meaning? I hope that the reader will forgive me if, yet again, I answer yes and no; an answer which, of course, requires considerable amplification.

We need to consider the general sense and the specific case. I have shown that time does not exist so, in the general sense, there can be no such thing as a point in time. This is really the same conclusion that Einstein reached when he said in Chapter1X:
"Every reference-body (co-ordinate system) has its own particular time; unless we are told the reference-body to which the statement of time refers, there is no meaning in a statement of the time of an event." So it is apparent that I am just amplifying and clarifying what Einstein said, and drawing the only logical conclusion which many, including Einstein himself possibly, appear to have missed; that is the impossibility of time existing as an entity which can flow (relative to anything).

There are only events, and time is purely the concept of how these events relate. So in the general sense, when we are considering events, simultaneity is not a meaningful concept. If, however, we consider the specific case of physical interaction, it has to be of crucial significance. Take, for instance, a baseball player. If he swings early or late, he may miss the ball. The arrival of the ball at the point where he hopes to hit it and the arrival of the bat at the same point have to be simultaneous. Tell a

baseball player that there is no such thing as simultaneity and he will tell you that you are just a crazy scientist.

What we can learn from this rebuke is the sensible way to consider the relativity of events (time). If event A (the arrival of the bat) is to influence event B (the arrival of the ball), the relativity of these events has to conform to the otherwise meaningless notion of "at the same time". In practice there is some margin for error in the example given, especially if the bat is swung through the same plane as the end of the ball's trajectory, but the principle is clear. If any event is to have any effect on another event there has to be an order representing "before", "now" and "after".

So we can define the concepts of before, now and after, in terms of the possibility of them affecting another event *at the same locality*. And the last phrase is then defined in exactly the same way, because the concept of position in space caries the same implications as the concept of a position in time; both statements are meaningless until we relate them to some physical reality (event).

If we wish to quantify the extent of how much before and how much after, we can only do so by making a choice by which to compare. This may be with regard to fractions of events whose supposed regularity exceeds the period in question, or with multiples of events which seem to occur regularly within the period in question. So time, and its measurement, is always just a question of the relativity of events; we can compare one string of events to another string of events, and that is the simple extent of the concept of time.

It should then, I hope, be clear to the reader that "time travel" is a nonsense. The only way we can define the concepts of before and after is by the possibility of influencing another event. So, by definition, it is not possible to do anything after an event which can ever influence it. It does not matter how fast we go or whatever we do, because this is then just a series of events which can only follow in the same way; before events which have not happened and after those which have.

Many readers will, I am sure, be starting to doubt the certainty of this view. The reasons for this are the limitation of our senses and the eternal desire to be able to correct mistakes and change things for the better. How many people must have contemplated the possibility of going back and killing Hitler before he inflicted so much harm on humanity? I will make no comment here on the moral, ethical or religious connotations of such an act; my views in general in this respect are contained in my autobiography (A Nutcase in the Universe). But the emotional aspects are significant because we tend to believe what we want to believe.

It is, I regret to say, a failing of the Human species that we tend to think far too often with our emotions rather than logic. This tendency, combined with the already mentioned limitations of the function and experience of the Human mind, make it difficult for us to free ourselves from the concept of events existing at points in time. Our own built in retrieval and replay system (memory) convinces us that reality is similar with "time" acting like video tape, with events stored in sequence. A mixture of emotions, ranging from guilt to curiosity, maintains the constant desire to be able to "replay" the "tape".

If we approach the problem in a purely logical way, realising that "time" is just a word which requires careful thought to ascertain the nature and limitations of its meaning, we see that it is just comparison, in the same way that "energy" is just comparison; and events only exist for the duration of their physical reality.

Appendix 5

The Question of Distance

In Appendix 4 I made the following observation: "So we can define the concepts of before, now and after, in terms of the possibility of them affecting another event *at the same locality.* And the last phrase is then defined in exactly the same way, because the concept of position in space caries the same implications as the concept of a position in time; both statements are meaningless until we relate them to some physical reality (event).

What this statement indicates is the similarity between the concepts of time and distance. The only way to conceive of either is by comparison and there can never be certainty that we can measure either absolutely. What I have demonstrated about the significance of rotation to the concept of time, illustrates this similarity in a way perhaps never envisaged before. Consider Figure 12.

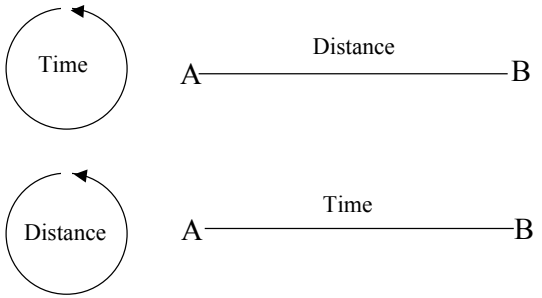


Fig. 12

Comparisons of time and distance

In our imaginary Universe consisting of nothing but fundamental particles, which we shall suppose are tiny spheres, we can call one revolution of a particular particle one unit of "time". But this also represents a distance i.e. the circumference of the particle. So comparing points along the straight line distance with one revolution is, in effect, exactly the same as comparing those points with a distance visualised as a straight line (a rule).

So comparison of time and distance would appear to be interchangeable. If we say that motion from A-B occurs in time t, and equate this to one revolution, we are actually equating distance travelled with distance travelled. If we define the straight line motion to occur in one second (or perhaps "zit" if we are an alien) we can then equate one revolution to one second if the circumference equals A-B. We can compare, but we cannot say that we have measured the rate of rotation or the length represented by A-B absolutely. This aspect of time was examined in Chapter 1, but not the concept of distance.

It may be tempting to imagine that two particles could exist at the two points A and B, at a set distance apart, and that if we assume that nothing happens to either particle it is safe to assume that the degree of separation must remain the same. But what if, contrary to what I suspect is true of our Universe, the imagined universe is expanding. Figure 13 then illustrates what could be happening.

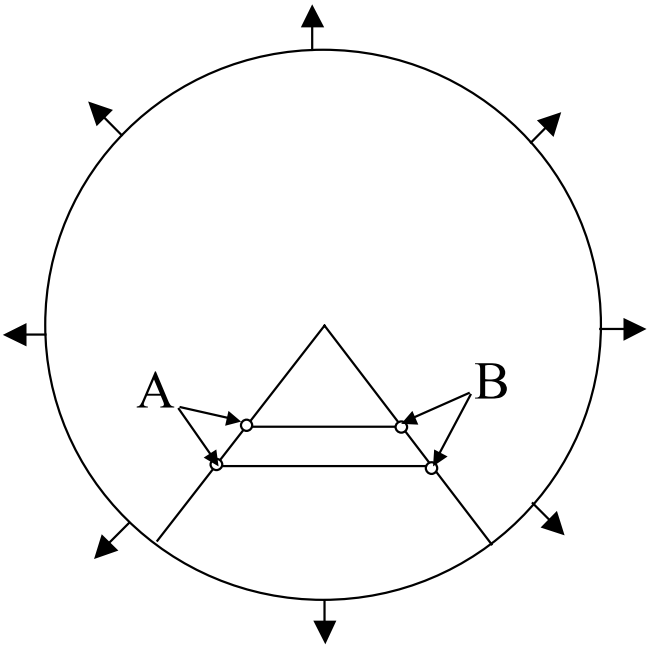


Fig. 13

Distance in an expanding universe

Also, even in a universe which is not expanding, without reference to any other physical object, such as ourselves perhaps as observers, there is no way of judging the separation of two imagined points. If there are particles of assumed dimension at points A and B the degree of separation can be compared to the size of the particles; but, just as with time, what then do we compare the size of the particles with to be sure that they are not expanding or contracting? In our imagined universe it may seem reasonable to stipulate that the most fundamental of particles can

only come in one size, but in reality how can we be sure that change of size could not occur?

So time and distance are purely questions of comparison; and in both cases the comparison is of the same form; distance is compared with distance. It is just that we have chosen the word "time" to represent comparison with rotational (repetitive) distance, and the word "dimension" to represent linear (repetitive) distance. The concept of "Space-time" then seems to be absolutely natural. Whereas the classical concept of time and space being independent and different entities, made Einstein's space-time seem mysterious and unnatural.

Before we compare distance using a rule we have to do all we can to ensure that the length of the rule will remain constant (by choice of materials and being aware of effects such as temperature). Similarly, we have to try to ensure that whatever is rotating, oscillating or vibrating does so uniformly and consistently. But we can never be sure of the absence of some change that may be very hard to detect. I have already indicated my agreement with Einstein's conclusion that time must be considered to change with speed, though I go further and say that this depends upon what we choose as the means of comparison. I have never been entirely convinced, however, that the dimensions of physical objects change with speed.

As I showed with π, considering dimensions to have changed, even when they have not, and cannot, is a way of correcting the error which would otherwise result from ignoring the effects of relative motion. I have been considering, therefore, that dimensions in general do not need to change in a physical way to satisfy special relativity, but that the true relativity of events in any system of reference can be ascertained simply by considering dimensions, which actually remain the same, to have changed purely for the purposes of calculation.

I have to admit, however, that I am not yet convinced one way or the other. There may be a way to clarify this matter by observation, but it does seem to me that a principle will come into operation similar to Heisenberg's uncertainty principle. If

something changes length by reason of its motion then so will the means of measuring it.

So can we ever measure speed and true length simultaneously? I also have to admit that this is not something which I have yet considered in great depth, nor researched the extent of other opinion, other than being aware of the difficulty in measuring the very small change involved at the sort of speeds we have been able to achieve in the space programme, as explained by the then Dr. T. E. Cranshaw in a booklet I obtained when doing "A" levels in the early sixties. The booklet may be old but I think that the observation is still valid, because he pointed out then that even at 20,000mph, this is still only one thirty thousandth of the velocity of light, so the effect would be only one part in a thousand million (roughly I think).

I need to investigate whether it has been possible to use particle accelerators to verify this aspect of Relativity, but I do not wish to delay publication for this reason because I see it as a matter of urgency that my claims that gravity can be defeated are investigated. If anyone thinks that governments really have the will to do anything drastic enough to reverse climate change, or that tinkering with technology will do enough to counter expansion of energy use in the third World, I have to say please think again! We need something drastic and we need it in the next two or three decades. That means urgent research now.

It is possible to envisage a way that the dimensions of physical objects may change with speed, but this would seem to depend upon the materials involved, which would hardly be a satisfactory answer from a relativistic point of view. What I am thinking is that, if rate of spin must change with speed, as I have suggested, then atomic size and packing could be affected. It is hard to imagine, however, that the extent of this possible effect could be independent of the density and nature of the material involved. Consider long chain molecules, for instance, compared to something with a lattice crystalline structure. Also, this effect would have three-dimensional consequences, not just in the

direction of motion. So at this point I remain sceptical of the predictions of Relativity in this respect.

This does not mean that this aspect of Relativity is wrong exactly. It is more a question of precise interpretation. If a spinning spherical particle follows a curved path, a point on the edge will follow a longer distance in space than if it was moving less or spinning less, which accords with the assumption that the value of π has increased in describing the motion relative to the appropriate co-ordinate system. This increased value is equally explained by assuming that measuring rods decrease in length around the appropriate circumference of the particle, but not along the radii, where they have no forward motion. There is then no actual change in the shape of the particle or the actual(local) value of π, but assuming them to change for the purposes of calculation only has permitted the clear representation of the relative motion.

I think this way of looking at the problem resolves the pole in the barn paradox and the problem of both the item to be measured and the measuring rod changing length simultaneously. When we consider the latter there is clearly a problem with the plane circular disc in Einstein's Chapter XXIII, BEHAVIOUR OF CLOCKS AND MEASURING RODS ON A ROTATING BODY OF REFERENCE. In the case of a spaceship moving at high speed relative to the Earth, it is quite possible to envisage the change in length suggested by Special Relativity of both the ship itself and measuring rods aligned in the direction of motion, even if you doubt that such change actually occurs. On a rotating disc, however, would not sections of the disc corresponding to the rod have to change length in the same way? If so what would be the effect on the shape of the disc?

As I have pointed out, it is possible to envisage a <u>decrease</u> in the value of π whereby the flat disc transforms into part of a hollow sphere (dish shape), but what possible change of shape can be imagined that would increase the value? After considerable pondering I was unable to suggest anything; but when I went on to consider the effect on a sphere, it took me only about 30 seconds to conclude that any such change was impossible. This is then an

indication that the argument I have put forward for there being no physical change in dimension, but only a considered change, may well be the correct approach.

The reason why we need to consider dimensions to change is that standard motion in our Universe is not as described by Newton, but in curves. This may be because the universe is rotating or because anything which spins must follow a curved path with the degree of curvature dependent on rate of spin. With no spin Newton's first law would apply, but as I have shown, everything in our Universe is dependent upon spin: time, mass, energy, forces, radiation, interaction, elements….life(as we know it, Jim)!

Appendix 6

Can Expansion be Observed Correctly?

Figure 13 and consideration of the points mentioned in Appendix 2 led me to examine this question. If the Universe were indeed expanding, would we be able to observe it in the way that most people probably envisage? Consider Figure 14. Each long, dotted arrow suggests how far light may travel in the time it takes galaxies to move outwards the distance represented by the solid black arrows. The proportions are not too important at this early stage of analysis, except that I have assumed that the galaxies would be moving at less than c to satisfy those who insist that this must be the case.

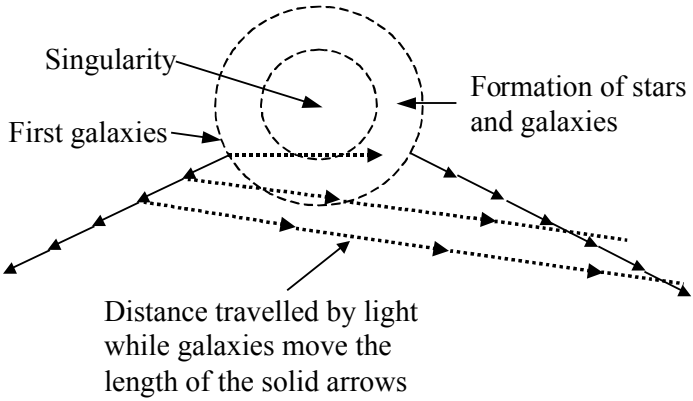


Fig. 14

In the case chosen, which we shall assume for the time being represents a reasonable approximation to reality, light emitted by the galaxy at the end of the first arrow (left) cannot reach the galaxy to the right of the figure until it has moved more than two

arrow lengths further. But that galaxy then has to move almost three and a half arrow lengths to intercept the light emitted at the end of the second arrow. Because the Universe shown is expanding from one point, the distance between all galaxies must increase; so it would appear form this initial analysis that we are constrained by what we can observe by the very fact of expansion, and we can not observe the full extent of the Universe nor the actual rate of expansion. It has to be remembered that when the light is received near the middle of the sixth arrow (right) the other galaxy is also moving in the sixth arrow, but the light from it in this and other positions will never reach the other galaxy at its corresponding position, but further and further out as expansion proceeds. In figure 15 the galaxies are closer together.

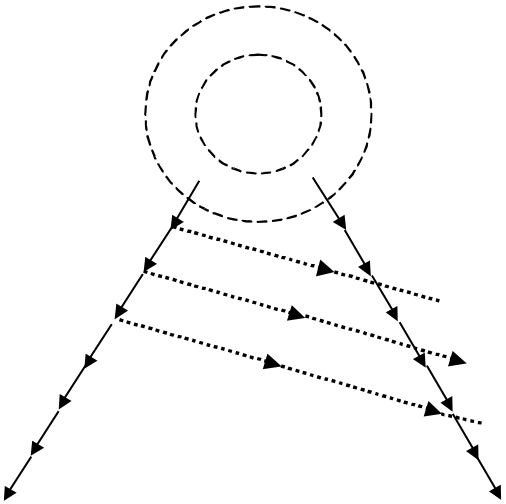


Fig.15

This time we see that light from the end of the third arrow now reaches the sixth arrow (right). We are still constrained to see galaxies in their earlier positions, but not quite to the same degree.

Figure 16 demonstrates that, with the same criteria, if we consider ourselves to be at position 6 it would only be possible to see just past the second arrow in the case of galaxies moving almost directly away from us, across the central region. (Read the figure as almost at right angles)

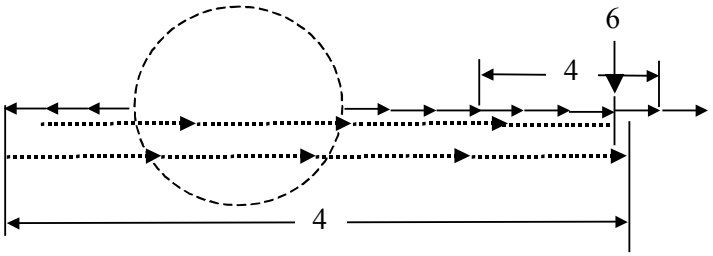


Fig. 16

Light from the end of the third arrow would still not have reached us until we had passed position 6 (i.e. another billion years or so!) So, in this scenario, the extent of the observable Universe is approximately as indicated in figure 17.

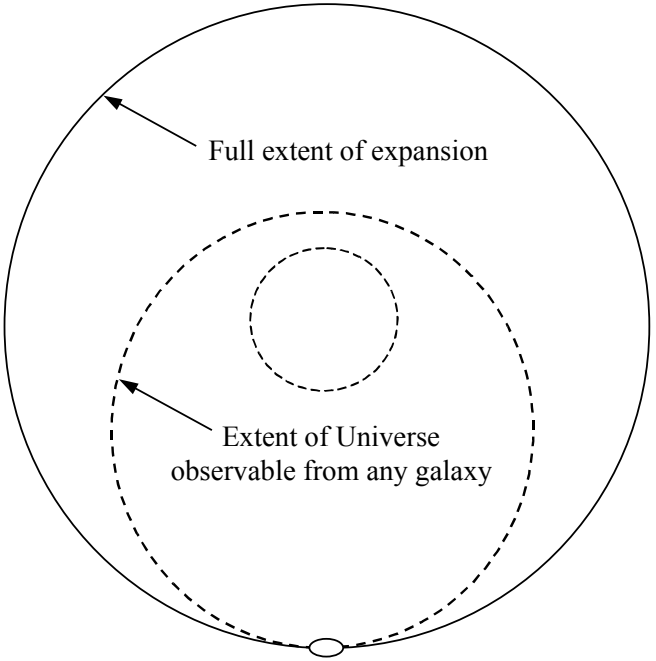


Fig. 17

The broken line extent of observability, in the position shown, relates to the galaxy shown. The same extent, but moved round

and overlapping will apply to any galaxy, provided that we are considering only the "inflating balloon" scenario, whereby all galaxies move out in unison to the same distances from the origin. The above analysis demonstrates why we would not see emptiness within the "balloon".

Please bear in mind that this illustration is not my interpretation of the observable and actual Universe. It indicates what would follow if certain aspects of an inflationary (Big Bang) Universe apply. It thus appears that expansion from a singularity, following the "inflated balloon" idea, at a steady rate, cannot be observed as such. It would appear irregular and uni-directional from one side of the galaxy only.

Some may say that space-time would be so curved as galaxies move out that we would actually see galaxies in the direction of outward motion. They see space-time as an entity, which I have made clear I do not agree with, and I think Einstein had doubts about; but even if light were curved in this way, the result is another illusion.

Also, if the rate of expansion were increasing, as is now thought, the effect illustrated above would be even more marked. It may appear that we would be able to receive radiation from the Big Bang as it is shown within the observable Universe, but applying the dotted arrows demonstrates why Figure 10 (Appendix 2) still applies. The only way that we could receive such radiation would be if something remained behind and continued to emit radiation long enough for galaxies to form and move out to positions where they could receive it. This source, however, located then at one end of the observable Universe, would not account for the observations of Penzias and Wilson, as confirmed to be approximately correct by COBE and WMAP, which showed the radiation to be coming uniformly from all parts of the sky.

The question now to be answered is whether the assumptions made in the above analysis can be expected to conform either with actual reality or with the reality assumed by supporters of Big Bang theory. In "The Universe in a Nutshell", Stephen Hawking suggests that the Universe has been expanding for 15 billion

years; that the first galaxies were forming from about 3 billion years; and galaxies like our own were forming between about 5 and 10 billion years from the Big Bang.

It would appear from Wikipedia and other sources on the internet that the extent of the observable Universe (cosmic light horizon) is thought to be 13.7 billion light years, with the outermost limits of galaxies (which they think have moved further out since the light we see was emitted) estimated to be 47 billion light years. Wikipedia gives the co-moving distance (which I assume to be the diameter) as 78 billion light years, which is closer to the views of others who argue that 47 is too high.

It would appear that those who consider that the whole Universe can be that large are not aware of the illusion that my analysis has revealed. Although the above indicates that the observable Universe is probably smaller that the actual size, the latter could not be over three times as large. It is easy to fall into the trap, as I admit I have in the past, of thinking that we are near the centre of the actual expansion, observing galaxies which must then continue to move out for the length of time that it has taken their light to reach us. As I mentioned in Appendix 2, there is something illogical in the notion that we can look outwards away from the actual centre, so far that we see early galaxies forming!

The conclusion which follows from this is that it is far from clear as to what the age and extent of the Universe is actually considered to be. The Universe, in its considered entirety, has to be much older than 15 billion years. It would seem that it is not just the ignorant few like me who find the way this information is presented confusing. The following is a quote from an article by Stephen Battersby (New Scientist, 20/27 Dec. 2003/3Jan.2004, P.16):-

"Just 20 years ago, for example the universe was thought to be "somewhere between 10 and 20 billion years old". By January, the range had been whittled down to 12 to 15 billion. A few days later we got the real answer at last. The universe is 13.7 billion years old."

When, oh when, oh when, are people who talk about science and write about science, going to learn the lessons of the past and adopt a truly scientific approach!? When are they going to learn to define what they say and doubt what they say? What Stephen Battersby should, perhaps have said was that the observable Universe appears to be 13.7 billion years old, but if past experience is anything to go by, those who think so could eventually be shown to be considerably in error.

But even then the whole issue seems to be confused. If I have understood it correctly, 13.7 billion years is considered to be the length of time that light has taken to reach us from the earliest observable galaxies. Given that the observable Universe is thought to have been expanding at an average rate much less than c, the total age since the singularity has to be significantly more. It is clear that all that there is, we do not see, and all that we see, is not where we see it. This is clearly very "dodgy ground" to base an argument which is as assault on all reason!

The number of galaxies apparently observed grows phenomenally at every improvement in our observational ability. Consider the size of our own galaxy. Light takes 100,000 years, travelling at 186,000miles per second, to get across! Even words like "phenomenal" seem inadequate to describe the amount of matter and concomitant energy in our galaxy alone; and yet, because some claim to prove it mathematically, we are expected to believe that everything in the entire Universe, not just the observable Universe remember, came from a singularity. This is how Stephen Hawking puts it "The Illustrated Brief History of Time":-

"Penrose's theorem had shown that any collapsing star *must* end in a singularity; the time-reversed argument showed that any Friedmann-like expanding universe *must* have begun with a singularity. For technical reasons Penrose's theorem required that the Universe be infinite in space. So I could in fact use it to prove that there should be a singularity only if the universe was expanding fast enough to avoid collapsing again (since only those Friedmann models were infinite in space).

During the next few years I developed new mathematical techniques to remove this and other technical conditions from the theorems that proved that singularities must occur. The final result was a joint paper by Penrose and myself in 1970, which at last proved that there must have been a big bang singularity provided only that general relativity is correct and the universe contains as much matter as we observe." (The italic emphasis is Hawking's)

As I have said, Stephen Hawking uses the word "proved" a lot, and it is unscientific to do so. He should say "the maths appears to prove", or better still "appears to verify". Nothing in science can be proved, and when we allow ourselves to think it we are in great danger of deceiving ourselves. People will fall about laughing that so many were duped into believing this aspect of the big bang in the 20th century, when they eventually realise that gravity has to have a mechanism which makes a nonsense of the whole idea of singularities.

I have, however, digressed slightly from the argument in question. Can we say that my analysis is based on what is actually thought to be the case, and is this likely to represent probable reality? The first problem is to determine just how fast the Universe is thought to have been expanding since the big bang. The first point is that it is not thought to have been expanding at a constant rate. As I mentioned in Chapter 4, galaxies furthest away appear to be receding the fastest. The rate of increased expansion (Hubble's constant) is also subject to doubt and ideas on its value seem to vary considerably between about 50 and 80 km/sec/megaparsec, (a parsec is about 3.26 light years). But even here there would appear to be confusion. Some seem to argue that Hubble's law would be satisfied if the "balloon" were inflating at a steady rate, which my figures 14-17 indicate, albeit in a way that raises issues with other observation. But it now seems to be agued that because distant galaxies appear to be moving away the fastest, the Universe is expanding at an ever increasing rate. Perhaps I have been reading the wrong articles, but as the purpose of this

analysis is to consider any and all ways that what we apparently observe can be explained, I shall continue on the basis that the actual rate of expansion has been increasing, although I am personally doubtful that the laws of physics can account for it.

The figure suggested by WMAP is 71 so I shall use that, subject to the possibility that it could well need further revision (or scrapping entirely if either of my ideas in this respect can be shown to be more logical). Hubble's constant, of course, relates to observational distance and apparent rate of recession from Earth, but if we are considering balloon-like (spherical) expansion form a central point, it can be shown that the rate of recession from us is the same (per unit of separation) as outward motion.

This may be hard to visualise, but if you imagine an equilateral triangle, with one corner at the centre of the sphere and the other two corners at two galaxies on the circumference, it is clear that all three sides increase in length at the same rate. A little more thought confirms that this applies to all triangles because they remain "similar".

On this basis, after 3 billion light years from the Big Bang (920.25 Mpc) the first galaxies would be moving at 920.25 times 71 = 65337.75km/sec (0.218c) which is not that far from the length of my arrows. However, after ten billion light years the speed of recession is about three quarters the speed of light, 217791km/sec (0.726c), and after 15 billion light years the speed of light is exceeded at 326687 km/sec (1.09c). This is justified by Big Bang theorists by the idea that this is not motion through space but the creation of space; though what, if nothing and not nothing, permits this expansion is quite beyond me. Perhaps significantly, or just an amazing co-incidence, the speed of recession at 13.7 billion light years is very close to c (298374 km/sec = 0.995c).

We can see how this changes the analysis above in Figure 18.

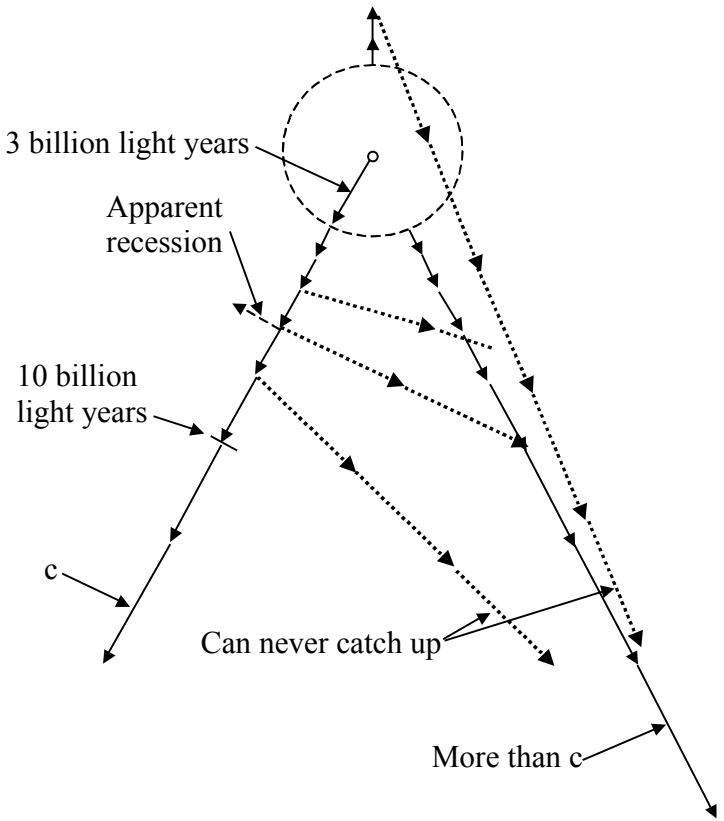


Fig.18

The dotted lines do not represent a light year or 300,000 km. They indicate how far light travels while galaxies move the distances represented by the solid arrows, which themselves cover millions or billions of light years.

What the above demonstrates is that if the Universe were expanding in the way that many would appear to suppose, we could not observe anything near to what would actually be

happening. Galaxies would appear to be concentrated in a narrow band and some expansion could not be detected as it actually happens at all. Some would even appear to be receding from us towards the centre, because our relative motion away would be greater, or at right angles to actual motion as indicated. The Universe would not look the same in all directions and background radiation would seem to come from just one remote corner. So the balloon-like expansion to explain what we seem to observe does not seem to fit at all.

Before celebrating the demise of the whole crazy idea of the Big Bang, however, we have to consider if something other than balloon–like expansion could account for what we appear to observe. Suppose that galaxies continued to form in a "nursery" region near the centre as others were already moving well away from it. If our galaxy was emitted from this region later than many others, perhaps we would then see a universe which looked approximately the same in all directions and appeared to be expanding in all directions according to Hubble's law. This is considered in Figure 19.

See Figure 19, next page

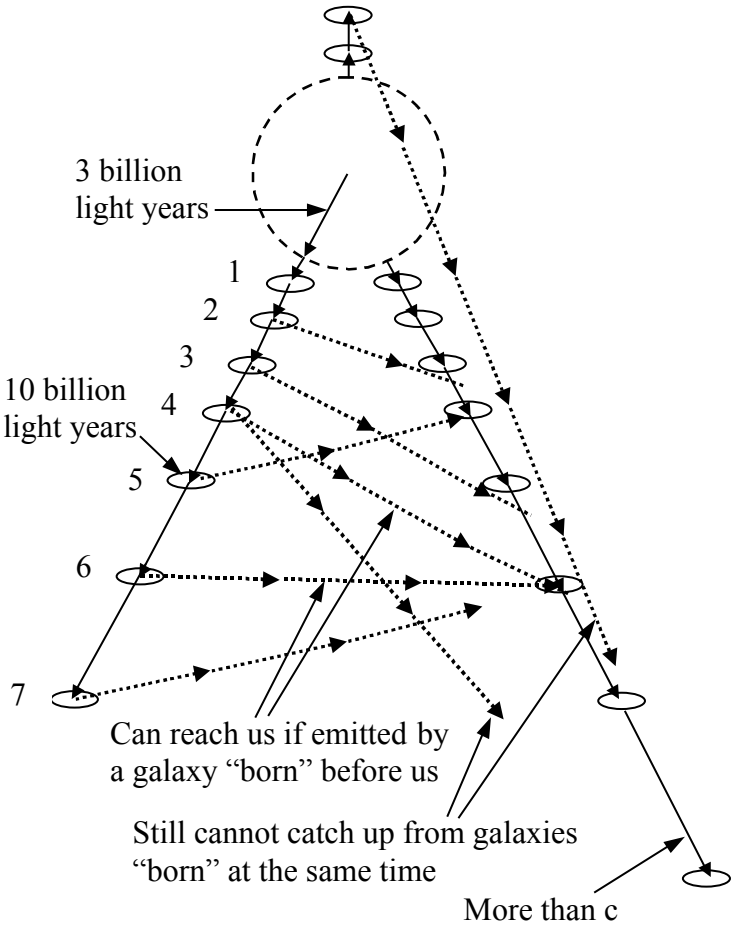

3 billion
light years
1
2
3
10 billion
light years
4
5
6
7
Can reach us if emitted by
a galaxy “born” before us
Still cannot catch up from galaxies
“born” at the same time
More than c

Fig. 19

This does look very complicated but soon simplifies with consideration. This time we do not consider just two galaxies moving out, each following Hubble's constant at the same distance from the centre, but galaxies at each point (1-7) moving at increasing rates with distance from the centre. I do not argue that this could happen because as far as I am concerned this would not obey the laws of physics until a force could be identified to cause the acceleration. The argument that space is being created, which I do not subscribe to anyway, could only apply to the first galaxies to be "born".

There would not, of course, be galaxies only in the positions indicated, and they can be considered to extend well beyond the seventh arrow, though this represents galaxies moving at c and faster. The one at point 6 represents a galaxy at 13.7 billion light years from the centre, just about to move at c. The distribution shown is purely to facilitate analysis; there would be many more in reality (or rather according to observation, in respect of which great caution is required), but to show them would make analysis far too complicated. Once the general idea is established we can interpolate between and beyond to visualise what can and cannot be observed.

The first, quite tricky, question to consider is which position can we consider ourselves to be now. If, as Hawking and others seem to think, that we can look back in time by receiving light from the earliest galaxies to form, we could perhaps be either at point 6 seeing those between 1 and 0, or perhaps our galaxy is much younger and we see those moving in the opposite direction (at the top of the figure). If we were at positions two or three we would be able to see some galaxies moving away beyond the singularity, but our galaxy would then not be old enough to account for the fact that astronomers consider our galaxy to contain stars which are 14 billion years old.

Supposing then we consider position 6 (right) in more detail. We have to divide our attention between being able to see those galaxies to the left which emitted the light when we were back with them, and to what extent we could see those "born" earlier

and later. In the former case similar considerations as before would apply but we would see many more galaxies in that direction because we could also see those born later. The extent to which we could see those born later would depend upon how much later.

There is now somewhat of a reversal in that the light from such galaxies in positions 1 to 4 will struggle to reach us, but those born before us and after us, both within certain limits, will be visible. When we were at position 3, for instance, light emitted by a galaxy at position 6(left) will reach us now, just as we arrive at position 6 also. Light from one at position 7(left), however, would have to have been emitted when we were between positions 2 and 3.

What then if we look back along our line of motion. We would not see galaxies1-5 coming towards us but they would appear to be moving back (towards the singularity) because we are moving faster in the opposite direction, and the galaxy at 1 will seem to be receding much faster than 5. Looking out in the direction of 7(right), galaxies close by will have small velocities relative to us, which then increase as we look further out. So perhaps, although we could still only observe part of the actual expanding universe, the illusion would persist that we are somewhere near the centre of a universe expanding in some respects at least according to Hubble's law.

Supporters of Big Bang theories might be happy to settle for the case that they may have been fooled into the right basic answer by an illusion, but is this scenario actually workable? What about background radiation? The initial source of this, which would have to continue over a very long period to maintain the continuous production of galaxies, would be not at the centre of the observable universe but at one end. Galaxies produced at an even rate and distributed over the life of the Universe would surely result in an overcrowded appearance at one end of the observable universe and an open appearance at the other. So even this idea does not appear to fit.

In any event, could what I have described above really be considered to represent a true Big Bang theory? It would represent something closer to continuous creation. You cannot "run time backwards" as part of a logical or mathematical exercise to show that everything must have originated at the singularity at the same time. The whole basis for this as a "Big Bang" theory breaks down. A big bang is essentially an explosion which provides the reason for expansion. How do we explain something which carries on for billions of years? This would have to be a completely new theory involving a process which could be maintained over very long periods, generating matter and energy at a continuous steady rate from nothing. This then seems to be even less credible than the inflating balloon version.

A key consideration, which I think all of the above analysis demonstrates, is that we either see early galaxies as illusions caused by the extreme bending of space-time, if this is possible, with considerable doubt, therefore, as to their exact position and actual rate of recession, or they could only be observed in one particular region of the sky. Until I find that these scenarios have been considered I must argue that the Big Bang has not been thoroughly thought out.

The answer to all this is that Penrose and Hawking were wrong. Not being aware at the time of the mechanism by which gravity works, their conclusions about singularities were in error. Gravity requires rotational energy in quarks to sustain it and gravitational waves have to be emitted for gravity to work. There has to be a cut-off point beyond which contraction to a singularity cannot occur. This means grey holes rather than black, almost certainly in every galaxy, giving the results obtained by WMAP, a slightly mottled picture because of the "clumping" of galaxies and an excess coming from the centre of our galaxy, where there is thought to be a black (or grey) hole. Red shift could be either a consequence of a rotating Universe or frequency reducing with distance.

As for being able to observe very young galaxies, Stephen Battersby, reporting on the American Astronomical Society

meeting in Atlanta Georgia in January (New Scientist 17 Jan 2004, p.14), drew attention to observations showing that galaxies in the "early" Universe look unexpectedly mature, very much like our own; and superclusters were observed where they should not have had time to form. This, of course, does not surprise me at all. The question is, how many such observations will it take before somebody other than me sees the Big Bang for what it is: probably the craziest idea to be held by scientists in the entire history of Humanity!

Appendix 7

Gravitational Effects of Eclipses

I had thought, with the completion of Appendix 6, that this book was finished. In fact I have been thinking since April 2004 that it is about finished, but a combination of problems with computers and regularly finding new information in support of my ideas has prolonged its production. There may have been some purpose in what seemed like considerable frustration on many occasions. Sometimes history seems to repeat itself in eerily similar ways. I find that I not only have similar traits to Einstein; I also need help with the complicated maths involved; I have a tendency to loose my calculations; and now it appears that it may be an eclipse which may help verify my theory of gravitation.

On 27th November it was revealed in an article entitled "Shadow over Gravity"(New Scientist, p.28) that observations carried out way back in the fifties, and repeated since, which I and many others probably, have been blissfully unaware, suggest very strongly that Relativity (as it has been interpreted by many - but not me) is not able to answer all questions about gravity. This relates to the effect on Foucault's pendulum of eclipses. My interpretation of Relativity does not accept that there are no gravitational forces, but suggests that Einstein's "pure gravitational field" has to be a real force caused by the interaction of real particles.

The effect was first observed by someone who also seems a little like me in some ways. He is a French engineer, economist and would-be physicist called Maurice Allais (still alive today at 93). What he observed during eclipses on 30 June 1954 and 22 October 1959 was that the rotation of Foucaults pendulum actually reversed with the eclipse. The effect was independently confirmed by three Romanian scientists, who were unaware of Allais's results, during an eclipse in 1961. Then in 1970 Erwin

Saxl and Mildred Allen (USA) repeated the experiment and concluded that "gravitational theory needs to be modified" (*Physical Review* D, vol.3, p823). They even recorded a weak effect with their torsion pendulum during a lunar eclipse. Allais had previously found that the rate of rotation increased and decreased in the course of a day.

It appears to me that work on "twisted light" and Sir Roger Penrose's Twister theory, considered together with the view expressed in "Nuclear and Particle Physics" by Burcham and Jobes (Page 162) that ".. it will be necessary to ascribe a new property of *helicity* to the neutrinos", give considerable weight to my idea that helixes of neutrinos are the basis of both EMR and gravity. I suggest that either neutrinos, or some other, very small fundamental particles as yet undiscovered, can have a fundamental component of mass due only to spin. Thus, in the "screw-in" action of helixes comprised of many neutrinos, momentum can be exchanged. What else but a screw can pull in the opposite direction to motion? So between any two bodies there is a constant two-way exchange of particles, which maintains the numbers of such particles and their rotational and orbital KE within quarks. My theory then actually predicts that anything which prevents or effects such two-way exchange must have consequences for local gravitational field. The Moon is unlikely to block gravitational "waves" completely but may well have some diminishing or focusing effect. There could, therefore, be two effects on the apparatus: one caused by a very localised change in the Earth's gravitational field, and a direct effect on the apparatus of the changes in both the Sun's and the Moon's locally directed field.

What Allais noticed about the change in the rate of rotation during the day has to depend on the relative position of the Sun, which in turn must affect local gravitational field if I am right about the exchange of gravitons. Clearly gravity is not turned on and off with day and night, but there would have to be some change, even if generally unnoticed. It should be quite possible to rule out other explanations so far suggested, such as atmospheric

effects or increased human activity during eclipses, neither of which seem very plausible and would not account for all of Allais' observations.

General Relativity does not have to be wrong for this to be explained but rather that the understanding of it needs to be modified or clarified. I have never been happy to accept that Relativity has to mean that "there are no gravitational forces". The fact that the effects of motion and real forces can be indistinguishable does not mean that they have to be. Gravitation can have two or more components. If we start with bodies in space with no motion, attracting each other in accordance with Newton's inverse square law, they will not orbit at all. The result would be a "big crunch". General Relativity, or any other explanation of our Universe, has to have other motion as a prerequisite.

Friedmann realised this, and because of what seemed to be observational evidence in favour of expansion, this has been accepted rather than any other motion. The extent and nature of the motion, in relation to the strength of real gravitational field will determine the net result in which orbit is determined by total energy and momentum present, which must then give a more complete and accurate answer than just considering Newton's laws alone. It seems to me to be far more likely that the motion most able to explain our Universe, and to maintain it, is rotation. In this case orbit, which as I have shown can explain everything about matter and forces, is a natural consequence rather than an occasional resultant. Clearly just the right degree of motion will balance gravity, keeping the Universe stable. But, of course, it could be both rotating and expanding or contracting to some degree, depending on the rate of rotation, but still appear to be expanding because of the illusion I have identified.

There are then four components to the orbit of planets: the rotation of the Universe, the rotation of the galaxy, curvature of path due to spin, and curvature due to real (pure) gravitational field caused by the interaction that I have suggested. Taken as a whole, this amounts to General Relativity, with real forces

indistinguishable from apparent ones resulting from motion. The real force that I have identified as the probable result of the structure of quarks and electrons, is clearly very similar to light and so its intensity will obey the same inverse square law, but the effect of this will depend upon the inherent motion in all bodies.

I am, therefore, very interested to see how experimentation on the gravitational effects of eclipses, and its interpretation, proceeds. At least one person, Thomas Goodey, an independent researcher based in Brentford, Middlesex, in the UK is planning further experimentation in this respect with more accurate apparatus. In May 2004 he presented his strategy to the Society for Scientific Exploration in Las Vegas and invited physicists to join him. Apparently several accepted, so the next eclipses on 8 April 2005 in Latin America and 3 October 2005 in Portugal and Spain, could provide further observational evidence in support of my theory.

I hope that by then some physicists will have read my book or other material I have been sending, but as with Immanuel Velikovsky and Maurice Allais, whose work was dismissed by those who had not even read it, I may continue to be ignored for reasons which are not much to do with science but human failings. As mentioned in Appendix 3, Francis Hitching wrote in his General Introduction to The World Atlas of Mysteries:

> "There are a number of examples in the Atlas of how innovative thinking on a subject has been rejected by the scientists or historians in the disciplines concerned simply because the suggestion was made by an outsider"

If there is one thing above all else that I wish to convince both the scientific community and mankind as a whole, and especially terrorists, governments, religions, journalists or any who are happy to inflict harm on others on the basis that they have to be right, it is human fallibility and the arrogance that tends to go with it. If we are to travel the Universe the human race needs to learn

open-minded humility and put an end to dogma, which inflicted so much harm in the exploration of this planet.

I believe that God has provided mankind with a test, in the form of this book. Does it have the humility and the open-mindedness to accept that maybe, just maybe, God reveals truth at appropriate times and in appropriate ways, whether it be through coffee shop philosophers, patent clerks or humble carpenters? If it can learn this lesson, the future of mankind can be amazing; if not it may well be set on self-destruction.

THE END

The end of this book but the start of what may be the greatest drama the World has ever known. If I am right in my belief that God is offering mankind a way out of its own path towards self-destruction in the knowledge of how to defeat gravity, then we have a "cliff-hanger" before us of epic proportions. I have been trying for over a year with no success just to get scientists, politicians, the press and the media to consider my ideas. Perhaps it is down to you, all those who read this book, to decide what is logical, and insist that it has to make sense to submit these ideas to the closest scrutiny. Contact governments, the press, the media, and insist that they inquire of science why my ideas should not be considered, and then hope that there are enough like you with faith, hope, logic and reason to save mankind from its own folly.

Let us, however, proceed with good humour. I propose a debate:

Giant sausages v Tiny spaghetti rings

Acknowledgements

The following publications have been helpful:-

Relativity THE SPECIAL & THE GENERAL THEORY	Albert Einstein
Basic Relativity	Richard A Mould
Particle Physics	B.R. Martin & G. Shaw
Nuclear and Particle Physics	Burcham and Jobes
The Illustrated Brief History of Time	Stephen Hawking
The Universe in a Nutshell	Stephen Hawking
Quantum Theory for Beginners	J. P. McEvoy
Faster than the Speed of Light	João Magueijo
Gulliver's Travels	Jonathan Swift
The World Atlas of Mysteries	Francis Hitching
The Road to Reality	Roger Penrose
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