

The Future for Theology in a Scientific Age¹

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Resumo

Neste trabalho são analisadas as presentes debilidades da religião – da teologia e da sua formulação intelectual – no seio da sociedade ocidental bem como o debate acerca da necessidade de uma teologia mais aberta que tenha em conta as perspectivas científicas. Sustenta-se que um melhor conhecimento de Deus e da Sua relação com o mundo decorrerá dessa prospecção, abordando-se parcialmente as suas ligações a alguns modelos tradicionais. Por fim, são analisadas as implicações dessa abordagem para o futuro da teologia..

In May 1936, T. S. Eliot visited the 17th-century chapel of Little Gidding, a small village in Huntingdonshire, England, and later he composed the last of his influential *Four Quartets*. The poem, entitled *Little Gidding*, is a profound reflection on the significance of time in the divine purpose and four lines provide the *leit-motif* of this lecture:

We shall not cease from exploration
And the end of all our exploring
Will be to arrive where we started
And know the place for the first time.

(T.S. Eliot, *Little Gidding*)

His experience, and mine later in the same chapel, ground my hope for the track I shall be following here. For science is one of the major spurs goading believers in God into new paths for expressing their beliefs and commitments. In the exploration from the world of science towards God although the ride may be bumpy (for not all Christians will necessarily

concur with what emerges), the goal is in itself unchanged. It is simply to God's own self. If indeed God exists, is at all, the honest pursuit of truth cannot but lead to God. It will not be God who has changed in our quest but we in our perception and experience of the divine.

I. The present state of religious beliefs (and so of theology) in relation to science.

In the last 30 years, the momentum of the dialogue between theology and science has increased enormously — though whether its impact on theology and public religious belief has yet had the enlightening effects we all hoped for we shall have to consider later. There are nevertheless some encouraging signs in the world of science itself. For recently, in 1997 and 2001, widely and sympathetically publicised conferences in Berkeley² and Boston, USA, brought to the platform two dozen leading scientists to talk about their spiritual quests as Muslims, Jews and Christians and even seeking-agnostics. There was a striking shared sense of wonder in their attitudes to the natural world which itself fired their individual spiritual paths. The quests for *intelligibility*, in science, and for *meaning*, in religion, can apparently work together, even though this has not been the popular perception for the last 150 years. Many felt what Carl Sagan had so well expressed:

“How is it that hardly any major religion has looked at science and concluded, ‘This is better than we thought! The Universe is much bigger than our prophets said, grander, more subtle, more elegant’? Instead they say, ‘No, no, no! My god is a little god, and I want him to stay that way. ‘A religion, old or new, that stressed the magnificence of the Universe as revealed by modern science might be able to draw forth reserves of reverence and awe hardly tapped by the conventional faiths’³.

In spite of the attempted corrosions of post-modernist relativities, scientists and religious believers share a common conviction that they are dealing with reality in their respective enterprises. Scientists would leave their laboratories and believers their churches, or mosques, or synagogues, for good if they did not think they were dealing with the realities of nature or of God, respectively.

Yet what I have to say will, in fact, not be *naively* but *critically* realist with respect to both science and theology. Both *aim* to depict reality, both

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use metaphorical languages and models which are revisable in the light of experiments and of experiences. The aim of both is to tell as true a story as possible. Only thus, be it noted, can the religious quest have intellectual integrity, a quality that also demands recognition of the blinkers to our perceptions resulting from the social milieu in which we are embedded. Such a quest for truth about God has acute problems today since the world is perceived totally differently from that which shaped two to three millennia ago the language of the Abrahamic religions, in the Judeo-Christian literature of the Bible and of the Koran.

So how might a contemporary Bible begin? Let me speculate:

Genesis for the Third Millennium (or at least the 21st century)

There was God. And God Was All-That-Was. God's Love overflowed and God said: 'Let Other be. And let it have the capacity to become what it might be, making it make itself. And let it explore its potentialities.

And there was Other in God, a field of energy, vibrating energy but no matter, space, time or form. Obeying its given laws and with one intensely hot surge of energy a hot big bang this Other exploded as the Universe from a point 12 or so billion years ago in our time, thereby making space.

[Vibrating fundamental particles appeared, expanded and expanded, and cooled into clouds of gas, bathed in radiant light. Still the universe went on expanding and condensing into swirling whirlpools of matter and light - a billion galaxies.

Five billion years ago, one star in one galaxy our Sun attracted round it matter as planets. One of them was our Earth. On Earth, the assembly of atoms and the temperature became just right to allow water and solid rock to form. Continents and mountains grew and in some deep wet crevice, or pool, or deep in the sea, just over 3 billion years ago some molecules became large and complex enough to make copies of themselves and became the first specks of life.

Life multiplied in the seas, diversifying and becoming more and more complex. 500 million years ago, creatures with solid skeletons, the vertebrates, appeared. Algae in the sea and green plants on land changed the atmosphere by making oxygen. Then 300 million years ago, certain fish learned to crawl from the sea and live on the edge of land, breathing that oxygen from the air.

Now life burst into many forms reptiles, mammals (and dinosaurs) on land Creptiles and birds in the air. Over millions of years the mammals began to develop complex brains that enabled them to learn. Among these were creatures

who lived in trees. From these our first ancestors derived and then, only 40,000 years ago, the first men and women appeared. They began to know about themselves and what they were doing - they were not only conscious but also self-conscious. The first word, the first laugh was heard. The first paintings were made. The first sense of a destiny beyond - with the first signs of hope, for they buried their dead with ritual. The first prayers were made to the One who made All-That-Is and All-That-Is-Becoming. The first experiences of goodness, beauty and truth - but also of their opposites, for human beings were free.]

I have given (being me) this Genesis, a theistic perspective on cosmic and biological evolution — the 'epic of evolution' has become an 'epic of creation' — but however much *private* revelations of God may be important to an individual, they are no use, being incommunicable, to anyone else. Now science has found a reliable method for establishing *public* knowledge about nature, adequate for its practical and conceptual purposes. Hence the key question is: "Can thinking hard about religious beliefs ('theology'), exercise a method of proceeding of comparable reliability that can carry conviction and even be heard in the cacophony of siren calls from other sources today?" .

All the social barometers indicate that in the formerly predominantly Christian Western world the Christian church is failing to convince more and more people of the validity of its traditional beliefs. Sociological surveys of Britain, Western Europe (e.g., Germany, the Netherlands, Sweden), Canada and Australia record a steady decline in participation in religious (mainly Christian) institutions, and this is beginning to happen also in the supposedly very religious USA, at least in most of the mainline churches and more certainly in the universities. For example, in Britain in the 1990s, two thirds of those in the 18-24 age-group said they had no religion and less than a third reported themselves as having "been brought up religiously at home" — compared with over four fifths of those over 64 years old. In two generations those younger ones will be the elderly and so those of the younger age-group who will have "been brought up religiously" will have dropped to a tenth, if the trend continues.⁴ This decline in religious influence is, not surprisingly, accompanied by a marked increase in scepticism about particular traditional beliefs — for example in a personal God, the divinity of Christ and in 'life after death' (whereas, oddly, belief in reincarnation and in horoscopes has remained steady at about a quarter of the population for three decades!).

I know best my own English scene and I find I have to concur with the diagnoses even of journalists:

“It [the Church] has not been able to develop a working model of a faith in which rational people could wholeheartedly believe.” (John Lloyd, Associate Editor of the *New Statesman*, in *The Times*, Sept. 19th, 1997). Wistful agnostics abound in educated circles!

“Now Christianity seems to matter only at the margins. The past 150 years have witnessed a slow but ceaseless decline. A.N.Wilson’s erudite survey, *God’s Funeral*, charts the loss of faith among 19th-century European intellectuals, Carlyle, Eliot, Spencer, Marx, Darwin: these were the precursors of a great discarding that has gone on ever since, as science effaced belief and rationalism the irreplaceable notion of mystery” (Hugo Young, *Guardian*, 1st January, 2000).

Western society is returning a negative answer to my question. For the Western intellectual world has yet to be convinced that theology can be done with the kind of intellectual honesty and integrity which is the hallmark of scientific thought. In religious circles, some have rejoiced that a recent survey in the USA has shown that 40% of general scientists believe in a personal God (which means 60% do *not*!) but have overlooked the other finding, namely that 93% of ‘top scientists’ do not do so.⁵

Among less exalted circles, I myself detect an increasingly alarming dissonance between the language of devotion, doctrine and liturgy and the way people really perceive themselves to be in the modern world a world they now see in the light of the sciences, especially of that “epic of creation”. Intellectually, educated, thinking people, if they are still attached in any way to the Christian churches of the West, are, as it were, hanging on by their finger tips as they increasingly bracket off large sections of the liturgies in which they participate as either unintelligible or, if intelligible, unbelievable in their classical form — and in the end they vote with their feet, certainly in Europe and, I suspect, will increasingly do so in the USA. Our world is full of wistful agnostics — wanting to believe with integrity, respecting the person and life of Jesus of Nazareth but unable to buy into the traditional ontology and images.

This deep alienation from religious belief, especially among the key formulators of our Western culture, is becoming almost lethal, for such belief has nearly always been based on some sort of authority: The Bible says, the Church says even the theologians say! Educated people know,

have come to believe, that such authoritarian claims are circular and cannot be justified because they fail to meet the demand for validation by an external, universally accepted standard.

I am convinced that that standard can only be reason based on experience, or reasonableness for short. A strong case can be made that the *natural and human sciences* have done just that and have achieved their goal of depicting provisionally and metaphorically the realities of the natural world by *inferring to the best explanation*. This method employs criteria such as *comprehensiveness* giving a unified explanation of a diverse range of facts not previously connected; *general plausibility*, giving the best fit with previously established knowledge; *internal coherence and consistency*, avoiding self-contradictions; and *simplicity* of explanation.

A theology based on these principles would be, as Hans Küng has put it, “truthful, free, critical and ecumenical” an *open* theology, which deals with and interprets the realities of all that constitutes the world, especially human beings and their inner lives. Such an *open theology* has been more generally characterised by my colleague at Oxford, Keith Ward⁶, the Regius Professor of Divinity, as follows:

It will seek a convergence of common core beliefs.

It will seek to learn from complementary beliefs in other traditions.

It will be prepared to reinterpret its beliefs in the light of new, well-established factual and moral beliefs [science and philosophy].

It will encourage a dialogue with conflicting and dissentient views.

And it will try to develop a sensitivity to the historical and cultural contexts of the formulation of its own beliefs [so, science again], with a preparedness to continue developing new insights in new cultural situations.

Such an open theology, I propose, by inferring to the best explanation, could enter the fray of contemporary intellectual exchange and, I am convinced, have a chance of surviving in its own right.

Unfortunately, this is not how theology is currently practised, even in *academe*. Looking at the field today, we find a variety of theological procedures that do not meet those criteria, involving as they do:

Excessive reliance on an authoritative book; and/or excessive reliance on an authoritative community, including that of the academic theological community.

These and other (e.g. *a priori*) practices make it difficult for theology to come to terms with the world, particularly those realities which are

discovered by the sciences. The resources of theology are, indeed, the inheritance of claimed *classical revelatory experiences* (including the sacred books, liturgies, aesthetic experiences, music, architecture, etc.) leading to received orthodoxies. But now the data should include the realities of the world and of humanity discovered by the *sciences* leading, in my view of specifically Christian theology, to a radically revised theology. To these will very soon have to be added the perceptions and traditions of the other *world religions* leading perhaps, one day, to a global theology, but for our present purposes let us focus on the positive enrichment of theology by:

II. Exploring from science towards God (*that is, seeking an open theology which takes account of the world of science*).

The world as perceived by the natural sciences provides vistas, constitutes challenges and raises questions most of which are entirely new, though some go back to the days when the Ionian Greeks first woke up to the world around, some to the discussions between Christian, Jew and Muslim philosophers in 12th-century Cordoba and some to the philosophical reflections provoked by the rise of science since the 17th-century.

Let me try to give you some inkling of the issues and, in somewhat staccato fashion and ludicrously briefly, outline at least the beginnings of those tracks towards God, as it were through the jungle. Oddly, we start with a question that science significantly cannot answer:

“*Why is there anything at all?*”

Whatever the physical milieu (fluctuating quantum field, superstring, or ?) from which the universe expanded 12 or so billion years ago, there is no specific explanation in science of its *existence as such* nor of the laws and regularities it manifests.

We infer that: There is a self-existent Ground of Being (X) giving existence to and sustaining in existence all-that-is

This ultimate reality, X, must in principal have a nature beyond the capabilities of language to state explicitly; hence the need to resort to metaphor, model, analogy and extrapolation.

An exploration starting from the realities of the world as perceived by the sciences has led me to infer (see my last book⁷) — and I present these only as a possible set of inferences to encourage others to undertake a

similar exercise — that the best explanation of all-that-is and all-that-is becoming is an:

Ultimate Reality(X)

God

Who

- is the self-existent Ground of Being, giving existence to and sustaining in existence all-that-is;
- is One;
- is a diversity-in-unity, a Being of unfathomable richness;
- includes and penetrates all-that-is, but whose Being is more than, is not exhausted by it (panentheism);
- is supremely and unsurpassedly rational;
- is omniscient; (knowing all that it is logically possible to know);
- is omnipotent; (able to do all that it is logically possible to do);
- is omnipresent and eternal;
- is (at least) personal or supra-personal yet also has impersonal features;
- gives existence to each segment of time for all-that-is-becoming (but does not know the future which does not exist to know);
- has a self-limited omniscience;
- has a self-limited omnipotence;
- is the immanent Creator creating in and through the processes of the natural order;
- is the ultimate ground and source of both law (necessity) and chance an Improvisor of unsurpassed ingenuity;
- has something akin to joy and delight in creation;
- suffers in, with and under the creative processes of the world;
- took a risk in creation.

III. “Arriving where we started” and Aknowing the place for the first time”

I am not affirming that I have *proved* from my reflections on what we now know of the world from the sciences that there is an Ultimate Reality, God, with just these attributes \subset only that I infer that this is the *best* explanation. They are together cumulative in their effect and make a more

convincing case, in my view, than any of the rival explanations especially that of atheism (often under the guise of agnosticism). As a scientist, I cannot help going on asking Why? and this doesn't stop when science runs out of answers.

But to be accessible to personal and communal life what I have inferred is too abstract and we need to develop concepts, images, notions and metaphors that represent God's purposes and implanted meanings for the world as we actually find it be through the sciences. Transition to such an enriched (what some call a 'thick') theology is, in my view, *unavoidable* if believers in God are not to degenerate into an esoteric societies internally communing only with themselves. A rebirth of images is desperately needed to satisfy the spiritual hunger of our times.

Let me, again ludicrously briefly, draw on resources known to me as a Christian but I would invite those of other faiths to share with us all *their* resources for enriching this current impasse in our understanding of the divine. I will mention a few which I think can help us at this stage of our exploring as we arrive closer to the place Δ where we started, namely God and to illustrate the more positive aspects of an exploration towards God from the world of science.

Immanence: a theistic naturalism.

One of the positive affects of Darwin's eventually accepted proposal of a plausible mechanism for the changes in living organisms was that it led to the ultimate demise of the external, deistic notion of God's creative actions. For example, we find Aubrey Moore, an Anglican High Churchman, already in 1889 (in *Lux Mundi*), saying that

... Darwinism appeared, and, under the disguise of a foe, did the work of a friend. It has conferred upon philosophy and religion an inestimable benefit, by showing us that we must choose between two alternatives. Either God is everywhere present in nature, or He is nowhere.

Such an emphasis on the *immanence* of God as Creator in, with and under the processes of the world unveiled by the sciences is certainly in accord with all that the sciences have revealed since those debates of the 19th-century. These processes have the seamless character of an interconnecting web that has been spun on the loom of time: the process appears as

continuous from its cosmic beginning, in the hot big bang, to the present and at no point do modern natural scientists have to invoke any non-natural causes to explain their observations and inferences about the past.

The traditional notion of God sustaining the world in its general order and structure now has to be enriched by a dynamic and creative dimension. The processes are not themselves God, but the *action* of God-as-Creator. God gives existence in divinely-created time to a process that itself brings forth the new: thereby God is *creating*. This means we do not have to look for any *extra*-supposed gaps in which God might be supposed to be acting as Creator in the living world.

A musical analogy may help to convey what I have in mind. While one is listening to music to, say, a Beethoven piano sonata if one were to ask "Where is Beethoven the composer now?", one would have to reply that he was in the music and you were experiencing him, as composer, in the very music itself. The music, as appreciated, is itself the musical action of Beethoven. Correspondingly, the processes of the natural world, explicated by the sciences, are themselves the very creative action of God's own self. This perspective can properly be called a *theistic naturalism* to encapsulate where our explorations have so far led.

Panentheism⁸

is the belief that the Being of God includes and penetrates the whole universe, so that every part of it exists in God but (as against pantheism) that God's Being is more than, and is not exhausted by, the universe (after the definition in the Oxford Dictionary of the Christian Church). More familiarly, recall Paul's address at Athens when he is reported to have said of God, quoting with approval a local poet, that In him we live and move and have our being. (Acts 17 v.28). This notion is in fact also deeply embedded in the Eastern Christian tradition.

For classical philosophical theism there was a space *outside* God in which the realm of created substances existed. This way of speaking has become inadequate for it has become increasingly difficult to express the way in which God is present to the world in terms of substances, which by definition cannot be internally present to each other. God can only intervene in the world in such a model. Yet, we have just seen, natural processes in the world need to be regarded as *such* as God's creative

action. In other words, the world is to God, rather as our bodies are to us as personal agents with the necessary qualification that God as Creator is distinct from that of the world (panentheism, not pantheism). Interestingly, this *personal* model represents better how we are now impelled to understand God's perennial action in the world as coming, as it were, from the inside and the need for feminine models of divine creativity — God creates the world within *herself*.

The Wisdom (Sophia) and the Word (Logos) of God.

Biblical scholars have, in recent decades come to emphasise the significance of the central themes of the so-called Wisdom literature (*Job, Proverbs, Ecclesiastes, Ecclesiasticus and Wisdom*). In this broad corpus of writings the feminine figure of Wisdom (*Sophia*) is a convenient way of speaking about God acting in creation, revelation and salvation; Wisdom never becomes more than a personification of God's activity. (J.G. Dunn) This Wisdom endows some human beings, at least, with a personal wisdom that is rooted in their concrete experiences and in their systematic and ordinary observations of the natural world what we would call science. All such wisdom, imprinted as a pattern on the natural world and in the mind of the sage, is but a pale image of the divine Wisdom that activity distinctive of God's relation to the world.

Wisdom as an attribute of God, personified as female, has been of especial significance to women theologians one of whom (Celia Deane-Drummond) has argued, on the basis of a wider range of biblical sources, that the feminine in God refers to all persons of the Christian Triune God so that Wisdom (*Sophia*) becomes the feminine face of God expressed in *all* persons of the Trinity. (*Heythrop J.* XL (1999) 41-59). One cannot help recalling that the greatest church ever built in Christendom was, in Constantinople in the 6th century, dedicated to *Hagia Sophia* (Holy Wisdom). This important concept of Wisdom (*Sophia*) unites intimately the divine activity of creation, human experience and the processes of the natural world.

So also does the closely related concept of the Word (*Logos*) of God which is regarded (in *John I*) as existing eternally as a mode of God's own being, as active in creation and as a self-expression of God's own being and becoming imprinted in the very warp and woof of the created order.

[It seems to be a conflation of the, largely Hebraic, concept of the Word of the Lord, as the will of God in creative activity, with the Stoic divine principle of rationality which is manifest in the cosmos and in the human reason.] It is, needless to say, significant for Christians that this Word/*Logos* was regarded as made flesh in the person of Jesus the Christ (*John I*, v. 1-14) who is also seen in the New Testament as the very Wisdom of God's own self.

A Sacramental Universe.

The evolutionary epic, as I have called it, recounts in its sweep and continuity how over aeons of time the mental and spiritual potentialities of matter have been supremely actualized in the evolved complex of the human-brain-in-the-human-body. So in persons matter manifests that unique combination of physical, mental and spiritual capacities. God is, it appears, is using matter in that process as an *instrument* of God's purposes and as a *symbol* of the divine nature, the means of conveying insight into these purposes.

But, in the Christian tradition, this is precisely what its sacraments do. They are valued for what God is effecting *instrumentally* and for what God is conveying *symbolically* through them. Thus William Temple came to speak of the Sacramental Universe (in his *Nature, Man and God*, Macmillan, London, 1934, repr. 1964), and we can come to see nature as sacrament, or at least, as sacramental.

For Christians, this could be developed further in relation to the doctrine of the Incarnation and to the *new valuation on the very stuff of the world* which ensues from those significant words of Jesus at the Last Supper: This: my body and This; my blood referring to the bread which earth has given and human hands have made and to wine as fruit of the vine and work of human hands.

The Uncreated Energies of God.

The Eastern (Orthodox) Christian Church. has long maintained a distinction which today still has potential for expressing the continuing, dynamic, creative activity of God between God's *essence* and God's *uncreated energies*.

God's essence (Gk., *ousia*) is hidden, infinitely transcendent, beyond all understanding, yet is regarded as made known in God's *uncreated energies* (Gk., *energies*) that is, in God's work, the outcomes of the divine creative activity. These uncreated energies are the manifestation of God in the general realm of the structures, patterns and organization of activities of the world. The divine energies are God's own self in action. This is an essentially pantheistic perception of God's relation to the world: for God is seen in everything and everything is seen in God.

I myself find this profound emphasis of Eastern Christians more congenial to my scientific presuppositions than much Western traditional religious talk of the supernatural as the milieu of God's activity. Indeed, we find Lossky eschewing this term:

Eastern [Christian] tradition knows no such supernatural order between God and the created world. That which western theology calls by the name of the *supernatural* signifies for the East the *uncreated* the divine energies ineffably distinct from the essence of God (V. Lossky, *The Mystical Theology of the Eastern Church*, 1991, English edit.,(p. 88).

The place we have arrived at is indeed richly furnished from the past..

IV .The Future of Theology.

I have, up to this point, been positive and (I hope) constructive in developing theological insights enriched by reflection upon the best knowledge, possessed through the sciences, which we have today of the world. However, this is only one aspect of the current situation and I cannot conceal my anxiety about the present state of specifically Christian theology and indeed others in which I am not involved enough to speak. There are two main sources for this gloomy diagnosis in my own thinking.

The first is not unfamiliar and has been with us for nearly 150 years, namely the way in which systematic theology seems to ignore the *challenges of biblical scholarship to the historicity of both OT and NT narratives*. This is an enormous issue that is way beyond my professional competence to address satisfactorily here, so I speak only as a layperson in this context. Leaving aside the doubtful historicity of great swathes of the OT on which the presumed historical action of God in a supposedly chosen people has been

based, studies on the NT cast doubt on many assumptions both of ordinary Christians and of systematic theologians. (Just look, for example, at the summary, "Retrospect: A Short Life of Jesus", which concludes the didactic survey⁹ of Gerd Theissen and Annette Merz on what is known of the historical Jesus). NT scholars widely accept, for example: that the birth narratives are non-historical (Jesus was born and lived in Nazareth, with Joseph as his father); that the virginal birth cannot be attested historically (and is also paradoxical biologically for Jesus should, on that hypothesis, have been female, lacking a Y-chromosome); that the historical Jesus had no sense of being divine and that his knowledge and understanding was limited to what would have been available to a 1st-century Jew in ancient Palestine; that he was possibly mistaken about the immediate, historical advent of the Kingdom (certainly enough to mislead his followers into expecting his imminent return); and that his tomb was possibly, even probably, not empty (the early witness of his followers was that they experienced that he was 'risen', not the same thing) — and so on and so on.

Some of this leaks through to the general public generating scepticism¹⁰ and one has to ask "When will theology stop building unstable, inverted pyramids of metaphysical speculation on inadequate biblical evidence?". As Leslie Houlden has recently documented¹¹, the formative church councils formulated their classical doctrinal statements, many now enshrined in the creeds to which church members are expected to assent, neglecting the Gospels and with little knowledge of and reference to the life and teaching of Jesus. As my resort earlier to the concepts of the *Logos* and of 'Wisdom' and their applicability to the historical Jesus indicates, such reservations do not, in my perception, in the end, undermine the universal significance of what Jesus was and is, as 'the Christ'. But for honesty's sake let theology not go on pretending there is no problem here¹².

Enough for my non-professional reflections on the significance of biblical studies — reflections, it must be said, that will and ought to be shared by any thoughtful inquirer into the validity of Christian beliefs.

Let me address now some of the *challenges to received Christian theology posed by our broad understanding of the world that the sciences now afford*.

Our current perception of the world as a closed nexus of events renders the idea of God intervening in the world to rupture its God-given regularities as incoherent. Miracles as a breaking of the regularities of the divinely created natural world are inconsistent with the nature of the God

who is creating the world through its natural processes. If we are going to postulate them, we must have overwhelming historical evidence which is, in most cases, not forthcoming. But this is only one aspect of the immense problem of how to conceive consistently of God's action in the world over and beyond the divine sustaining in existence of all-that-is and all-that-is-becoming (God's 'general providence'). This is the problem of 'special divine action' (SDA) in the world. After a magisterial survey of the attempts to tackle this problem in intensive and extensive, cooperative investigations by scientist-theologians and philosopher-theologians undertaken over more than a decade, Nicholas Saunders in a final chapter of his *Divine Action and Modern Science* (C.U.P., Cambridge, 2003), entitled "Is SDA really tenable?", asks

"Would it be correct to argue on the basis of the foregoing critique that the prospects for supporting anything like the 'traditional understanding' of God's activity on the world are extremely bleak?" and he responds: "To a large extent the answer to this question must be yes. *In fact it is no exaggeration to state that contemporary theology is in crisis. As we have seen, such a wide range of doctrine is dependent on a coherent account of God's action in the world, and we simply do not have anything other than bold assertions and a belief that SDA takes place.*" (p.215, emphasis in the original)

Other issues have been with us longer¹³: the demise of all kinds of dualisms in a monistic world with its inappropriateness of talk of the 'supernatural' and the ambiguity of many uses of the term 'spiritual'; the relation of 'original sin' to those aspects of human behaviour (about a half) under the leash of the genes; the evolutionary evidence of humanity as 'rising beasts' gradually emerging into self-consciousness and the apprehension of values and the notion of a historical 'Fall' from which humanity needs redemption; the role of chance in divine creation; the possibility of life on other planets and their relation to God and the claimed uniqueness of Jesus as Saviour; the biological role of physical death of the individual in evolution and the rupture of its claimed relation to human sin ("the wages of sin" as death); the relation of God to time in the light of relativity.

There is little doubt in my mind that the major responsibility for developing the dialogue between science and theology that has been increasingly fruitful over the last 30 years now lies with theologians to become truly open in the sense I expounded and frankly to infer to the best explanation of their own special (and not unwarranted) data, rather than invoking any other source of authority that claims to express a 'revelation'

from God which is perennially binding. I get the impression from the current literature that very few Christian theologians have been engaged in this urgent task

I genuinely believe that a new truly catholic, evangelical and liberal Christian theology can be and is in the process of being forged in the heat generated in the furnace of science, which in the culture of our time is the divine agent of regeneration of theology — as were Greek philosophy in the early centuries of the Church and Aristotelian learning in the 11th-12th-centuries.

Earlier I prescinded from any attempt at developing a *global* theology. But let me now share **a concluding reflection on what I have been attempting, namely, to start from the world as we best understand it and to find paths leading towards God:**

The paths we have been following from our knowledge of the world as described today by the sciences towards an understanding of God and of God's relation to that world, have led towards various kinds of insight. From this point, the seeker has to ask him or herself what is the general significance of Jesus the Christ who was successively designated Son of Man (possibly by himself), Son of God (in the New Testament), and God the Son (by the Church). He came to be seen as the incarnation in some sense of God as Word/Wisdom in a human person.

The way our understanding of God's relation to the world that I have been developing here now allows, I would suggest, an *inclusive* interpretation of this central theme in Christian belief, which may be amenable to those of other faiths. Although for Christians, Jesus continues to be the unique, historical embodiment of God as Word/Wisdom this does not preclude God as Word/Wisdom being expressed in other peoples, cultures and times. And who dare affirm that God was *not* at work expressing Godself, as Word/Wisdom, through the great founders of other religions and in the continued experience of their disciples and followers? So Christians, indeed everyone, should be ready with humility to hear and to be open to the Word/Wisdom as it is manifested in other religions as not at all derogating from its own distinctive insights.

I therefore hope that the place at which we have arrived in this exploration may turn out to be one from which the seekers of many religions have started; and that we all might be prepared to know it for the first time.

Since science is a truly, global, cognitive resource accepted across all cultures, might not these inferences from the scientific perspective constitute a common pool of resources for the exploration towards God of the seekers of many religious traditions, or of none? For to arrive where we started by that route signposted by the sciences and to know the place for the first time is an opportunity to establish a new, surer, more widely-accepted base from which the long pilgrimage of humanity towards God might set out. In that pilgrimage our resources will certainly be richly diverse and often other than scientific historical, aesthetic, symbolic, mystical, experiential, philosophical but at least we might, with the help of our new scientifically informed insights, then *share a starting point for it more common than in the past.*

Then it would indeed be true that

'We should not be ceasing from exploration
And the end of all our exploring
Would then indeed be to arrive where we started,
And know the place for the first time.'

Notes and references:

1. For a fuller exposition of some of the themes of this lecture see: Arthur Peacocke, *Paths from Science towards God: The End of All Our Exploring* (Oneworld, Oxford, 2001). This lecture is a shortened version of an address given, under a different title, on May 2nd, 2003, at the Zygon Center for Religion and Science, Chicago, USA and which will be published in full in *Zygon*.
2. The proceedings have recently been published as *Science and the Spiritual Quest: new essays by leading scientists*, ed. W.M.Richardson, R.J.Russell, P.Clayton & K.Wegter-McNelly (Routledge, London & New York, 2002).
3. Carl Sagan in *Pale Blue Dot* (1995) – quoted by Richard Dawkins in *Unweaving the Rainbow* ((Penguin Books, London, 1999) p.114.
4. Robin Gill, "The Future of Religious Participation and Belief in Britain and Beyond", in Richard K.Fenn (ed.), *The Blackwell Companion in Sociology of Religion*, Blackwell, Oxford, 2001, pp.279-291.
5. E.J.Larson and L.Witham, "Scientists are still keeping the faith", *Nature* 386 (1997) 435-6; E.J.Larson and L.Witham, "Leading scientists still reject God", *Nature* 394 (1998) 313.

6. Keith Ward, *Religion and Revelation* (Clarendon Press, Oxford, 1994) pp.339-340.
7. *Paths from Science towards God: the End of All Our Exploring* (Oneworld, Oxford, 2001), ch.7.
8. To be expounded and analysed more fully in a forthcoming volume: *In Whom We Live and Move and Have Our Being: panentheistic reflection on God's presence in a scientific world*, eds. Philip Clayton and Arthur Peacocke, Eerdmans, Grand Rapids, 2004)
9. *The Historical Jesus: a comprehensive guide* (SCM Press, London, 1998), pp.569-572.
10. Richard Holloway, who recently retired as the Primus of the Episcopal Church of Scotland, has warned "By depriving our people of insight into the different approaches to biblical interpretation, because we are afraid of upsetting them, we are driving others out of the Church who mistakenly believe that naïve realism [not critical realism] is the only approach on offer." *Church Times*, 17 March, 2000.
11. Leslie Houlden, *The Strange Story of the Gospels: finding doctrine through narrative* (SPCK, London, 2002).
12. Sophisticated theologians often claim that historicity is not the point, though 'ordinary' people and seekers who hear dogmatic statements assuming the historical veracity of the Bible may be excused for not being aware of this. Thus Anthony Phillips, an OT scholar: "While faith cannot be divorced from history, both evolving within it and being formed by it, the historicity of the traditions nonetheless remains theologically irrelevant. It is in the words which the community of faith used to express their faith that the revelation is to be found", *The Times*, April 5, 1986. Clearly, the less historicity is emphasized, the less is any special divine action (SDA) needs to be postulated as operative in any particular historical event.
13. For a fuller exposition, see my article "Science and the Future of Theology: critical issues" in *Zygon*, vol. 35, no.1, March, 2000, pp.119-140.

Science and Religion for the 21st Century

Varadaraja V. Raman *

Resumo

O que provavelmente teve início como um sentimento de assombro acerca dos estudos do céu e do nascimento do universo, aliado a visões místicas, deu origem às grandes religiões da humanidade. O que começou por ser uma forma inteligente de descrever o movimento dos planetas, assim como a invenção de engenhosos instrumentos e modos de medida dos movimentos terrestres, deu origem a um dos mais impressionantes empreendimentos humanos, ou seja, a ciência. Durante as últimas quatro décadas, ciência e religião cresceram como “irmãos”, algumas vezes brincando juntos, outras vezes tendo quezílias, mas sempre a enriquecer o espírito humano, promovendo o respeito mútuo e a tolerância.

Introduction: science and religion

Science is the human mind's quest to unravel the workings of the world. It is a collective effort to understand, explain, and grasp the perceived world. Religion is a search for meaning behind human existence, and a yearning to connect with the Whole. It arises from the recognition of the uniqueness of consciousness in the universe. Science and religion are the loftiest expressions of the human spirit.

The religious traditions of humankind emerged, it is said, from the cosmic visions of Vedic rishis, from the covenant of Moses with God, from the enlightenment of the Buddha, from the commitment to non-violence of Mahavira, from the sermons of Jesus of Nazareth, from the revelations to Prophet Mohammed, and from the syncretistic inspiration of Guru Nanak.

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Religion led to the formulation of ethical principles in the Judeo-Christian world, it fostered compassion in the Buddhist-Jaina world, it inspired sophisticated metaphysics in the Hindu world, and provoked massive scholarship in the Islamic context. When religion is a quest to communicate with the transcendent and the commitment to serve others, it elevates the human spirit to its highest potential.

At one time, science was but intelligent guessing about how the world was formed and how it ticks the way it does. With its empirical methodology, ingenious instruments, and mathematical analysis, modern science has made astounding advances in unveiling the secrets of the world. It has fathomed the deepest core of matter and the farthestmost depths of space. It has served to demolish plagues and pestilences, and the mindless fears that tormented our ancestors. When science is disinterested effort to comprehend perceived reality, and it results in enhancing the quality of life, in mitigating pain and disease, and in eradicating superstitions, it is a fruitful enterprise indeed.

Science and religion in the modern world

The history of human civilization is marked by several major revolutions, some slow and some abrupt, some dramatic and some subtle, some of local significance and some of global impact. Among the most important of these are the agricultural revolution which introduced sowing, harvesting, and storage of crops; the cultural revolution from which emerged abstract thoughts and ethical frameworks, as also philosophies and religious systems; the scientific revolution which changed the coordinates of our planet from cosmic center to an insignificant niche in an immeasurably vast expanse; and the industrial-technological revolution which harnesses matter and energy on the basis of an understanding of the workings of the physical world.

It would be a distortion of history to say that in earlier times there was neither science nor technology. From the unrecorded dawn of consciousness, when the human mind wondered and human hands turned a stone or a stick this way and that to feel and fathom what it was, science has been there in every community and culture. In periods now long past scientific creativity and discovery flourished in India and China, in Egypt and Mesopotamia, Greece and elsewhere. Devices have been contrived to

lessen muscular effort and facilitate human manipulation of the world since time immemorial. Wonderment and curiosity about the surroundings, and eagerness to diminish sweat and work are inherent to the human spirit.

Religion continues to be a potent force in modern societies. It is true that in certain quarters the doctrines of traditional religions are not being taken as seriously as they used to be. The power and performance of science have weakened some of the traditional claims of religions. Nevertheless, in a great many places all over the world, there is a resurgence of interest in religions and pseudo-religions, in cults and charismatic preachers. There are moves to repair historical institutional schisms, and to extend hands of friendship between religious adversaries.

The Internationalization of Science

The scientific revolution of the 16th century was significant not so much in the discarding of geocentricity though this was one of its earliest steps; not so much in the discovery of elliptical planetary orbits though this opened our visions to hitherto hidden aspects of the universe, not even so much in the formulation of the laws of motion, though these led to a deeper understanding of the physical world; but the scientific revolution was significant because it initiated a universality which has transformed the very nature of the enterprise.

Since the emergence of modern science, the enormous range of scientific efforts in different countries, and then in different continents, have come to be subsumed under a single umbrella, made up of an abstract international body of scientific practice and culture. The various nations of the world have their own research laboratories and publications, and yet, the works carried out and published in these geographically separated places are interwoven into a web held firm by invisible bonds that know no borders, that feel no cultural differences. The meter and the kilogram in any national bureau of standards are precisely the same, no matter what the religion or form of government may be in the country.

Science certainly has its local interests, narrow nationalism, and petty fights over priorities too. After all, it is only a human enterprise. There are rivalries and races in the pursuit of knowledge and competition in discoveries. There is national pride when a prize is announced. And yet, the

technical work of scientists is blind to nationalities, they overlap and mingle like sounds from different instruments in an orchestra to create and constitute the grand symphony that science is. The true strength and stature of modern science lies in its universality. Science is no longer bits of insights here and there, nor imaginative speculations by keen minds in particular cultures. It surely is not parochial ethnic interpretations of natural phenomena, nor narratives from sacred books. Rather, science is a collective quest, a restless drive to eradicate every misunderstanding in the interpretation of every occurrence from the micro to the macrocosm, to unravel every mystery and dispel every doubt and darkness from the inquiring mind.

What characterizes modern times is transnational science, and the ubiquity of modern technology. There is no member state of the United Nations Organization where science is not taught, or planes don't land. Whether one understands science or decries it, no serious thinker or leader in the twentieth century can ignore science, or function without its technological offshoots. The primary contribution of science has been the quenching of curiosity through disinterested search, the providing of intellectual satisfaction through its explanatory successes, and the enhancement of creature comforts through ingenious technology.

In spite of all our national differences and cultural diversity, no matter what language we speak and what creeds we subscribe to, the one common thread that connects the minds of men and women in today's world is international science. So too, the commonalties in the towns and cities of the modern world are electric lights and communication systems, automobiles and computers.

We live in a world where science and technology hold the sway. If we look around any spot on earth that has found its way into the mainstream of human history, we cannot escape the presence of wheels and wires, of gadgets and generators, of vaccines and pills. The material impacts of science, the magic and madness of machines are omnipresent and inevitable. Science and technology are here to stay, and their influences are likely to grow even more in times to come.

In no other context in human culture: not in art, nor in music, not in sports, much less in politics, do men and women of all races and colors, of all languages and religions, hold hands as comrades in a common pursuit. This speaks as much to the glory of the science as an enterprise, as all its technological triumph do.

Religion, Separate and Universal

The scientific revolution merged diverse streams of search into a single surging river, as it were. But nothing of the kind happened in the realm of religion. Here the ancient roots stayed separate and sturdy, and the trees grew taller and vigorous too, shooting out branches along different directions, but the branches of a tree drew nourishment from their respective roots. Whether it was Judaism or Buddhism, Hinduism, Christianity, or Islam, each gave rise to different sects and schools, but in each instance, there was a core which was safe and secure.

Unlike with science, there arose no common religious institution to embrace all the faiths of humankind to form a single superstructure unto which all would come and pray. True, there have been efforts to repair old divisions, attempts to heal historical wounds, even movements to bring out the best from all religions. But Din Ilahis and Unitarians, Bahais, and Brahmos have been elite groups, rather than major religions with mass followings. If anything, over the past few centuries, newer groups have come and gone, new prophets and cult leaders, have forged more movements still.

One reason for this is that science is concerned with the external world of cold reality, whereas religion is linked to inner warmth, to local moorings, trusted traditions, and close community. Every religion is affiliated, not only to ancient prophets and personages, but also to time-honored rites and rituals, which have acquired the weight of centuries and the wisdom of ages. To reject all this and embrace a global network is more difficult than to switch from the geocentric to the heliostatic model. To resonate with prayers from alien faiths is more difficult than to use telescopes and microscopes to explore the world.

So we find that in schools everywhere the same laws of nature and the same mathematics are taught, the same facts of anatomy and the same genetic structures are explained, but in places of worship different symbols are venerated, different eschatologies expounded, and different days prescribed for fasting and feasting.

Need for a Trans-denominational Religion

This persistence of religious diversity is understandable, even commendable. It has its cultural and aesthetic richness too. And yet, in a sense, the situation is also crying for fresh perspectives. For ours has become a complex world with complex interactions between peoples. It is a world where some nations are firmly affiliated to a single religious loyalty, while others foster religious pluralism. It is a world where economic injustices and political squabbles still disfigure human culture.

In such a world, if it is good to see people faithful to their traditions, it is also disconcerting when both shepherd and sheep are convinced that their particular path to Heaven or salvation is the only right one there is. In such a world, it becomes all the more imperative that we try to bridge the chasm that perilously separates the peoples of the world. It is urgent that enlightened religious leaders from every faith and intellectuals from every culture inspire men and women of goodwill to complement their local loyalties with a global vision of trans-denominational perspectives which would not only enrich their own sensitivities for the sacred and the spiritual, but also serve to lessen tensions and mistrust among the more ardent true-believers. In this effort, we need to extract from all religions whatever is best and overlapping in values and perspectives.

Blessings with blemishes

Neither science nor religion has been a blessing without a blemish. It is no secret that both have wrought much havoc in the world.

In their convictions as to the nature of the Divine and on who represents God here below, religions differ in profound ways. When a belief-system encounters a competing world view, spokespeople for religions tend to regard others as astray or evil. Left to itself, no religion recommends anything harmful towards others. However, when faced with people of a different faith or symbol, the zeal to convert emerges, and all the caring and submission to God tends to be transformed into big-brotherliness at best, into hate and hurt at worst. Human history is replete with ugly memories of mutual massacres, rampages, burnings at the stake, inquisitions and holy wars: all perpetrated in the name of religion. True

believers do not have the slightest doubt that their own religious, moral, and cosmological worldviews are the only correct ones. Where and when they acquire power over others, they can be far more dangerous than pious theists, cocksure atheists, or narrow fundamentalists in non-theocratic societies.

At this point in history, there is still hope that the hate and intolerance lurking in traditional religions may be subdued, tamed, and transformed. Yes, there are still pockets of religious animosity and persecution, but there are also places where self-righteous passions are restrained by enlightened laws. We may hope that some day sectarian cleansing and witch hunting will become mere embarrassments of history, and that the religions of the world will coexist in harmony.

Not all the outgrowths of science have been benign either. Scientific knowledge has given rise to germ warfare, chemical weapons, and nuclear holocausts. Then there are countless side effects of technology, from environmental pollution and population explosion to rain forest depletion, and global warming. Just as religion has been harmful through its doctrinal arrogance, science has been dangerous through its impacts which are endangering health and survival.

Harmony of earlier ages

There was a time when science and religion co-existed in happy harmony. During much of human history until the rise of modern science in the 16th and 17th centuries, it was religion that swayed the minds and actions of people. Whether in ancient Greece or Rome, in China, India, Egypt or in medieval Europe, the world view of the religion of the time and place determined how people lived, what their ethical framework was, and how they pictured the dark beyond. In traditional societies, men of science were also men of religious wisdom. They were privy to esoteric truths, they uttered magic formulas, and they initiated the young into the realms of occult lore. Priests were knowledge-bearers, astrologers were astronomers, and revealed books stated how the world came to be and why. There was no question of conflict between science and religion because the leaders in science and of religion were often the same personages.

Religiously inclined scientists and dimensions of religion

Even after the rise of modern science, there have been many creative scientific thinkers who have been deeply religious. This should lead any reasonable person to conclude that the call of religion has little to do with the appeal of science.

This is because religion has several dimensions which have nothing to do with science: Many of the doctrines of religions relate to God and the hereafter, often to matters that lie beyond the realm or reach of science. These are domains in which science has no concern and of which it has no inkling either. Religions also have a communal dimension which is manifest in their prescription of days of feasting and fasting, their specification of places of pilgrimage, and so on. Above all, religions have an ethical dimension that formulates rules of right conduct. Religions have symbols that soothe the heart and modes that uplift the spirit.

None of these has anything to do with gravitation or speed of light, with electricity or molecules. One may learn about the heliocentric nature of the solar system, and also subscribe to the doctrine of the Trinity. One may accept plate tectonics, and also fast during Ramadan, feast on Divali day, or light candle for Hanukkah. One may agree with Darwin's theory of evolution, and still visit holy shrines with reverence for the associated symbols. One may attach credence to space-time curvature and yet be kind to one's neighbor and faithful to one's spouse.

Equally importantly, religions enable us to perceive dimensions of the human experience that transcend logic and rationality. Like the aesthetic joy one derives from listening to glorious music or beholding a magnificent work of art, the religious experience endows us with an ineffable ecstasy that, no matter what its cerebral-neural origins, is a profoundly fulfilling human experience.

Thus, religious involvement is not just a possibility; in many instances, it is an inevitable part of being fully developed. Even those who disparage traditional religions and proudly proclaim themselves to be atheistic, materialistic, agnostic, or whatever, have some source, implicit or explicit, to quench their spiritual thirst. Even in nations which prohibit public religious expressions, they organize impressive parades and celebrate national heroes with great fanfare.

Moreover, profound questions have been raised on the intriguing coincidences in the values of the so-called fundamental constants which are

ultimately responsible for the kind of world we experience. In particular, carbon-based life (and its long range offshoot, the human mind) would be impossible if some of the constants had even slightly different values. This prompted the physicist-celebrity Stephen Hawking to write, “It would be very difficult to explain why the universe should have begun in just this way, except as the act of a God who intended to create beings like us.” This has led to the fascinating conjecture that the specific values were *intended* to give rise to quantum physicists and cosmologists. The eminent physicist Freeman Dyson declared more cautiously: “As we look out into the universe and identify the many accidents of physics and astronomy that have worked together to our benefit, it almost seems as if the universe must in some sense have known that we were coming.”

God is no longer a beautiful *hypothesis* as the First Cause, but a plausible, if not compelling *conclusion* from measured parameters. That an intelligent principle was the root cause of it all now seems to be more than a religious dogma.

Skeptics’ ineffective reaction

Die-hard skeptics still wonder why so many silent eons were frittered away in the lighting and snuffing of stupendously vast stars before *Homo sapiens* could come to the fore. An all-powerful Designer could surely have come up with the appropriate combination of constants to manufacture an Einstein and a Feynman in short order and in a smaller span of space, without the tortuous and time-consuming route of supernova furnaces for synthesizing heavier elements.

The point is, there are thinkers who seem to be genetically averse to any mention of God. They are convinced there is nothing beyond matter and energy in space and time. To them, those who speak of God and salvation are soft-hearted, misguided souls, unable to cope with the tribulations of life, people who naively continue to believe in a loftier version of the fairy tales of their infancy. To them beauty, love, meaning and the quest for truth are emergent properties of cerebral biochemistry, the elaborate details of which will be uncovered by neurophysiologists, molecular biologists, and computer scientists before the end of this new century.

While perhaps correctly recognizing that the universe is not anthropocentric, they fail to see that science is, in its very mode, anthropic. Take away

the human mind, and there can be no description of the world in terms of concepts like momentum and energy, let alone *visible* light, *short-lived* particles, and *audible* sound. The unswerving commitment of unbending materialists to the causal and the spatio-temporal, and their uncompromising rejection of anything spiritual can only be described (in terms of its deeply-felt attachment) as religious, much as they would abhor the epithet.

The lamentation of the no-nonsense hard-core school of scientists about the “demon haunted world” of scientific darkness into which, they fear, humanity is fast plunging, has been forcibly articulated by many. But such moaning, however eloquently and reasonably expressed, does not seem to be very effective. One reason for this is that die-hard scientists and rationalist-empiricists on the one hand and the rest of the decent people in society on the other, adopt different criteria for truth-content. Even among scientists, cultural sensibilities and spiritual penchants are variously developed.

We live in a world polluted by ugly spewing from the industrial age which, in the eyes of many, is a direct consequence of the scientific world view. Moreover, science offers a purposeless portrayal of a universe which, at least from the perspective of human consciousness, is replete with majesty and mystery, a universe where awe and beauty, love and laughter are more immediate than leptons, hadrons, and field bosons. Consider also the catastrophic pessimism into which thermodynamics and astrophysics dump us; and the fact that scientists keep changing their explanatory models like cars from Detroit or Osaka, making theories of past generations approximate, obsolete or downright wrong.

All the technical jargon of science can be understood only with mounds of sophisticated mathematics, abstruse terminology, and exhausting analytical techniques. Given that high school algebra is hard enough to master, not many are eager to buy into inscrutable science when rosier pictures are available for far less, especially when the perks of science, like antibiotics, TV, planes, computers, and hurricane prediction, can all be had without taking an oath of allegiance to scientific rationality and empiricism?

Need to recognize that the spiritual yearning is intrinsically human

All this reveals the fact that the yearning for spiritual experience is not an abnormal or trivial quirk of the mentally challenged, as some would

contend; but a deep-felt component of the healthy human heart. Though naturalist-thinkers have tried to explain this in terms of neurochemistry and Darwinian adaptation tricks, from the religious perspective, this yearning is implanted by the heavens above, by the Divinity that creates and sustains. If one insists, the religiously inclined would say that evolution and adaptation are themselves rules spelled out by the Almighty.

But whatever the source, whether it expresses itself as relentless search for supersymmetry, as poetic mysticism, or as faith in God, the thirst for an Abstract Beyond is part of thinking entities, unless they are chip-based. To some, the more one probes into the origin and evolution of the world, the more pointless it may all seem. But for countless others, if meaning and purpose do not exist, then, like Voltarian God, they have to be invented in the interest of sanity. Any system which denies these is regarded by many as more foe than friend to the human condition. Science as a belief system may not concern itself with these, but if it attributes them to human frailty and belittles their significance, it is not likely to win much adherence or applause.

With all its probing and with all its penetrating instruments and fertile formulas, science has not proved, and may never be able to prove, the non-existence of entities and principles that transcend the spatio-temporal physical world to which we are dimensionally condemned. It may rule them out as highly improbable. Nor can Science confine reality by fiat to only that which is tangible and instrumentally detectable, though it might define for its own purposes only that as reality which is subject to detection through physical means.

Science excites the mind and adds to our creature comforts, but religion stirs the soul and gives meaning to the life-experience. For a great many people, science cannot soothe the grieving heart, nor bring hope to the oppressed; it cannot add to the joys of relationship, nor give courage to the disheartened. For them, religion of one kind or another is a satisfying answer. Spokespersons for science must allow that there are matters that lie beyond logical proofs, mathematical formulas, and repeatable experiments, and extra-scientific existence does not make them any less significant for individuals and to groups.

Challenge for the coming century

Our challenge is to bring about a balance between amoral, no-nonsense science, and non-rational, enlightened religion. To trace Omnipotent God through Einstein's equations or vacuum fluctuations may be more than muddled mixing of metaphor and mathematics: it may be plain wrong. But it does not follow that the universe could not have emerged from the creative Mind of an omnipotent principle.

The vast majority of the truly faithful do not understand Frank Tipler, Victor Weisskopf, Fritz Capra *et al.* Nor do they feel the need for the approval of such authors to believe in the Almighty God of their tradition. They are not hankering for the sanction and support of esoteric equations to derive inner peace from meditation. The Bhagavad Gita, the Torah, the Dhammapada, the Bible, the Holy Koran, the Guru Granth Sahib, and other such texts offer much to spiritually inclined souls, even without the benefit of a knowledge of quarks or quantum field theory.

People who try to establish God on a *quod erat demonstrandum* basis overlook the fact that God is a sublime personal experience, not an entity hiding behind Higgs bosons or string theory, waiting to be uncovered like an Easter egg by theoretical physicists.

When it comes to a discussion of science and religion it may be useful to bear in mind that there is more to the human experience than *explaining* the world, hence many matters of significance, such as love, compassion, kindness, justice, aesthetics, and the relevance of the human spirit in a cold and apparently value-less cosmos, are beyond the purview of science. Science may explain how these come about, but that is irrelevant to the thrill we derive from them.

In our new century we need to create an amalgam of worldviews and values: the worldview components are to be drawn from whatever is reasonable, rational, and verifiable from the scientific perspective, and the value components are to be derived from whatever is ethical, meaningful, and fulfilling in traditional religious perspectives.

When it comes to interpreting an aspect of perceived reality in the phenomenal world, the new enlightenment will embrace the scientific mode, not because this is the truth, but because, on the weight of all available evidence at a given time, it is the most persuasive interpretation. It will discard the theory of yester-century if it fails in the scientific criteria for

truth content. This springs, not from disrespect for investigators of generations now no more, but because of untenability of older views in the light of newly gathered data.

Likewise, when it comes to embracing ethical principles and adopting moral stances, this framework will be inspired by the wisdom of the ages, enshrined in the revered texts of various religions. However, when these embody attitudes and injunctions which, no matter how appropriate they might have been in times past, are unacceptable in a more enlightened age, the new vision will not shy away from calling a spade a spade, and dumping outworn and unconscionable views and values into the dustbin of history.

The 20th century will be remembered for consciousness-raising and for its scientific/technological breakthroughs. That century made racism a bad word and shameful practice; recognized gender oppression as social evil; proclaimed human rights as transcending race, caste, and religion; pleaded for international economic justice; condemned the exploitation of the young; began to celebrate diversity; and initiated care for the disabled. It released millions from colonial shackles, and it established world organizations in which free nations come together to solve their problems of food and health, trade and education, and resolve their political differences through discussions.

Future Visions

The course of human history is instigated by many factors, perceived and unperceived, gradual and sudden, tangible and intangible too. Thus, the rise of Buddha, Christ, or the Prophet Mohammed were among the major perceived factors, while the impact of certain viruses and microbes on the course of human history were never recognized as such. The impact of the Copernican-Galilean science was gradual, that of the French Revolution was sudden. The onset of the computer is a tangible factor, while that of the Human Rights concept is an intangible one.

So, when we forge visions about the Future, we can only be approximate in our assessment. And while we may be well-intentioned and enlightened in our planning, there is no telling what the future holds.

Now, as never before in human history, we have come to realize that we are all co-passengers in the only space-ship that is ours to share.

Fortified by the knowledge that come from the sciences, and enriched by the values and wisdom that come from traditions, we must make every effort to forget the antagonisms and animosities of the past, and strive to build a world civilization that will make this our planet a more rewarding place to be in.

Given all this, our goals for the coming millennium should be to recognize the positive aspects of all religions. Religions bring communities together. They offer satisfying answers to complex questions regarding the meaning and purpose of existence, and consequently a coherent worldview to the practitioners. They rest on thoughts and insights which have acquired a sanctity by virtue of their age. They make life and death meaningful through sacraments. We must nourish the emotional, spiritual, ethical, and inspirational enrichment that all the religions of the human family provide.

We may hope that the spirit of inquiry of science will evolve without losing sight of moral and human dimensions, and that our religious feelings will evolve along enlightened paths of tolerance and mutual respect, while individuals, in their local contexts continue to derive spiritual fulfillment through the names and symbols of their tradition.

Conferência de Encerramento

Por que acredito na Ciência e por que acredito em Deus

Ervin Laszlo *

Resumo

Enquanto filósofo da Ciência e humanista, o autor afirmou acreditar na ciência e também em Deus, sem um sentido de conflito ou de contradição. Como é isto possível? Interroga-se, afirmando que crescemos na convicção de que o conflito entre Ciência e Religião é definitivamente irremediável, o que não é hojeo caso. Embora seja exagerado invocar que as duas mundivisões da Ciência e da Religião, são iguais, estas não deixam de procurar a mesma conclusão fundamental acerca do mundo. Nessa perspectiva fundamental, afirma poder acreditar na Ciência e, em boa consciência, acreditar em Deus. Assim, realça que se tentarmos compreender por que razão a Ciência e a Religião – mesmo a Religião Ocidental Judaico-Cristã – procuram a mesma conclusão essencial sobre o mundo, deveríamos compreender o que é que a Ciência nos diz actualmente sobre o mundo. De facto, o que a Ciência nos diz hoje é bastante diferente do que a Ciência nos tinha para dizer – e o que nos disseram na escola e ainda é dito na televisão e nos jornais, bem como em revistas de divulgação científica. Em síntese, esta comunicação destaca o conceito científico emergente de Mundo e examina as suas implicações para a concepção religiosa de Deus enquanto Criador Transcendente.

Abstract

As a philosopher of science and concerned humanist, I for one believe in science and also believe in God. I do so without a sense of conflict and contradiction. How is this possible? We grew up with the conviction that the conflict between science and religion is ultimately irremediable.

Today this is no longer the case. Although it would be exaggerated to claim that the two worldviews, of science and of religion, are the same, they reach the same fundamental conclusion about the world. In that fundamental regard at least, we can believe in science and, in good conscience, believe in God. If we are to understand why science and religion — even Western Judeo-Christian religion — reach the same fundamental conclusion about the world, we should understand what science is now telling us about the world. This is quite different from what classical science had to say — and what we were told in school and are still being told on television and in newspapers, and by popular science publications. This paper outlines the emerging scientific world concept and examines its implications for the religious concept of God as a transcendental Creator.

Note: The author only sent us the abstract of his communication.

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Nota: O autor apenas remeteu o “abstract” da sua comunicação.