

*Physics, God and the End
of the World*

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Dedication

To my wife Margaret who has put up with all those late nights of research and typing. My excited bouncing of ideas off her, some that were beyond her comprehension (or care) but she patiently tolerated my enthusiasm.

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Introduction

Physics and Cosmology have been an interest of mine for many years, as I have always had a desire to know how and why things work, I read a lot and have many varied interests. I originally enrolled at university to study for a business degree but I was distracted by the multitude of courses available. In addition to business related subjects I have studied at one time or another such diverse fields as physics, parapsychology, behavioural science and philosophy.

I was particularly interested in general relativity, gravity and its effect on time and of the nature of time. These fields were of special interest to me because although I had been told that time passes in a certain manner, what is past is gone and we cannot see the future until it arrives. I never believed any of this for a single moment, for you see I am clairvoyant. I regularly see or just know what is going to happen before it occurs, these events are called precognitive and premonitory by parapsychologists (the people who investigate “spooky stuff”). I spent many years keeping it well under wraps because as a small boy I assumed everyone was able to do this, but when I told my Father something about his business (I don’t even remember what it was) he was horrified and wanted to know how I knew this.

Not being exactly aware of how this information was arriving in my consciousness the best explanation I could give was; “the little people told me”. “What little people?” He asked. “The little people who live under the bed.” That was the best way I could describe the things I could see and hear while relaxing on my bed and letting my mind drift free. He looked at me in a very strange way and I realised from what he was obviously thinking that not everybody could see what I was seeing. I can still remember clearly to this day the

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looks that passed between he and my Mother, who was standing nearby doing the ironing (a regular chore in those days before synthetic fabrics became common). That evening my parents had a discussion about the incident they were very concerned and decided that if this strange behaviour persisted they would have to seek professional help. I was in bed and out of earshot but I understood what was happening and it concerned me that I had frightened my parents so much and so I became careful to be far subtler when anything was important enough that they should be told. They were far happier thinking I was just fairly clever than thinking I might be “strange”.

It was a handy talent to have, in all my years at school I never had to ask a single question of a teacher. I just had to think hard about the question for a moment or two and either of two things would happen, the answer would pop into my mind or someone else in the class would ask the question for me. I still had to be careful because sometimes my thoughts would find their way into another person’s head, once a fellow student was cheating and I simply thought ‘stop cheating’ and he turned to me and said “shut up, Wright!” There appears to be no limit to the range at which this operates, for I have seen friends away in the distance, well out of earshot, but they have heard me call even when I have not uttered a sound. When my children were young I found that several of them would “hear” me call them home at mealtimes even if I did not make a sound, that was very convenient because they regularly played in a park playground well down the street.

One granddaughter proved to be the most amazing, whenever I rang home and she was there she would always answer the phone *before* it rang. It concerned her Mother when she would pick up the silent telephone and begin chatting when asked who she was talking to it was always

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“Pa!” It sometimes became difficult for me because she would answer the telephone and begin telling me about her day and would not be put off when I asked to speak to an adult. I would eventually have to ask if the ‘phone had rung before she answered it. The answer was invariably no and when I asked to speak to her Mother or Grandmother the stock answer was invariably, “In a minute.”

It was the visions that came to me from time to time that I found most disconcerting, because invariably they were related to someone in danger. It is almost as though fear and pain cause the mind to send out messages that others can receive. So often though, we cannot know anything much about the disaster until after it happens, as the images are not definitive. One example I will give to demonstrate this involves the sinking of a ferry in the Thames River in London. I had seen the cabin protruding from the water and thought it looked like a bus or train as it had rectangular coach style windows, so for three days I warned friends to be careful on buses or trains that would be crossing water. Then the television news showed the exact image that I had already seen, but it was halfway around the world and a ferry not a bus or train.

It was events like this though that inspired my desire to understand the nature of time, to explain why this could happen. I knew that there must be a rational scientific answer as to how it occurred and so began my quest to learn physics. I naturally turned first to basic physics and then to Einstein’s theories, and was lucky enough to find a translation of some lectures that he delivered at Berlin University in the 1930’s. It was Einstein’s work that first showed me the ways in which the flow of time can be altered, and I had already calculated that “real” time had to be something different to “perceived” time. I had conceived a universe where time did

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not move, and then realised that Einstein's space-time continuum was basically the same concept I had envisaged.

I had dropped out of college because I had obtained a reasonable position in a large corporation and I intended to complete my degree on a part time basis. Promotion and an increased workload and responsibilities accompanied by requirements to travel on the company's behalf soon made continued formal study impossible. I changed corporate employers several times each change leading to a higher position and increased responsibilities but I continued my physics research because my clairvoyant episodes continued.

By 1989 my research and study had provided me with a sufficient understanding of time to be confident enough to share my findings, and so my first book "The Time Illusion" was written and published. Mathematically the only way that all time could exist at the same time was if each unit of time was different in some way, two objects cannot occupy the same position in the same dimension at one time. I concluded that as we know from Einstein time can progress at different rates depending on motion or gravity then each second must be of a slightly different duration to those preceding it or those following it. From there it was a small step to consider,

- a) the universe is expanding,
- b) it is entropy which generates the concept of time,
- c) the universe is becoming less dense, its overall gravity must be decreasing,
- d) time must be accelerating under these conditions.

In the years since 1989, science has continued to make discoveries and several of these have supported the concept. In this book I have provided a more definitive explanation of the link between gravity and time and examined the very nature of existence. I don't claim to have yet developed

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Einstein's sought after "theory of everything" but I am optimistic that this book may be another step along the way.

In later years I have operated various businesses of my own and although the workload of the self-employed is greater than that of one who works for someone else I managed to continue my research. I was eventually able to reduce the hours I worked and I became a member of the Australasian Society for General Relativity and Gravitation in order to keep abreast of new developments. One night at a dinner party I was explaining to a guest why time may not be the one way street it is normally assumed to be and I performed a few basic calculations on a piece of paper. He became quite fascinated with this and asked if I was doing anything in the field of quantum mechanics. I assured him that I was not and he recommended that I at least look at some of the work that was currently being done. The next week my first quantum physics book arrived. After I commenced reading I discovered that I needed additional information I had soon collected a quantity of books, magazines and papers on the subject and so began my introduction to quantum physics.

Once I started to look into what we have learned about the nature and behaviour of sub-atomic particles I began to see similarities between quantum mechanics and the Jewish mystical teachings of Kabbalah. I had read a little of Kabbalah sometime previously, when researching for another project, but the little I knew was enough for me to recognise similarities between quanta and *Nitzutzei Kedusha* or "Holy Sparks" in the Kabbalistic teachings. Holy Sparks are like the spiritual fuel of creation, and nothing can exist or function anywhere in the universe without being fueled by Holy Sparks. These are, in a sense; spiritual packets of the Creator's Holy light, that actually represent the constriction and filtering of that Light. Without this constriction and filtering, physical creation could never exist, because the

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Almighty Light would remain too intense for anything physical to contain it. Thus, the more Holy Sparks something possesses, the holier it is and by definition the more life it has.

In order to help those who have not studied either or both of these fields I will try to give a brief explanation of each, which should help to show the similarities. It was initially my intention to divide each chapter into two parts, one scientific and one spiritual but during research it became obvious that the two subjects would need to be separated into their own units. Some chapters contain two parts but most relate to one topic although references to connections appear regularly. Many of the theories in these studies appear a little strange to the novice, but I will give some examples of experiments, which defy logic but support both quantum theory and Kabbalah. Kabbalah study has become a popular pastime in some circles (celebrities such as Madonna are learning Kabbalah) but the version being taught is somewhat abbreviated. Nobody would expect to learn physics or quantum theory in a few weeks of part time lessons and yet there are those who expect to do just that with Kabbalah. Traditionally to study Kabbalah one had to be forty years of age, married and a Talmudic student. I am personally a novice in both the fields but with the open mind of one new to possibilities have been able to see the similarities that a more learned man may neglect or not even notice.

There are a number of experiments discussed in this book most have been performed many times and so I have not singled out many of the researchers who performed those experiments, unless they were the first to do so. There are a number of explanations given for phenomena, which still perplex our scientists, and all of these can be summarised by a single new equation presented later in this book. This new equation relates to the manner in which times flows and is

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explained in detail in each of the chapters where it influences our physical world. There are other phenomena, which, at this time, cannot be adequately explained by physics, but some of these are quite easily explained by Kabbalistic teachings. The new equation referred to above may help us to understand just a little better how those teachings can assist science, but will raise at least one new question: Have we been ignoring scientific proof of the existence of God?

Chapter 1

Mind Over Matter

The problem facing physicists today is how to integrate quantum mechanics and Einstein's theory of gravity into a theory that could finally unify all physical laws into one all encompassing hypothesis. Our current knowledge of quantum physics and relativity (though incomplete) still gives us a background from which we have not seen any experimental deviation. Einstein, who spent his last thirty years working toward creating this picture, called it the Unified Field Theory, the ultimate goal of all physics, the theory to end all theories. By combining the teachings of Kabbalah and the discoveries of physics, both quantum physics and classical physics, we may be moving ever closer to that ultimate goal. The language of nature is mathematics (e.g. tensor calculus and Lie group theory) so obviously it is necessary to formulate ideas in mathematical form. Once formulated mathematically, it's then relatively easy for a theoretical physicist to determine the precise nature of the explanation, without mathematics our language is inadequate to explain concepts of nature. At the very least, any description must contain the tensor equations of Einstein and the quantum theory of the Standard Model. If they lack these two ingredients, then a theory probably cannot describe nature, as we know it. The concepts presented in this book are built on those fundamentals but the mathematical equations have not been reiterated as those who understand them will follow new calculations easily. Those who don't understand the finer points of mathematics will still be able to grasp the ideas. The images I have tried to present are designed for everyone, but they build on what we already know and demonstrate links that have rarely been considered previously.

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Many Kabbalistic scholars spend a lifetime of learning and admit that they have still only touched the surface. The theory of Kabbalah is based on understanding of the Torah, not just the written word but, obscured meanings and gematria (numerical values), for every letter and word in Hebrew has a numerical equivalent. According to tradition the Torah was dictated to Moses by the Almighty letter by letter and is more than just a history or set of instructions. Scholars over the years have been instructed to ensure that when they transcribe Torah passages they must be accurate lest they change the fate of the world. Most of us today have heard of the “Bible Codes”, messages within the Torah, which seem to predict the future, these are only some of the layers of information, which the Kabbalist examines from the pages of the Torah. There is a Jewish joke, which gives some insight into what information the student hopes to find in the Torah. Question: How many Kabbalists does it take to change a light bulb? Answer: Eleven, one to hold the light bulb and ten to rotate the universe. To the outsider much of this seems a little far-fetched but I am sure some physicists will already see where this is heading. How could making an error of transcription in writing the Torah affect the future of the World? The Kabbalists are implying that our thoughts and actions control the physical world. This view is at odds with our accepted image and classical physics which see the universe as a great automatic machine. Planets revolve around their stars, which in turn rotate around their galaxies and the whole system can go on indefinitely whether man exists or not.

Quantum mechanics, which is a branch of physics, agrees more with the Kabbalists than with classical (Newtonian) physics for it too implies that our thoughts and actions control the physical world. The concept of quanta first appeared in 1900 when the German Physicist Max Planck formulated the correct mathematical description of thermal

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radiation and demonstrated that the process of absorption and emission was “discontinuous”. The energy was gained or lost in discrete increments, or quanta, which are determined by the frequency of the radiation. Planck calculated the physical constant (denoted by the symbol h) which bears his name; Planck’s constant. The significance of Planck’s Constant is that the energy of each quantum, or each photon, equals Planck’s constant (h) times the radiation frequency symbolized by the Greek letter nu (ν), or $E=h\nu$.

Planck’s discovery reportedly disturbed him, as he could not explain his findings in terms of Newtonian physics. He did not set out to undermine classical physics; he was simply trying to discover why things behave as they do when they get hot. Why do things glow brighter as they get hotter and change colour as the temperature increases or decreases. Classical physics had defined acoustics, optics and astronomy but was unable to provide a sensible explanation of this phenomenon. Classical physics also suggests that there should be a continuously variable change in the absorption, transmission and emission of energy, but Planck demonstrated that this is not so.

The discovery of Quantum Mechanics demonstrated that the laws of classical physics do not apply to subatomic phenomena. Werner Heisenberg introduced his uncertainty principle, which explains that in the subatomic world we cannot know both the position and the momentum of a particle with precision. We can know both approximately, but the more we know about one, the less we know about the other. It has been proved repeatedly by experiment that we can know either one precisely, but then we will know nothing of the other. It is difficult to imagine that our decisions about what we wish to measure affect what we can or cannot measure, but quantum mechanics shows that the world may not exist apart from us and implies that

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everything in the universe may be part of one all encompassing whole. We are now seeing science concur with the Kabbalists, but science has yet to concede that this all-encompassing whole may be conscious.

Despite the parallels and similarities that are the purpose of this book we need to remember that we are examining two completely different philosophies. Science is not interested in the who or why of creation and existence, just the how and when. Our scientists are concentrating on the mechanics of the physical world, which is probably why they call it “Quantum Physics” or “Quantum Mechanics”. The scientist expresses much of his explanation in mathematical terms, a system, which we will avoid to some degree, but as already mentioned mathematics is the language of nature. The Kabbalist is more concerned with why, as he already knows whom. As we reconcile the two schools of thought and analyse the similarities we may all come to a deeper grasp of the universe and our place in it.

The statement, “quantum mechanics shows that the world may not exist apart from us” indicates the physicist’s acceptance that our perception influences reality. This fits in well with the Kabbalah concept that to change a line in the Torah could alter the future of the world. Everything we experience of the world is experienced internally, sight is the result of light entering the eyes and sound is recognised by vibrations entering the ears. Even touch is registered by pressure on the skin being detected by nerves inside the body, as are taste and smell. This is why philosophers have asked for aeons, “How do we know reality exists?” The real question is how much really exists and how much is simply our interpretation of the various forces that affect our consciousness? The extension of this is, can our consciousness affect matter and energy outside our own body or mind?

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According to Kabbalah we can control much of our world but only with the help of the Creator. A single person can control his own destiny, through proper attitude. But to do greater things requires greater numbers, this is why Jewish teaching says that to make prayer work you need a minimum of ten men over the age of thirteen, this quorum is known as a *minyan* in Judaism. It is probable that this is the reason Jesus traveled with a dozen men, it ensured that he was always accompanied by a *minyan*, which would ensure that his requests to the Almighty were answered. One other relevant aspect of the story of Jesus points to a link to this concept. When he returned to his own town the people knew him but not as a prophet and so his miracles failed. In other words much of his success depended on the expectation of those around him, as if their minds were contributing to the outcome of reality.

In our own time we have seen examples of the expectations of the masses affecting not only opinion, but also the outcome of various ideas. One prime example was the demise of the Berlin wall, as soon as it was mooted that the wall would one day be removed the ground swell of expectation grew to a force attracting crowds, which then began the dismantling. Human emotions are also known to physically affect inanimate objects, with computers being among the most susceptible. Major emotional events can trigger detectable responses in computer networks; two relatively recent events that have shown significant aberration in global computer networks were the death of Princess Diana and the World Trade Centre attack (9/11). We can now establish that the human mind does in fact affect the material world, we just do not yet know to what extent. All science is based on reproducible results. No matter how outlandish an idea is, it will be accepted if it holds up experimentally, these events show that not only

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experiments but also everyday events can help to substantiate scientific theories.

Quantum mechanics deals with subatomic particles but before we can explore the subatomic world we need to examine how we came to this domain. The word atom comes from Ancient Greek and means indivisible but the ancient Greeks thought that there were only four types of atom and that these were made of Earth, air, fire and water. Modern understanding of atomic structure did not occur until the early nineteenth century when an English chemist, John Dalton proposed his atomic theory and in 1811 the Italian physicist Amedeo Avogadro drew the distinction between atoms and molecules. Avogadro's differentiation reconciled many contradictory experimental results and set the stage for chemists to identify different elements and compounds and to begin to understand atomic structure.

Initially scientists envisaged atoms as a nucleus with electrons attached as though on jiggling springs but this model was unable to account for some experimental results and so the planetary model was adopted with electrons orbiting the nucleus as planets orbit the Sun. Today we know that an atom is mostly empty space, if we could imagine an atom the size of a football field the nucleus would appear as some grains of sand in the centre and the electrons would be like specks of talcum powder floating around the boundary line.

This is a rather simplified concept of atomic structure for a subatomic "particle" is not a particle like a grain of sand or a speck of powder. At the subatomic level, mass and energy change unceasingly from one state to the other. Physicists are so conversant with this occurrence that they regularly measure the mass of particles in energy units. According to Einstein's Special Theory of Relativity mass is energy and

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energy is mass so that there is no need to differentiate. Scientists have also discovered that particles seem to create and annihilate ceaselessly when particles collide more and new particles are created the energy of the collision creates new “mass”.

The structure of an atom is more complicated than this as scientists discovered when they developed the science of spectroscopy. When light is passed through a prism the refraction causes the light to separate into various wavelengths, or colours. When the light passes through one side of the prism the different wavelengths of light bend at slightly different angles so that they strike the opposite side of the prism at different positions and as they emerge are angled even further apart creating a rainbow effect. Rainbows are created in just this manner as the sunlight passing through raindrops diffracts into its various wavelengths. However, not every spectrum is complete, if we were to heat the chemical mercury for instance until it was incandescent its spectrum is far from complete. When we pass this light through a prism we only see three red lines and three yellow (two of which are so close that they almost appear as one thick line). If we were to pass white light through mercury vapour we would find black lines corresponding to the red and yellow lines in the mercury spectrum, these are called absorption lines.

It seemed logical that these spectral and absorption lines would relate to atomic structure, but the simplest of all atoms, hydrogen, seemed to dispute this. The hydrogen atom has one proton and one electron but has over one hundred lines in its spectrum. The Danish physicist Niels Bohr solved the problem in 1913 and earned himself a Nobel Prize. Bohr speculated that electrons revolve around the nucleus of an atom in distinct orbits, which cluster into groups called shells that are specific distances from the nucleus. Theoretically

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there are an infinite number of shells, each able to contain a limited number of electrons. If the atom has more electrons than the first shell can contain then the electrons begin to fill up the second shell, once the first and second shells limit has been exceeded the third shell begins to fill and so on. Elements with filled electron shells are inert and do not combine readily with other elements, but elements with gaps in their outer shells have a high valence and combine easily with other elements.

The innermost shell contains just one orbit and can contain only two electrons; the second shell contains two orbits and can therefore accommodate eight electrons. A table showing a summary of the shells and the number of electrons they can accommodate looks like this:

Shell N ^o .	1	2	3	4	5...
N ^o . of electrons	2	8	18	32	50...

Using the hydrogen atom with its single electron as an example Bohr's theory states that the electron stays as close to the nucleus as it can, that is it is usually in the first shell. This is what we call the "ground state", as it is the lowest energy-state of an atom. If we excite the hydrogen atom we cause its electron to jump to one of the outer shells, how far it jumps depends on how much energy is introduced. Small amounts of energy will make a small jump but if we add a lot of energy the electron may jump all the way to one of the outer shells. But as soon as it can the electron returns to a shell closer in, eventually coming all the way back to the first shell, at each jump from an outer shell to an inner shell it emits energy in the form of light. The energy emitted is equal to the amount of energy absorbed when it jumped outward initially. Bohr discovered that all the possible combinations of jumps the hydrogen electron can make in

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returning to the ground state is equal to the number of lines in the hydrogen spectrum.

The hydrogen electron requires specific amounts of energy to jump from one shell to the next; it needs just that amount no more and no less. White light shining on a hydrogen atom produces whole groups of differing energy packets, but not all of these are suitable those that are suitable can be absorbed causing the electron to jump between shells and create the absorption lines in the hydrogen spectrum. Atoms can exist in the ground state with no additional energy or in an excited state with extra electrons in outer shells waiting for the chance to emit energy and return to the inner shells. The energy required to make an electron jump to an outer shell can be any energy as long as it is in exactly the required quantity, no more no less.

The Kabbalist claims an ability to influence the universe but does not try to do it on his own. In order to generate the correct quantity of energy it takes a group of at least ten men over the age of thirteen (a Minyan) to make prayers work and influence matter (the universe). We might at first regard this as superstition but there are documented experiments, which indicate the probability that a group dynamic can create physical results. Buddhist Monks in Tibet reportedly can create a being using nothing but their minds, the “being” they create has no body and is therefore only seen as a “spirit”. Entities created by the power of thought could explain many of the “demons” which have pursued mankind throughout history. In Jewish mythology the Golan is a creature, which a trained Rabbi creates by animating a clay figure to be the guardian of a community.

In the 1970's an experiment was conducted in Toronto, Canada and has been well recorded in the annals of parapsychology *. The participants set out to create their

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own new being and demonstrate the power of the mind. The measure of success achieved demonstrated that the principles, which we do not yet understand, do apparently work. The degree of success may well depend on the abilities of the participants. The technique requires a group dynamic and is not thought to work with just the thoughts of a single person, although some poltergeist experiences might refute that notion. It is undeniable that the mind can generate physical manifestations just how useful these might be is yet to be ascertained. It does appear that at least in this aspect science and Kabbalah are in agreement.

The ability to produce physical reactions using the power of the mind alone may be as simple as generating sufficient discrete amounts of energy of the right size to induce an electron to change from one shell to another. Scientists have demonstrated that any form of energy can cause an electron to leap to another shell heat, light, motion and so on, it is therefore assumable that the energy of human thought may be able to do the same. The amount of jumps generated by a single mind may be few but in concert we should be able to do much more. In later chapters we will also examine a link to the strong atomic force, which has an equivalent in Kabbalah where it is believed to have both a physical and a spiritual manifestation.

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Chapter 2

Waves and Particles

In 1803 scientists became convinced that light traveled in waves, just like the ripples we see when we throw a stone into a pond. In that year Thomas Young had devised an experiment to demonstrate the nature of light. His experiment is known as the double slit experiment, in front of a light source he had placed a screen in which he had cut two narrow slits. When one slit is covered the light passing through the open slit shines onto a white screen, just as we would expect – showing a single pool of light. However when both slits are opened the projection on the screen does not show two spots of light, as we would anticipate, instead we see a centre band of bright light flanked on either side by bands of fainter light and darkness.

The reason for this phenomenon is a well-known occurrence of wave mechanics and is known as interference. The interference patterns happen when the waves of light diffracting from the two slits interfere with each other, in some places overlapping and reinforcing and in other places canceling each other. To understand how this happens we can think back to our stone in the pond analogy, if we have a barrier across the pond and that barrier has an opening which we can increase or decrease a couple of outcomes are possible. If the opening is larger than the wavelength of the ripples, that is the distance between the crests of the ripples, then the waves can pass through unimpeded. However if the width of the opening is smaller than the wavelength the waves coming through will fan out in a D shape.

When two narrow openings (slits) are close together the D shape wave patterns overlap. In places the crests of the waves coming through the two slits overlap and reinforce

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each other and where the crest coincides with a trough they cancel each other. Young had successfully demonstrated that light is made up of waves, but that is not the end of the story. In the early 1900's along came another scientist by the name of Albert Einstein and proved that light is made of particles called photons. Einstein explained the photoelectric effect, which is the ejection of electrons from a metal when struck by light or X-rays, by theorizing that photons are absorbed by electrons that gain their energy.

Photon energy has to be more than enough to free an electron from the forces binding it to the metal demonstrating that light must have more than a threshold frequency to be able to cause the emission of electrons. This also explains why a greater intensity of light causes the emission of more electrons, but the energy of individual electrons does not increase with the greater intensity of light. The reverse has also been demonstrated in that, by introducing additional electrons metal can be stimulated to emit light. It was this discovery that won Einstein the Nobel Prize for Physics in 1921.

The photon theory of light was further demonstrated in 1923 by the US physicist A H Compton, who studied the scattering of a beam of X-rays by solid matter. Compton used carbon because its electrons are less tightly bound to its atoms than are those of many other elements. He discovered that the scattered radiation consists of two wavelengths, modified and unmodified, indicating that there are two distinct ways in which the X-rays are scattered. Unmodified photons are seen as having been scattered by those electrons, which are tightly bound to the atom, and the modified photons by the more loosely bound electrons. Compton showed that the photons have both energy and momentum his theory also predicted the angle of scattering and the effect on the scattering electrons.

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Einstein's work on the photoelectric effect and the Compton effect point to the existence of photons of energy $W=h\nu$, and of momentum $p=h\lambda^{-1}$. The connecting link between W and p , which describes the particle effect, and ν and λ which describe the wave aspect, is the Planck constant h .

Young has proved that light is made of waves of energy but Einstein, using Planck's discoveries, has shown that light is made of particles, now if this sounds confusing it is about to get worse. We return to Young's double slit experiment and replace the screen with a photographic plate, which can record a single photon. We then cover one slit and emit a photon, which passes through the slit and strikes the photographic plate in a place, which would have been a dark band if both slits were open, but when both slits are open it will not strike this spot. The question is; how does a photon know if the other slit is open or not?

Another experiment popular among quantum physicists involves placing a drop of ink in a beaker of glycerin. When the beaker is swirled in one direction about three times the ink dissipates and mixes with the glycerin, no surprise there. The surprise comes when we swirl the beaker the same number of times in the opposite direction; the ink separates from the glycerin and returns to its original position as a single drop. How could the atoms, which make up the drop of ink, know where the other ink atoms are, or remember how or where they started before the beaker was swirled?

Science is currently unable to adequately explain the results of these experiments, but an explanation may be found in Kabbalah and other religious or mystical teachings. Earlier I mentioned "Holy Sparks" as the tools of the Almighty's creation, but now we need to look at the nature of these sparks or, in scientific language, quanta. Many religions and

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philosophies speak of the Creator as a spirit or force and use words like omnipotent and omnipresent without giving due consideration to what these words truly mean.

The Kabbalist studies scripture in order to ensure that he fully understands the real meaning, a prime example of how words can sometimes be interpreted in different ways is the first line of the Shema, the most important Jewish prayer recited every morning and evening by devout Jews. This prayer is found in the Bible at Deuteronomy 6:4, the King James Version interprets the first line of this prayer as "... The Lord our God is one Lord:" In the Torah the original Hebrew says, "A-do-nay Ehad" which translates as, "The Lord is One", it could also be translated as "There is Only the Lord". In this context the phrase means that the Creator is in all creation, the Holy Sparks, the energy that makes up every atomic particle and every photon, is part of the Creator.

It now becomes easier to see why science is having difficulty understanding the behaviour of atomic particles and photons; it is because they have perceived them as inert unconscious matter/energy. We can now see that this is a simplistic and materialistic view of something that is beyond what we can scientifically discern and the reasons for this we will examine in the next chapter. The mysterious behaviour of photons and atomic particles and their apparent ability to communicate instantly at a distance, and to remember, is more understandable if we regard them as parts of the Creator. Who is a living conscious being residing in a dimension which exists beyond normal space and time, a concept that we will also explore later in this book.