God, GUTs and gurus: the new physics and New Age ideology

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Introduction

In 1975 the physicist Fritjof Capra wrote,

> Although we are still lacking a complete quantum-relativistic theory of the sub-atomic world, several partial theories and models have been developed which describe some aspects of this world very successfully. A discussion of the most important of these models and theories will show that they all involve philosophical conceptions which are in striking agreement with those in Eastern mysticism (Capra 1986, p. 227).

He was not the first physicist to say this kind of thing, but his book struck a chord with a generation which had lived through the counter-culture of the 1960s with its turning to the East for spiritual inspiration. Soon more popular books were being written expounding the same theme, one of the better known being *The Dancing Wu Li Masters* written by a non-physicist, Gary Zukav. This claimed link between what is called 'the new physics' and eastern mysticism is appealed to by exponents of New Age ideology as evidence in favour of their world-view. One example is the New Age popularizer Shirley MacLaine, who refers to it in her spiritual autobiographies.

> Quantum physics was saying that what we perceive to be physical reality was actually our cognitive construction of it. Hence reality was only what each of us decided it was (MacLaine 1986, p. 337).

> As the new physics and the ancient mystics now seemed to agree — when one observes the world and the beings within it, one sees that we are in fact only dancing with our own consciousness. Everything we feel, think and act upon is interrelated with everything everyone else feels, thinks, and acts upon. We are *all* participating in the dance (p. 420).

So, what is the new physics? In what ways is it supposed to support New Age ideology? How valid are the claims that it does so? What implications does this have for Christian theology? These are questions I will try to deal with in this paper in what can be only a brief and introductory way.

The new physics

The early decades of this century saw a revolution taking place in physics. To a large degree the foundation and inspiration of physics from 1700-1900, what is now called 'classical physics', was provided by the work of Isaac Newton. This produced the 'mechanistic paradigm' in which the universe was viewed as one vast mechanical system operating according to exact laws capable of mathematical expression. Two theories which were formulated around 1900 shattered this paradigm — the theory of relativity and quantum theory — and gave rise to the new physics.

Relativity

Albert Einstein put forward the theory of relativity because of a strange observation made by physicists when measuring the speed of light. When driving on a road where everyone is travelling at 60-70 mph, a car coming up from behind to overtake us appears to be travelling much more slowly than one which is approaching us at the same speed. This is because the speeds at which the two cars are travelling *relative to us* are very different. The one overtaking us is approaching us at only a few mph whereas the other one is approaching us at a relative speed of over 120 mph. Since the earth is travelling rapidly through space as it revolves around the sun, physicists expected that the speed of light would appear to vary according to the direction in which it was measured relative to the direction of the earth's motion. However, they consistently failed to detect any such apparent variation. This led Einstein to propose that the speed of light is always the same *relative to any and every 'frame of reference' used for the measurement.* He also proposed that nothing can travel faster than light.

These two seemingly simple propositions have some very profound and surprising implications. We will consider only two. The first is the understanding of space and time. According to the theory of relativity time can no longer be regarded as an independent entity separate from the three spatial dimensions of length, depth and height. Instead we have to think in terms of a unified, four-dimensional space-time. According to the classical view events *happen* in three-dimensional space and *develop* with the passage of time, which flows in one direction. According to the theory of relativity, says Zukav,

> it is preferable, and more useful, to think in terms of a *static*, non-moving picture of space-time. . . . In this static picture, the space-time continuum, events do not develop, they just are. If we could view our reality in a four-dimensional way, we would see that everything that now seems to unfold before us with the passing of time, already exists *in toto*, painted, as it were, on the fabric of space-time (1982, p. 172).

Therefore, some argue, ultimate reality is a timeless unity, as eastern mystics have always claimed.

Moreover, if the speed of light is the same whether measured when travelling at one-tenth or at half the speed of light the difference must lie in the measuring instruments. Put crudely, the ruler must change its length and the clock must run at different rates at the two speeds. This leads to the 'twin paradox'. If one of a pair of twins leaves the earth in a rocket and travels at close to the speed of light for some months, when he returns to earth his twin will be several years older than he is, since time passes more slowly when measured on the faster-moving frame of reference. This variability of the dimensions of space-time with the motion of the frame of reference leads Capra to conclude that there is no such thing as absolute space and time, rather space and time 'are nothing but names, forms of thought, words of common use' so that they 'are now reduced to the subjective role of the elements of the language a particular observer uses for his or her description of natural phenomena' (1986, p. 183). Capra considers that there is a striking similarity between this relativistic notion of space-time and reality experienced by eastern mystics when they attain 'non-ordinary states of consciousness in which they transcend the three-dimensional world of everyday life to experience a higher, multidimensional reality'. In these states they are aware, he says, of the interpenetration of space and time (1986, p. 189).

What are we to make of this claimed coincidence between the relativistic and mystical views of reality? The following points need careful consideration.

1. It is, to say the least, over-simplistic to equate the relativistic space-time continuum with the timeless unity experienced by the mystic. Space-time, as Zukav notes (p. 172), is a mathematical construct. All scientific concepts like this are only 'models' of physical reality. One hopes that, as one model replaces another, we are progressing towards a better understanding of the reality we are studying. But is the physical reality which is represented by the model of space-time the same as the spiritual reality experienced

by the mystic? Capra, and others, simply assume that it is. To do this is to make a jump from physics to metaphysics without giving any justification for the move, or even explicitly admitting that this is what is being done.

2. Capra's view that the theory of relativity requires a subjectivist interpretation of space and time is not universally accepted. The philosophical implications of the theory are still very much a matter of debate.[1] There are those who argue that absolute space-time does exist independently of any observer. His assertion (1986, p. 205) that 'space and time are fully equivalent' is particularly open to question. The fact is that we can move freely in space but not in time. Direction in time does not seem purely subjective or conventional.

3. Richard Jones, among others, has criticized the way Capra appeals to eastern mysticism (Jones 1986, pp. 201-204). He draws selectively on those concepts which suit his purpose but ignores others, equally important to a proper understanding of eastern mysticism, which do not fit the scheme he wants to portray. He may also be open to the criticisms that he too readily finds modern concepts in eastern mysticism. Jones asserts that 'there is no conception in classical India of space and time combined or of either time or space as an especially fundamental reality' (p. 184). One would never guess this reading Capra!

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So, Capra is taking a disputed metaphysical interpretation of the implications of the theory of relativity and equating it with a selective, and therefore questionable, reconstruction of the eastern mystical world-view in modern terms. We shall see that much the same can be said of the other examples we shall look at of claimed coincidence between the new physics and eastern mysticism.

The second implication of the theory of relativity with which we shall deal is summed up in what is probably one of the best known scientific equations:

$$E = mc^2$$

E stands for energy, m for mass and c is the speed of light. The equation states that mass and energy are inter-convertible. It was the key which unlocked the door to the use of nuclear power. Experiments in high-energy particle physics have verified this equation. The physicists who study sub-atomic particles have got used to the fact that not only can particles be converted into, or created from, energy but also one kind of particle can be converted into another with the absorption or emission of energy.

Both Zukav and Capra make much of this equivalence of matter and energy.

> In the East, however, there never has been much philosophical or religious (only in the West are these two separate) confusion about matter and energy. The world of matter is a relative world, and an illusory one: illusory not in the sense that it does not exist, but illusory in the sense that we do not see it as it really is. The way it really is cannot be communicated verbally, but in the attempt to talk around it, eastern literature speaks repeatedly of dancing energy and transient, impermanent forms. This is strikingly similar to the picture of physical reality emerging from high-energy particle physics (Zukav 1982, p. 177).

> Like modern physicists, Buddhists see all objects as processes in a universal flux and deny the existence of any material substance (Capra 1986, p. 226).

Here again we are faced with a simplistic shift from physics to metaphysics. Both writers imply that matter is somehow unreal, and indeed at times refer to matter as 'nothing but' or 'only' energy. However, this is not implied in Einstein's equation, which says nothing more than that matter can be converted to energy and *vice versa*. It is true that one leading theory in particle physics, quantum field theory, describes sub-atomic particles in terms of the interaction of energy fields. This does not mean that material particles are unreal. Rather, the theory shows that *both* the energy field and particle interpretations of sub-atomic reality are valid. Which is appropriate depends on the kind of question one wants to ask about that reality (Polkinghorne 1986, pp. 84, 108). In any case, why should matter, seen as a form of 'frozen' energy, be any less real than energy? Also, energy can be seen as 'nothing but' matter which is 'unfrozen'. Which is more real or more fundamental, ice or water? All in all, it is claiming too much to say that modern physics necessarily leads to the denial of the existence of material substance.

The claim that eastern mysticism and the new physics support each other because both tell us that we do not see the material world 'as it really is' is a trivial one. The pertinent point to consider is whether the mystic and the physicist agree about 'how it really is'. Jones denies that this is the case (Jones 1986, pp. 185f.). Among other things, he points out that mystics do not see energy fields but experience 'a blending of objects in the sense that boundaries are less noticed in the light of impermanence and the common experienced being-ness'. Moreover, this being-ness is something that is *felt* as a change in experience, not an abstract concept neutral to experience which can be expressed mathematically.

Quantum theory

Like the theory of relativity, quantum theory arose out of an attempt to explain experimental results which did not accord with the predictions of classical physics. In this case it was the distribution of energy radiated (*e.g.* as heat and light) by hot objects. There was always far less high-energy radiation than predicted. Max Planck found that this could be explained if energy is not emitted in just any quantity but in 'packets' (later called *quanta*) of specific amounts. The amount in a particular quantum depends on the wave length at which the energy is emitted. Once again, an apparently simple proposal had far-reaching implications. We will restrict our discussion to two of them.

Werner Heisenberg showed that the quantization of energy puts limits on what we can know about atoms and sub-atomic particles. For example, we cannot know at one and the same time both the exact position of a particle and its exact momentum (a measure of its velocity). The more accurately we know one, the less accurate is our knowledge of the other. This is Heisenberg's 'Uncertainty Principle'. As a result we can talk about such things as the position or velocity of such particles only in terms of probabilities. Erwin Schrödinger developed a form of quantum theory called 'wave mechanics' which treats all sub-atomic phenomena in terms of the mathematics of waves, in this case waves of 'probability'.

Wave mechanics fitted in with another physical puzzle. By the end of the nineteenth century light had come to be thought of as a wave of energy because this seemed the best way to explain its properties. Quantization of energy into discrete 'packets', however, suggested that it should have particle-like properties. Soon this was shown to be the case in certain situations. The light particles were named 'photons'. To add to this puzzle it was found that electrons, initially regarded as particles, sometimes behave as if they are waves of energy! Wave mechanics (and, even more so, quantum field theory) provided a mathematical way of describing this dual wave/particle behaviour. However, physicists had to accept that some phenomena can be understood adequately only in terms of mutually exclusive but complementary 'models' – in this case the models of particles and waves. Because they are mutually exclusive both pictures cannot be applied at one and the same time.

What determines whether an electron behaves like a wave or a particle? One answer is that the experimental set-up we use to observe it determines this. In other words, *how* we look at it determines *what* we see. A similar question applies to its position, given the Uncertainty Principle. If there are finite probabilities of it being in several different positions, what determines the fact that we see it at one particular position? Again, some suggest that the very act of observing it 'fixes' it at that position. It is argued from this that since it is humans who decide what to observe and how to observe it, human consciousness plays a part in determining how the world is. As Capra puts it, 'The electron does not *have* properties independent of my mind' (Capra 1985, p. 77). Humans are participators in the creation of reality. This leads Michael Talbot to claim,

> For centuries the mystic has asserted that matter and consciousness are different aspects of the same *something*. For all those who

> have spent their lives trying to penetrate the secrets of matter, the new physics has a message, not a new one, but one that may well turn out to be the most important rediscovery humankind has ever made . . . the message of the new physics is that we are *participators* in a universe of increasing wonder (Talbot 1981, p. 42).

There are various difficulties in the position adopted by Capra and Talbot. One is that it is only one of several possible interpretations of the implications of quantum theory.[2] In particular, it can be argued that they have confused *the act of observation* with *the consciousness of the observer* and that it is the influence of the measuring apparatus, not the mind of the observer, that affects the result obtained. For example, it is argued, is it really credible that a photographic plate exposed and then put away uninspected does not have a definite image on it until someone looks at it? It is possible to explain on quantum mechanical terms how and why the apparatus should have an effect on the measurement, without involving the consciousness of the observer.

Secondly, this position faces all the problems of an idealist philosophy. In particular it is solipsistic. The only world I can know about is the one I experience/create. Yet one of the characteristics of science is that experimental results are only acceptable if they can be repeated by any experimenter anywhere who follows the set experimental procedure. For the 'participator' view this would have to include the consciousness of the original experimenter!

Once again there is the question whether the kind of interaction between consciousness and matter posited on the basis of quantum theory is really the same kind of thing the eastern mystics talk about. Jones concludes that it is not. He finds that none of the ideas based on quantum theory of how consciousness affects what is observed can be compared with the mystical concept of creation by awareness. Also he points out that causing a world (which is the mystical view) is different from causing only a limited number of events within a world (which, strictly, is what is proposed in relation to observing quantum events) (Jones 1986, pp. 192-194).

Pantheistic monism removes any basis for giving special value to humans as against any other forms of life, or indeed non-life.

The second implication of quantum theory with which we shall deal is often called 'Bell's theorem', after one of the physicists who has studied it, although it was in fact Einstein and some of his co-workers, Podolsky and Rosen, who first raised the matter. The essence of the matter can be understood by considering the behaviour of snooker balls. When the cue ball strikes another the two balls move off in different directions. Their motion is not random, but obeys the laws of action and reaction. If the momentum of the cue ball before the collision is known, then measurement of the momentum of either ball after it enables the momentum of the other to be calculated without it needing to be observed. The laws of action and reaction apply to quantum particles. This ought to mean that if, after two particles have interacted, the momentum of particle 1 is measured, that of particle 2 can be deduced. This measurement will render the position of particle 1 uncertain but, since the momentum of particle 2 has not been measured directly, its position can be measured accurately. If this is done at the same time that the momentum of particle 1 is measured, both the position and momentum of particle 2 have been measured accurately, so circumventing the Uncertainty Principle. However, this argument makes two assumptions.

1. First, it assumes that a measurement made on a particle in one place cannot instantaneously affect a particle in another relatively distant place. This is called *the locality principle.* One reason for assuming this is that all normal physical effects are brought about by transfer of energy or information in some form and, according to the theory of relativity, this cannot happen at a speed faster than that of light. Though large, this is finite.

2. Second, it assumes that such things as 'position' and 'momentum' have an objective existence even when not observed. This is called *the reality principle.*

What Bell did was carry out the mathematical analysis which provided the basis for an experimental test of whether or not these two assumptions hold true for sub-atomic particles. The answer is that they do not. The results of the experiment mean that one of the assumptions must be invalid. Most physicists prefer to dispense with the locality principle, at least with regard to quantum systems. This means that once two sub-atomic particles have interacted with one another they are ever afterwards part of a single quantum system. As a result if, for example, the momentum of one of them is changed, the momentum of the other will change also *instantaneously.* This will happen even if they are at opposite ends of the galaxy. The shocking thing about this is that it means that something other than normal 'cause and effect' is operating in quantum systems, though we cannot (yet) describe or define just what it is.[3]

Zukav concludes that Bell's theorem shows that,

> what happens here is intimately and immediately connected to what happens elsewhere in the universe, which in turn, is intimately and immediately connected to what happens elsewhere in the universe, and so on, simply because the 'separate parts' of the universe are not separate parts (Zukav 1982, p. 315).

In other words, the universe is one single, interconnected wholeness and the 'separate parts' into which we divide it are unreal — as the eastern mystics have told us all along.

The existence of instantaneous action at a distance is not the only possible interpretation of Bell's theorem,[4] though it is the most widely accepted. A more fundamental criticism of the claim that the theorem, and other aspects of quantum theory, validate the mystical world-view is made by Jones.

> There is a fundamental difference of scope: mystical wholeness involves all of reality, especially the experiential level, while scientific theories deal only with very limited specified ranges of phenomena on subatomic levels. Expanding the scientific theories into metaphysics by means of analogies (with its accompanying problems) would cost at least the mathematical refinement of science, if not more (Jones 1986, pp. 190f.).

The same point is made by Clifton and Regehr when, after pointing out that Capra's appeal to the Bell theorem involves a jump from what happens in sub-atomic physics to the whole of reality, they comment that,

> There are a number of problems with this mixing of micro- and macroscopic levels of physical reality portraying them as bearing essentially the same features. . . . Clearly on a macroscopic level objects remain separate for physicists and, if anything, this is an argument against what mystics claim (Clifton and Regehr 1989, p. 71).

Jones refers to the use of analogies by those who claim that the new physics supports the mystical view of reality. One analogy which is often appealed to in tandem with Bell's theorem is that of the hologram. A hologram is produced by two beams of laser light, one striking a photographic film directly, the other being bounced off a three-dimensional object. When the developed film is illuminated by the same type of laser light an image of the original object in three dimensions is produced. Moreover, only a small part of the film needs to be illuminated, showing that this small part contains the information of the whole. This, it is argued, supports the mystical view that the totality of reality is 'in' each part and that everything is intimately interconnected. There are a number of weaknesses in this analogy.

1. As a hologram is cut into smaller and smaller fragments there is a loss of clarity of the image. Eventually no image can be produced at all. According to the mystics the whole of reality is fully 'encoded' in each fragment, however small.

2. What corresponds to reality in the analogy is not really the photographic plate but the plate plus the necessary apparatus to reproduce the image, which has no parallel in the mystical view.

3. The hologram does not contain information about itself but about a separate objective reality. For a strict analogy to hold the reality experienced by the mystic as 'in' each fragment of reality would have to be the copy of another real universe.

Some theological reflections

The concept of God held by advocates of the New Age and which, it is claimed, the new physics supports is a pantheistic monism.

Ultimate reality is taken to be a unified, undifferentiated consciousness. This, of course, stands in total contrast to the Christian trinitarian monotheism. The Christian doctrine was formulated in a religious *milieu* which included pantheism, *e.g.* in Stoicism. Insistence on the doctrine of *creatio ex nihilo* was one way of ruling out pantheism, since it asserts that God exists separately from the world, which is his creation and exists only because he wills it to, and is not dependent on it for his existence. Although we must be as firm in opposing New Age pantheism as the early church was, we must be careful not to overreact. There has frequently been a deistic tendency in orthodox Christianity which has led to a greater stress on God's transcendence than his immanence. This is not biblical, and we need to have effective ways of holding together and expressing the two truths of God's separateness from his creation and his intimate and continuing involvement with it.

The main concern of the New Age thinkers, however, seems not to be theology but anthropology. What attracts them to pantheistic monism is that they find in it a basis for asserting the dignity and value of human beings because, since everyone is an expression of the ultimate reality, each individual is divine. As one of Shirley MacLaine's gurus put it, the truth which she needed to grasp was that of 'each soul's responsibility for its own behaviour in the realization of its own divinity' (MacLaine 1983, p. 205). There are some inconsistencies in this position which its advocates seem to ignore. One is that, taken to its logical conclusion, pantheistic monism removes any basis for giving special value to humans as against any other forms of life, or indeed non-life. All are either expressions of the one ultimate reality, or else unreal creations of my mind. Secondly, for some, the quest to realize their own divinity leads to a narcissism which results in a lack of concern about the well-being of others.[5] The biblical teaching that humans are special because made in the image of God provides a much more coherent basis for a true 'humanism' than does New Age ideology.

Capra *et al.* who appeal to the new physics to support New Age ideology claim that it reasserts the human dignity which the 'Newtonian paradigm' destroyed by its clockwork view of the universe. This made humans nothing but robots programmed by the impersonal laws of physics. The idea that the consciousness of the observer affects the matter which is observed (at least at the atomic level), they claim, provides a way out of the mechanistic straitjacket. It reinstates consciousness as something 'real' and suggests a basis for the idea of freewill. This, however, is not at all clear. If, as they at least imply, the energy fields of quantum theory are the ultimate reality, consciousness is still determined by the laws of physics. If appeal is made to the probabilistic nature of these laws as understood in quantum theory, it must be pointed out that this does not provide a basis for belief in free, rational behaviour. Instead, it suggests random, irrational behaviour. The early modern scientists had a more coherent basis for their belief in human rationality and ability to understand the physical world in Christian theology, which led them to the conviction that they could, and did, think the creator God's thoughts after him as they did their science.[6]

New Age ideology, like all pantheistic monism, concludes that evil is illusory. The real problem is *ignorance* of our innate divinity. What we need is not a moral transformation but an alerted state of consciousness. It is probably at this point that evangelicals will have most difficulty in dialogue with New Age adherents. Evangelicalism has not been strong on mystical experience or theologizing about it. What are we to make of the mystical experience of oneness? I can only make some tentative suggestions.

It is tempting to dismiss it as illusory, either self-induced or a demonic deception. This may indeed be the explanation of it in some cases. Another possibility is that the mystic is experiencing the unity of God's creation, of which humans are a part. I do not think that the interrelated oneness of all (physical) things which does seem to be demonstrated by the new physics is at all surprising for a Christian. If the universe is the creation of the one and only Creator, who is both wise and faithful, and is constantly kept in being by him, I would expect there to be a fundamental coherence and unity about it. Moreover, the Christian concept of God as trinity asserts that God is in himself a harmonious interrelationship of persons. Surely his creation will reflect something of this as it reflects his glory? The whole scientific endeavour is based on the assumption of a harmonious unity in the physical world. In each discipline there is a search for over-arching unifying concepts and theories. Historically, it has been when such concepts and theories have been found that science has developed most rapidly. That is why today some physicists are busy trying to develop a Grand Universal Theory (GUT) which will unite quantum theory and the theory of relativity and be, as some put it, 'a theory of everything'. If the mystic is experiencing the harmony and unity of God's creation this can rightly lead to a sense of awe and wonder which stimulates worship of God. However, to go on seeking this experience of oneness *for itself* is to take the road to idolatry, to put the creation in the place due to the Creator.

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Finally, the mystic may have a genuine experience of God, who is one. However, I question whether this is so when the experience is said to lead to a loss of personal identity. The biblical picture of God is of trinity – diversity in unity – not undifferentiated oneness. One biblical picture of our relationship with God is that of human lovers, husband and wife. In such a relationship there is a unity which comes from each giving themselves to the other. But there is also an individuality which results from each accepting and affirming the other's worth. Indeed, as beings made in the image of God we only truly find ourselves in finding a personal relationship of love and obedience towards God. In this we are affirmed in our individuality because we discover how much we are worth to God. His valuation of us has been declared by the sacrifice at Calvary.

[1]See the brief discussion and bibliography in R.K. Clifton and M.G. Regehr, 'Capra on Eastern Mysticism and Modern Physics', *Science and Christian Belief*, 1(1989), pp. 53-74.

[2]For a fairly simple discussion of these see J. Polkinghorne, *The Quantum World* (Harmondsworth: Pelican, 1986), pp. 60-69.

[3]For a popular discussion of the Bell effect see J. Gribben, 'The man who proved Einstein was wrong', *New Scientist*, 24 November 1990, pp. 43-45.

[4]See the discussion in J. Polkinghorne, *The Quantum World*, pp. 70-77.

[5]See, for example, MacLaine's explanation of why she gave up socio-political activism in *Dancing*, p. 109.

[6]On this see S. Jaki, *Science and Creation* (Edinburgh: Scottish Academic Press, 1974); C. Russell, *Cross-Currents* (Leicester: IVP, 1985).

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