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THE CONTEMPORARY
WORLD

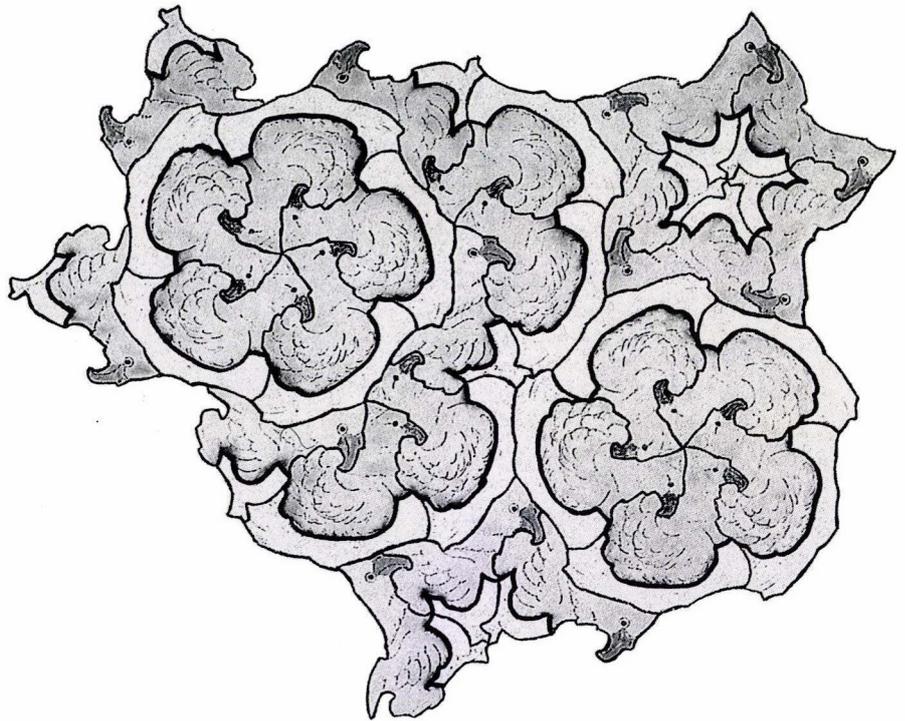
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Shobana Jeyasingh talks about her work

The Emperor's New Mind
*Roger Penrose on mathematics, science and
consciousness*

The Bequest of Beatrice
William Anderson on Dante's inspiration

Not to Bring Us to Heaven . . .
Martin Notcutt on the United Nations

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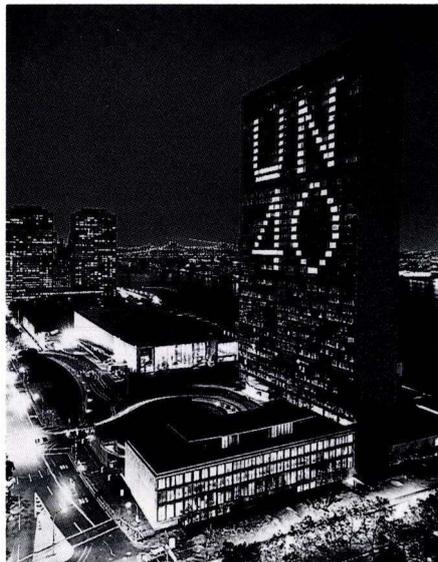


*Penrose's Aperiodic Chickens. See 'The Emperor's New Mind', page 20.
Courtesy of Roger Penrose*

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UN Photo No 166456.*

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BESHARA Magazine

was founded in 1987 as a forum where the ideas of unity which are now emerging in many different fields – in science, economics, ecology, the arts and in the spiritual traditions – can be expressed. 'Beshara' means 'Good News' or 'Omen of Joy', In its Arabic form it is found in the Quran, in its Aramaic form it is translated as the 'Glad Tidings' of the Bible, and it is also found in its Hebrew form in the Torah.

Front cover: Indian dancer and choreographer Shobana Jeyasingh with British composer Michael Nyman, with whom she has collaborated on two new pieces. Photo by Chris Nash.

Back cover: *Paradiso II* by Botticelli.

Dante and Beatrice with the sphere of the moon, the great circle enclosing them. On the left a plan of the poem's heavens, with the earth at the centre, then the spheres of air, fire, the Moon, Mercury, Venus, the Sun, Mars, Jupiter and Saturn; then the sphere of the fixed stars, and outermost, with the figures of six of its governing angels, the *Primum Mobile*.

Courtesy of the Staatliche Museen zu Berlin

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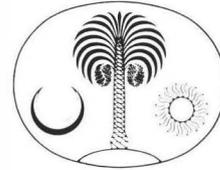
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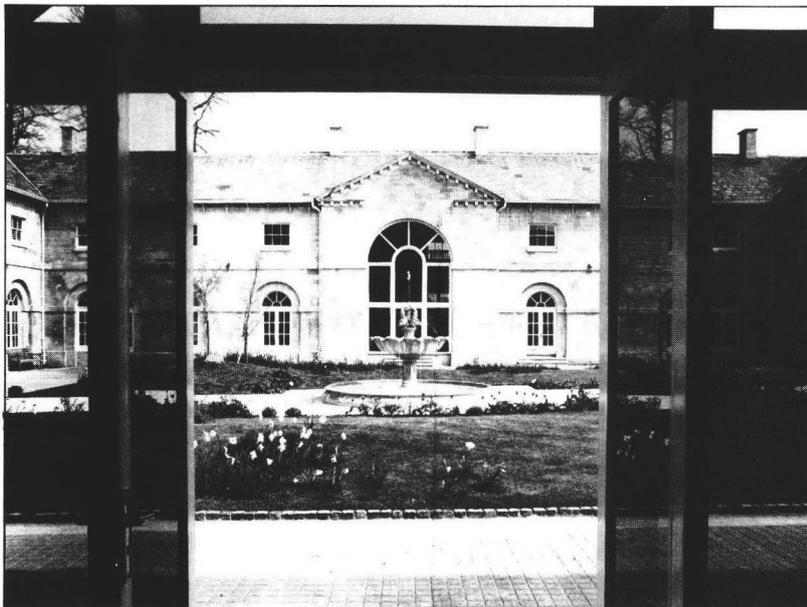
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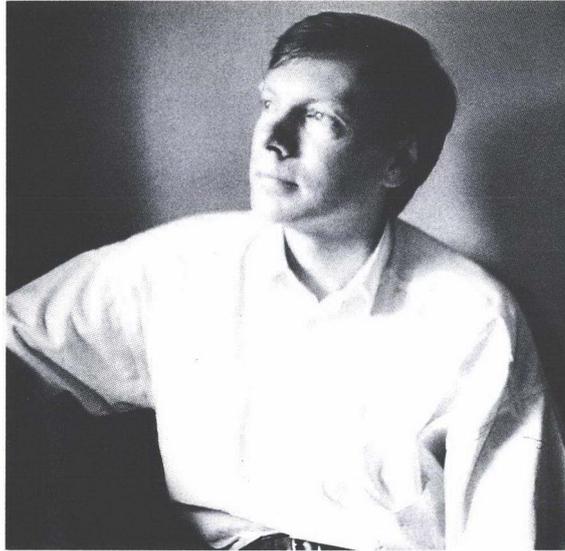


Editorial

THE ADVENT OF the 1990's, with the millenium now in sight and a continually surprising political situation unfolding before our eyes, has triggered a wealth of speculation as to the nature of the 'New Age' we are entering. It will be the age of biology, the age of ecology, the era of women, the end of history – or even, say some, the end of it all as we finally destroy the earth that sustains us. But John Naisbitt and Patricia Aburdene, authors of the best-selling book 'Megatrends 2000' (Sidgewick and Jackson, 1990), identify it above all as the age of the individual – a time when the person, rather than the collective, will triumph. It is individuals, they point out, who "create a work of art, embrace a political philosophy... have a transcendent experience, change themselves before attempting to change society. 'Mass' movements are a misnomer. The environmental movement, the women's movement, the anti-nuclear movement, were built one consciousness at a time, by an individual persuaded of the possibility of a new reality".

Naisbitt and Aburdene perceive that as the trend towards globalisation grows, then the power of the individual – as consumer, citizen, or worker – paradoxically grows. But so also does the sense of individual responsibility, which they see as the 'first principle' of the coming age: "...a Westernised version of the ancient Eastern dogma of karma – that every action generates consequences that the actor will eventually face. As the Bible puts it: 'As you sow so shall you reap' This is not 'every man for himself' individualism; it is an ethical philosophy which elevates the individual to a global level..."

IT IS, THEN, ironic – or perhaps it is symptomatic – that this rise in the status of the individual has coincided with



Dr. Michael Lockwood, author of 'Mind, Brain, and the Quantum' one of the best of the recent books on science and consciousness. Photo courtesy of Basil Blackwell

an awareness that modern science has little or nothing to say about the nature of individuality. The biological sciences of genetics and morphogenesis tend to emphasise those factors which are common to all beings, to the extent that, as the embryologist Dr Martin Johnson pointed out in an article in 'New Scientist' on December 9th last year, science can provide no criteria for deciding when an individual life begins. "In the context of biology", he says, "individual identity is not very important in itself".

Still less does science help us to understand that most immediate and intimate aspect of our experience, our sense of identity, or 'I'ness. Despite the well-established finding of quantum mechanics that 'the observer' necessarily has effect upon any phenomenon observed, the implications have not yet really penetrated physics, let alone the other sciences, and the so-called 'mind/body' problem bequeathed to us by Descartes has remained notoriously unsolved.

But there are signs, at least within

physics, that this is changing, as a recent flurry of conferences and books on the subject indicate. In this issue of BESHARA, for instance, Jane Carroll reports from America that some scientists are expecting consciousness to be the central point of their study in the next century, whilst Professor Roger Penrose acknowledges the importance of understanding the human mind – but we shall have to develop a much more sophisticated physics, he maintains, before we can come to any proper understanding of it.

NOR ARE THESE CHANGES limited to science. No survey of the subject of identity would be complete without mention of the late Samuel Beckett to whose exploration of the subject 'I' – that "unthinkable ancestor" – Aaron Cass pays tribute in this issue. Meanwhile, in the religious traditions, there are attempts to find fresh insights by drawing from ancient wisdom. Bede Griffiths, for instance, whose new book we review, emphasises the concept of the Cosmic Person – the archetypal man – which is found in all the major traditions. This 'Perfect Man', he says, "...contains within himself the whole universe and all humanity", and so provides a metaphysical basis for the global dimension of the individual which Naisbitt and Aburdene so astutely identify. The Persian poet and mystic, Jalal'uddin Rumi, of whom Cecilia Twinch writes in her piece on the recent visit of the Mevlevi Dervishes to London, said:

"Oh good friend, thou art not a single 'thou': thou art the sky and the deep sea.

Thy mighty infinite 'Thou' is the ocean wherein myriads of 'thou's' are sunken."

Jane Clark

News

The Wealth of Life

As public awareness of conservation and ecology grows Alison Yiangou reports on new understandings of biodiversity and Richard Twinch considers the special importance of the elephant and the whale.

BIOLOGICAL diversity – biodiversity for short – has been epitomised by the World Wide Fund for Nature as “the wealth of life on earth... the result of four billion years of evolution.” (1) Not so very long ago the term would have drawn a blank from most people, but now it has become almost synonymous with the concern for ecological conservation.

Whereas the Greek term *zoe* indicates the unqualified or universal quality of Life, the root *bios* denotes life ‘parcelled up’ as unique, living beings. Biodiversity is therefore a pointer to the idea that the expressions of life are infinite in their variety.

Losses

The WWF, which launched a 5-year Biodiversity campaign

ASPECTS OF DIVERSITY

Species diversity

refers to the total number of species within an ecosystem. It is the most readily identifiable, and so perhaps the best researched and publicised, form of diversity.

Genetic diversity

is the variation occurring within a species that gives it the ability to evolve and adapt to new conditions.

Ecosystem diversity

refers both to the variety of species within different ecosystems and to the variety of ecosystems found within a geographical boundary.

in March last year, identifies three principal aspects of biodiversity – genetic, species and ecosystem (see box) – which are completely interdependent. Reducing the genetic diversity within a species reduces that species’ chance of survival. Destroying a species obliterates its genetic store and creates imbalance in an ecosystem. Destroying an ecosystem destroys or does severe harm to its component species.

Yet all these things are now happening as a result of human activity; the destruction of habitats in the course of economic development; pollution; overexploitation and modern agricultural techniques, are all reducing diversity at a rate which is at least 25,000 times greater than extinctions during evolutionary time. The US Global 2000 report has projected a loss of between 15 and 20% of all species by the year 2000.

It is this threat which has caused a number of international organisations to research, and draw world attention to, what is about to be lost. Prince Philip, launching the WWF campaign, described it as “an attempt to bring the seriousness of the global situation to the attention of people in all walks of life”. A media campaign in Britain in March, Bioalert 90, aimed to highlight the sense of urgency, and emphasised that we have only a decade in



Ahmed the Great, who became a living symbol of Kenya's conservation policy before he died in 1970. Photo by Mohamed Amin/ Camerapix

which to find solutions to these problems.

Discoveries

However, although the apparent motivation behind all the attention has been one of threat, what is being revealed by research is of quite another order. It is showing that the sheer number and variety of species on this earth is far beyond even our wildest conceptions. The facts alone are staggering. Whilst taxonomists have so far named about 1.4 million species of living organisms, there may be as many as 30 million unnamed species of insect alone. This would mean that biologists working over a time span of centuries have so far described fewer than 5% of

the world's species. What's more, the estimate for the total number of species is increasing all the time as new habitats are explored and new identification techniques are developed, so that current estimates may be in error by as much as a factor of ten.

The extent of diversity varies in different parts of the world according to such factors as climate and the age of the ecosystem. Whilst it is perhaps well-known that rainforests are areas of extraordinary diversity – they account for a diminishing 14% of the total land surface yet contain at least half the world's species – less attention has been paid to the wetlands, and the coral reefs which are suffering equally severe destruction.

Perhaps paradoxically, the infinite variety of species serves to further emphasise their uniqueness, for it is often the case that the greater the number of different species in a habitat, the smaller the number of representatives per species. One hectare of rain-forest at Yanomono, Peru, was found to contain as many as 300 different tree species, 195 of which were represented by only a single tree.(2) In contrast, Brian Hibbert, research communications officer for the Forestry Commission told us that the number of native species in the whole of Britain is only 33.

It is this aspect of uniqueness that is of most concern when habitats are being destroyed – an unknown number of species are disappearing without ever having been scientifically recorded, and with virtually no possibility of regeneration. However, these species are not unknown to man. In the rainforests, the native populations not only witness the diversity, but make use of up to 79% of all plant and tree species for food, building, crafts, medicine and commerce.(3)

Action

Can human activity be changed so as to conserve biological diversity, rather than destroy it? The first step, according to the WWF, is to educate people as to why it is so important. They themselves give two reasons, the moral and the practical. The practical reason considers diversity in terms of its usefulness to man. 'Usefulness' here varies from the fundamental role of diversity in guaranteeing the stability of our climate and our food supplies, to the beneficence to be found in the rainforests in the form of medicines, edible fats and oils, fuels, rubber, etc.

For example, genetic diversity is vital for crop stability. Modern agriculture relies on highly bred monocultures (large areas sown with genetically identical varieties) to the extent that 75% of all human nutrition is now provided by just seven species of crop:

wheat, rice, maize, potato, barley, sweet potato and cassava. In contrast, in the course of human history some 3000 varieties have been used as food, with a further 75,000 estimated to be edible. Highly bred varieties are also less resistant to disease – as proved by the Irish potato famine of the 1840s – and to changes in climatic conditions, an important factor if the predictions of the 'greenhouse effect' prove true.

Equally, our appreciation of the diversity of plants and their role in sustaining human health is still in its infancy. Of the 25,000 flowering plants

which have been scientifically described, only 2% have been investigated for their medicinal properties. Yet this 2% has yielded more than 40% of existing prescription drugs.

The moral reasons acknowledge the inherent right of every existing species to exist. WWF point out that the world is an interdependent whole, in which the well-being and health of one part depends on the well-being and health of the other parts, in its report (4) it says "Human culture must be built upon a profound respect for nature, a sense of being one with nature and a recognition that human

affairs must proceed in harmony and balance with nature". A relationship of this order not only recognises the need for man to act with compassion towards nature – but also points to the compassion of nature towards man in showing him what is required of him. "The ecological limits within which we must work are not limits to human endeavour; instead they give direction and guidance as to how human affairs can sustain environmental stability and diversity".

WWF recognises that no organisation can ultimately solve such problems as the destruction of diversity, but success resides in individuals deciding to act. Said Susan Briggs for the Bioalert 90 campaign: "What we are doing is asking each person to change their attitudes and their behaviour". The demonstration of the sheer magnitude of biodiversity – evoking as it does a response of awe – is perhaps, an essential aspect of this, and may prove to be a more potent stimulus to proper action than the negative one of threat.

1. WWF Biodiversity report
2. Professor Ghillelan Prance, *New Scientist*, 13th Jan 1990
3. *Ibid*
4. WWF Biodiversity report



In Amazonia, local peoples use more than 1300 plants as medicines.
Photo by WWF/Mauri Rautkari

The Elephant and The Whale

THE PLIGHT OF the elephant and its cousin the whale are poignant reminders of the delicate balance that must be maintained in establishing a harmonious mode of living between man and nature at a time of great change and a dramatic rise in world population (due to double in the next 40 years or so). The situation with the whale has been eased by a temporary ban on commercial whaling since 1985, though many are still under threat from so-called 'scientific' whaling, whilst the case of the elephant has recently been highlighted by the world-wide ban on ivory trade as a "last desperate

effort to save the African elephant" (1), as numbers have plummeted from 1.2 million to 600,000 in just 10 short years.

In an unprecedented display of international co-operation, all the major importers of ivory, through the auspices of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) have now banned trade to allow elephant stocks to recover. This came into effect on 18th January this year.

On January 17th the British government announced that this had been waived for six months to allow the Hong Kong Market to sell its ivory

stock "... and allow the 3,000 carvers to find alternative employment". There are strong arguments for and against this move, (2) but far more important than politics is the understanding that whilst the extinction of some species may be unavoidable, it is often our own attitudes which are the deciding factor. How much do we care? And when so many species are at risk from the predations of the human species, what is so special about the elephant and the whale?

Mythological Creatures

The straightforward and obvious answer is that they are the largest mammals in their domain and are therefore magnificent natural specimens.



Orangespine Unicorn Fish in the coral reefs. Photo J. Jackson/WWF

Looked at from another point of view, perhaps, their size is an expression of their intrinsic magnificence, the presence of which inspires men to glory – what would Hannibal have been to history without his elephants and is not Charlemagne ‘the Emperor of the West’ reputed to have been the first to bring elephants into the Frankish kingdoms? What of Captain Ahab and Moby Dick, and Jonah and the whale? In India, elephants not only perform a useful economic role (one elephant does the work of 40 men) but are recognised as sacred, being incarnations of the god Ganesh, the son of Shiva himself. (3)

These creatures form an intrinsic aspect of man’s mythology, and, as Joseph Campbell wisely points out, mythology is an essential part of his knowing of himself and of his place. Since knowing himself is essential to man’s very *raison d’être*, it follows that separation from other living creatures is to deny his nature, and to deny is to be diminished. So we become less each time a species is wilfully, or carelessly, allowed to be obliterated. Robots and computers, products of the mind of man are poor substitutes for animals which are interconnected with his soul and his spirit.

Futures

It is not only the poachers who threaten the survival of

the elephants. Even if the ivory-trade were banned indefinitely, the elephants would probably be killed by local farmers since they take up valuable land that would otherwise be used for growing food for the burgeoning population.

But hope is, perhaps, at hand. In accordance with the original meaning of economics (from *oikos*, the home, therefore the law of the home), it is being rediscovered that good management allows no waste and that economic activity is not incompatible with respect. On the contrary, as the Indians have demonstrated over a millenium, it can provide the support through which proper care can be given to the animals.

Whilst governments such as Kenya pursue the idea of elephant farming, another, more radical, idea has recently been proposed (4) – that of ‘elephant futures’. Futures are money markets where money is borrowed against future profit – usually in some commodity or against a currency. Planting a forest is an investment in a future, for instance, where the return will not materialise for some time. In the futures market, it seems that elephants have biology on their side, for as they grow older, their tusks grow faster and faster each year; the difference in tusk weight between a 30 year old and a 40 year old elephant is much

more than between a 20 year old and a 30 year old. The proposal is that since money is borrowed at a more or less steady rate, and as elephants tusks grow in this exponential manner, it will pay ivory investors to pay people to stop killing elephants and protect them instead. The elephant, whose life-span is close to our own, can then be allowed to die a natural death in dignified old age. The double tragedy of the last few years has been that elephants’ were destroyed for very small quantities of ivory – not even making economic sense. Hopefully similar ‘futures’ strategies might be adopted to save the whales and other threatened species such as the walrus, on which the illegal ivory trade has now set its sights. (5)

This is just one instance of the way in which economics and long-term planning is being looked at as the only way of saving our natural habitat – ‘sustainable resources’ it is called. Rather than separating man from nature, it is perhaps more helpful to see man’s acquired skills and *rationale* as intrinsic to nature herself. Nature, however, awaits man’s willing co-operation before unleashing its immense beneficence. We can truly be responsible to this

natural magnificence when it is perceived within ourselves – only then can we, like Jonah, be fit to be disgorged naked on the shoreline of our future possibility.

1. Representative of WWF
2. From a letter from the Foreign and Commonwealth Office dated 14th February, which went on to confirm that “Both the British government and Hong Kong are fully committed to the conservation of endangered species and to CITIES itself. We would not have entered a Reservation” (ie. a 6 month waiver) “if we believed that by doing so we were putting at risk the future of the African elephant”. The counter argument by WWF is that this waiver will open up new markets which will then attract illegal poached ivory after the 6 month period. Richard Leakey has consequently reported (New Scientist on March 3rd) that the number of elephants killed rose from 20 in November to 100 in January.
3. Though even there, amidst the adulation, numbers of wild elephants are decreasing through poaching and loss of habitat and now number no more than 18,000. (Channel 4 ‘Ganesh the Elephant God’ 18th Feb 1990).
4. The Independent, 15th January 1990.
5. Sunday Times, 11th March 1990.

Causality and Science

IN SUMMER 1989, the Institute of Noetic Sciences in California launched a three year investigation into contemporary models of causality in science. The President of the Institute, Willis Harman, explains that:

“From Francis Bacon on, modern science has been characterised by the explicit or implicit assumption of a deterministic universe and physical causality. Whenever human experience or observed phenomena have appeared to ‘violate’ this deterministic/physicalistic assumption, they have tended to be treated as outside the purview of science – or else nonexistent except in imagination” (1).

Harman believes that most people do not even bother to question the deterministic model, but that nevertheless, it has effect on all areas of our lives. “The more one thinks about it”, he has said, “the more clear becomes the relationship between our explanations of ‘why things happen’ and the kinds of ecological, political, and social problems we create for ourselves”. (2)

He has identified a number of places where modern science has uncovered ‘anomalies’ which do not fit the standard model of physical causality. These include areas of physics which involve measurement and observation (as in quantum mechanics); areas of biology involving the defi-

dition of life, development of form (morphogenesis) and the origin of species through evolution: and the consciousness-related sciences such as psychology, cognitive science, the neurosciences and the social sciences. The project is also an aspect of the larger function of the Institute of Noetic Sciences, which, as its name suggests, was founded to promote the study of consciousness in science. Harman feels that one of the reasons that science finds it so hard to tackle consciousness is because of the very narrow models of causal-

ty which constitute its framework, and that these are now actively inhibiting the growing number of scientists who see the necessity of changing their attitude.

In its initial stages the project, which is funded by the Laurance Rockefeller Fund for the Enhancement of the Human Spirit and the John F Fetzer Foundation, will undertake selective interviews – largely of scientists, but also of psychologists, philosophers, historians and theologians – to identify the issues which are of particular importance. The



second stage will concentrate on more detailed work on these, including encouragement and funding for 'critical experiments' which could help to distinguish between the

suitability of various alternative models. The third stage will be one of publication and the setting up of conferences and symposia, aiming 'to stimulate dialogue leading to a greater consensus within the scientific community regarding how these puzzles should be handled'. A large public conference is anticipated in about three years time.

1. *Project publicity*
2. *Noetic Sciences Review*, Autumn 1989, p6.

Photo of Willis Harman. Courtesy of Institute of Noetic Sciences

Salvation in the Human Heart

"So no, not the millenium. Not yet. Just a unique moment in history – perhaps no longer than the blink of a star – when in order to be a realist, it is necessary to be an idealist; when the improbable is happening every day, and the impossible every week; and where human imagination and human creativity, unleashed in time, may yet sweep us above the slough of hopelessness to which we have been condemned too long."

SO SAID John le Carré, reflecting on East-West relations at a literary luncheon in New York to

mark his latest novel, 'The Russia House' (Hodder and Stoughton, 1989). But these words were said last September, when neither he, nor anyone else, could know how true they would prove to be. For the subsequent unfolding of events across the world – the overthrow of the communist régimes in Eastern Europe, the repeal of Article 6 in the USSR, German unification, the release of Mandela in South Africa – was utterly unforeseen.

More than unforeseen, these events were to an extent unforeseeable. Whilst few peo-

ple have fully absorbed the implications or the meaning of the transformation, there is nevertheless reason to suggest that these changes are expressions of the fact that people are looking for new forms of cultural and political life.

One leader whose emergence has come to epitomise the spirit of the times is the new president of Czechoslovakia, Vaclav Havel – a poet and playwright who only six

months ago was under arrest. His New Year's Address to his nation was described by the Washington Post as "an enormous and priceless contribution to understanding not just the meaning of the revolution in Eastern Europe, but also the obligations that revolution now imposes on the people who brought it about". The following is taken from a speech he made during his recent world tour.

An Extract from Vaclav Havel's speech to the American Congress, February 21st 1990

... I HAVE ONLY BEEN president for two months, and I haven't attended any schools for presidents. My only school was life itself, therefore I don't want to burden you... with my political thoughts, but instead I will move on to an area that is more familiar to me, to what I would call the philosophical aspect of those changes that still concern everyone, although they are taking place in our corner of the world.

As long as people are people, democracy in the full sense of the word will always be no more than an ideal; one may approach it as one would a horizon, in ways that may be better or worse, but it can never be fully attained. In this sense you too are merely approaching democracy. You have thousands of problems of all kinds, as other countries

do. But you have one great advantage. You have been approaching democracy uninterruptedly for more than 200 years, and your journey towards the horizon has never been disrupted by a totalitarian system. Czechs and Slovaks, despite their humanistic traditions that go back to the first millenium, have approached democracy for a mere 20 years, between the two world wars, and now for the three and a half months since the 17th November of last year.

The advantage you have over us is obvious at once...

At the same time, however – unintentionally, of course – (the legacy of the communist system) has given us something positive; a special capacity to look, from time to time, somewhat further than someone who has not undergone this bitter experience. A person who cannot move and live a normal life because he is



Nelson Mandela at Soweto soccer stadium, the first public rally after his release from jail. © Popperfoto/Reuter



The Dalai Lama in Prague, during his visit to Czechoslovakia in February, paying tribute to the statue of St Wenceslaw, whom Czechs regard as the patron saint of their revolution. Invitations to the Pope and the Dalai Lama were amongst the first actions of the newly formed democratic government – the first official invitation ever issued to the Dalai Lama, who was entertained personally by Vaclav Havel. Photograph © Popperfoto

pinned under a boulder has more time to think about his hopes than someone who is not trapped in that way.

What I am trying to say is this: we must all learn many things from you: how to educate our offspring, how to elect our representatives, all the way to how to organise our economic life so that it will lead to prosperity and not to poverty. But it doesn't have to be merely assistance from the well-educated, the powerful and the wealthy to someone who has nothing, and therefore has nothing to offer in return.

We can offer something to you: our experience and the knowledge that has come from it.

THIS IS THE SUBJECT for books, many of which have already been written and many of which have yet to be written. I shall therefore limit myself to a single idea.

The specific experience I'm talking about has given me one great certainty: consciousness precedes being, and not the other way around, as the Marxists claim.

For this reason, the salva-

tion of this human world lies nowhere else than in the human heart, in the human power to reflect. In human meekness and in human responsibility.

Without a global revolution in the sphere of human consciousness, nothing will change for the better in the sphere of our being as humans, and the catastrophe toward which this world is headed, be it ecological, social, demographic, or a general break-

down of civilization will be unavoidable. If we are no longer threatened by world war, or by the danger that the absurd mountains of accumulated nuclear weapons might blow up the world, this does not mean that we have definitively won. We are in fact far from the final victory.

We are still a long way from that 'family of man'; in fact, we seem to be receding from the ideal rather than drawing closer. Interests of all kinds –

personal, selfish, state, national, group and, if you like, company, interests – still considerably outweigh genuinely common and global interests... We are still destroying the planet that was entrusted to us, and its environment. We still close our eyes to the growing social, ethnic and cultural conflicts in the world. From time to time we say that the anonymous megamachinery we have created for ourselves no longer serves us, but

Mr Gorbachev demonstrates the new politics of persuasion during his visit to Lithuania, where he went out onto the streets to argue against secession. Subsequent events testify to the enormous difficulties which still need to be overcome before the promise of perestroika is fulfilled. Photograph © Japan Out/TASS.



rather has enslaved us, yet we still fail to do anything about it.

In other words, we still don't know how to put morality ahead of politics, science and economics. We are still incapable of understanding that the only genuine backbone of our actions – if they are to be moral – is responsibility. Responsibility to something higher than my family, my country, my company, my success. Responsibility to the order of being, where all our actions are indelibly recorded and where, and only where, they will be properly judged.

The interpreter or the mediator between us and this high-

er authority is what is traditionally referred to as human conscience.

If I subordinate my political behaviour to the imperative mediated to me by my conscience, I can't go far wrong. If on the contrary I were not guided by this voice, not even ten presidential schools with 2,000 of the best political scientists in the world could help me...

This is why I ultimately decided – after resisting for a long time – to accept the burden of political responsibility.

I am not the first, nor will I be the last, intellectual to do this. On the contrary, my feeling is that there will be more

and more of them all the time. If the hope of the world lies in human consciousness, then it is obvious that intellectuals cannot go on forever avoiding their share of responsibility for the world, and hiding their distaste for politics under an alleged need to be independent...

I THINK THAT YOU Americans should understand this way of thinking. Wasn't it the best minds of your country, people you could call intellectuals, who wrote your famous Declaration of Independence, your Bill of Human Rights and your Constitution and who – above all else – took upon

themselves the practical responsibility for putting them into practice... When Thomas Jefferson wrote that "Governments are instituted among men, deriving their just powers from the consent of the governed," it was a simple and important act of the human spirit. What gave meaning to that act, however, was the fact that the author backed it up with his life. It was not just his words, it was his deeds as well...

History has accelerated. I believe that once again it will be the human mind that will notice this acceleration, give it a name and transform those words into deeds.

The English Speaking World

IT IS NOTABLE but perhaps not surprising that the countries of Eastern Europe, having begun 1990 in jubilant, victorious form, should feel it necessary to make known almost immediately their need for teachers of English. Freed from government-imposed Russian lessons, the great majority of students in East Germany, Poland, Czechoslovakia, Yugoslavia, Rumania and Bulgaria choose English: their new democratic governments cannot help but ask for it too. Poland alone would like 40,000 new English teachers, half of those by the end of the decade. Hungary would like its 3,000 Russian teachers to 'convert' to English; the other countries follow suit.

A Key to Development

A recent article by Tim Rayment in the Sunday Times (1)

Alan Hughes, co-ordinator of the scientific team at the Oxford English Dictionary. Of the 5000 new words included in their new edition published last spring, 1200 were new science words, as opposed to 95 from economics and 175 from politics, reflecting the new role of English as the official language of science. This photograph by Pete Addis first appeared in New Scientist, London, the weekly review of science and technology, 29th July 1989.

quoted Professor David Crystal to the effect that the number of English speakers has doubled in the last 30 years. 350m people now speak it as their mother tongue, 350m as their second language, and a further 100m are fluent in it as a foreign language. Although Chinese dialects boast the largest number of speakers, with 1000m speakers in China alone, Crystal has no doubt that English may be considered the world language now.

Neither is the conversion limited to Eastern Europe, or even to developing countries in Africa and the Pacific rim. Jo Ritzen, the Dutch Educa-

tion minister, has recently provoked fury in his own country by proposing that university teaching should be conducted in English; whilst in France, a nation fiercely proud and protective of its tongue, the prestigious Pasteur Institute in Paris capitulated to what is now the international norm and published its annals in English last spring. Scientific conferences are now following their example.

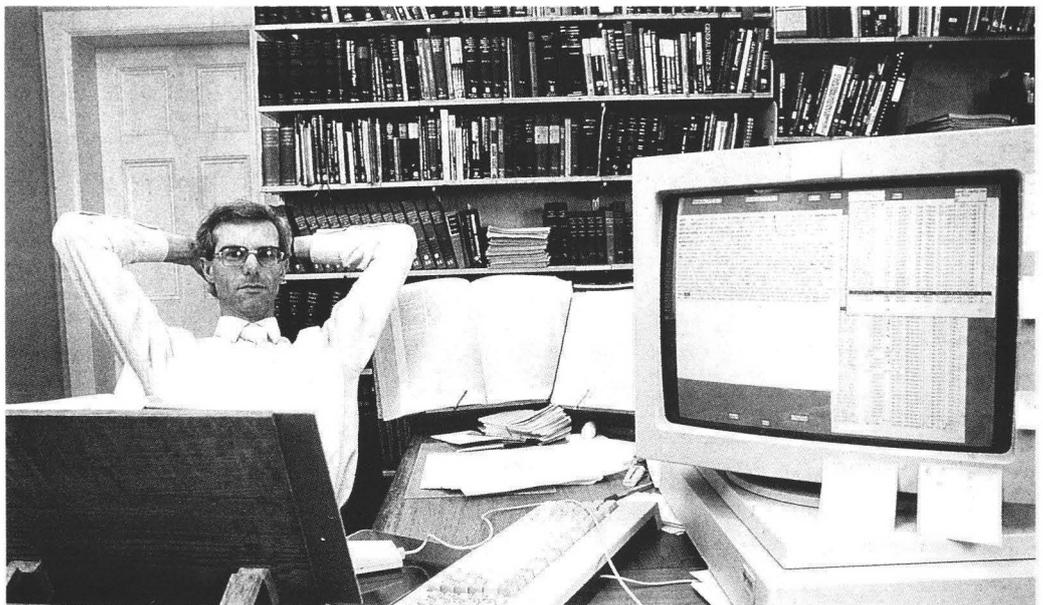
Sir Richard Francis, director-general of the British Council, whose organisation is active in helping train teachers in the field, has said:

"If there is one safe prediction for the 1990's, it is that the English language will become universally recognised as the

most important key to economic development and social betterment". (3)

Translations

One might ask, though, what it is about the English language which has given it such a prominent place in international affairs. The question is easier to answer in the realms of science – where it seems that the language has proved itself able to 'carry' scientific terms and concepts in a much more precise and concise way than many others – than in the realms of literature, religion or spirituality. Scholars translating from the five languages which have traditionally been called sacred – Greek, Hebrew, Arabic, Sanskrit and Chinese – often find English



dry and technical; yet simply because it has found itself to be the medium through which actual, practical communication is best effected on a global scale, English may have to be reconsidered in this light, and perhaps revalued.

When the representatives of the world's six major religious traditions met under the auspices of the Faith and Environment Network last year, they decided that in order to talk effectively, they first needed to understand each other, and that meant studying each others great texts. (3) Consequently, they launched a long-term programme of translation, and it was almost inevitable that English was the chosen medium. This project

will add to the great swell of spiritual classics and commentaries – Buddhist, Taoist, Hindu, Islamic, Jewish and even Aboriginal and native Indian – which have been translated during this century, including many initially thought to be untranslatable because English seemed too remote in grammatical habit from the original.

Such developments prompt questions about the content of a dialogue made possible by a 'universal' language. What, for example, is the conversation appropriate to the earth understood as a single body with many voices?

1. *21st January 1990.*

2. *Ibid*

3. *See Beshara 8*

Global Forum in Moscow

"A great challenge lies before us. How are we to adapt ourselves, our ways of life, our institutions and our most basic thinking, so as to assure human survival in the century to come, and beyond?"

(Gro Harlem Brundtland)(1)

THE GLOBAL Forum on Environment and Development, held in Moscow from 15th to 19th January, was truly global in composition, content and intention.

Opened by an address by UN Secretary General Javier Perez de Cuellar, and closed by one from Mikhail Gorbachev (who honoured his commitment to the event despite the civil war in Azerbaijan), it brought together over 1000 people – parliamentarians, spiritual leaders, scientists, artists, journalists, and students – from 83 different countries, from most of the world's religions and from a large number of indigenous peoples. All came as individuals, with knowledge and experience in different spheres, but united by the concern for human survival. In addition to a week of presentations and working groups, they were treated to a stunning array of

cultural events, including a reception at the Kremlin attended by Mr Gorbachev.

The Global Forum was launched in England in 1988 (2) and this was only its second meeting. What distinguished it from the many other environmental conferences currently being held all over the world was the explicit recognition that the issue of global survival has a spiritual as well as a physical dimension. "As our scientific understanding of the natural order improves, we are astonished to find that the wholeness of the universe and the oneness of creation are matters of documentable fact, rather than only of spiritual or philosophical insight", said the US Senator for Texas, Albert Gore. "We also understand that if humankind does not succeed in rejoining the wholeness of things, we will continue to release profoundly destructive forces whose consequences may be far beyond our abilities to remedy."

Intentions

The subject matter of the Forum was extensive, covering such topics as 'Environment and Development', 'The Earth and Human Society,' 'Technology, Industry and Urbani-



Gro. Harlem Brundtland. Photo by Mary Bloom © 1990

sation' and 'Global Education'. It was addressed by many eminent speakers, including Gro Harlem Brundtland, former Prime Minister of Norway; physicist Carl Sagan; Lester Brown, founder of the WorldWatch Institute; and Nobel Laureate Elie Wiesel. Almost without exception, they paid tribute to Mr Gorbachev for his role in bringing about what Mrs Brundtland called the " 'global warming' in political relations" and hence replacing a climate of confrontation by one of co-operation and collaboration.

However, as if to remind us that there are still many problems in international politics, the conference was not graced by the presence of His Holiness the Dalai Lama. Although he had made a great contribution to the Oxford Forum, the Moscow organisers withheld an invitation because of pressure from the People's Republic of China. For the same reason, the Buddhist representative on the

Forum's Council of Members, the Tibetan Doboam Tulku, was not present.

It was striking that although the seriousness and immediacy of environmental problems were accurately portrayed during the course of the five days, the Forum took a very positive approach; viz that the present situation can teach mankind a great deal about his relationship to his world, to his fellow human beings and to himself, and so act as a spur to real progress. There was a general conviction that solutions are possible. Lester Brown of the WorldWatch Institute, for instance, gave a detailed description of how the technical expertise necessary to bring about an environmentally sustainable global economy is already available. Other speakers pointed out that the appropriate international organisations are already in existence, principally through the various United Nations Agencies, whilst the finance could be made available were it to be freed from defence

expenditure.

However, some people pointed out that even this will not be sufficient. Karan Singh, Ambassador of India to the United States maintained that

"...It is not as though we lack the intellectual or economic resources to tackle the [ecological] problems. ... But what is missing is the wisdom and compassion to do so. Knowledge proliferates but wisdom languishes. It is this yawning chasm that will need to be bridged..."

Education

Amongst the many themes which emerged during the proceedings was the need for 'global education'. Frederico Mayor, Director General of UNESCO, explained that there are three levels on which this can be understood. "The first, which is fundamental to all the others, is the need and moral imperative of providing education to everyone, child and adult alike, throughout the world..." he said. "The second level, toward which we must strive, is to harness school systems, non-formal learning and informal education to teach and learn about global issues... This includes not only the underprivileged... but also those with the highest and most specialised educational backgrounds who, all too often, lack a global vision or an understanding of the interconnectedness of self, society and nature on a planetary scale."

The third level, he went on, concerns the means at our disposal to project a global reach for education through both simple and highly-advanced existing technologies. "Today the means exist...to provide global education with the whole world as its classroom... Yet the question remains concerning our ethical, spiritual and intellectual capacity to arrive at a global vision for ourselves and to share it with others."

Media

As if to demonstrate Mr Mayor's last point, this Forum

pioneered a tremendous advance in global communications. For the first time in human history, the two great satellite networks of West and East, INTELSAT and INTER-SPUTNIK, combined in donating satellite access for a television broadcast to 139 countries, and a potential audience of 2 billion viewers. In accord with the spirit of the Forum, the two hour broadcast on January 19th aimed to show what was possible, and so contained stories of environmental progress and positive development from around the world. (In case readers in the UK are wondering how they could possibly have missed it, the answer is that not one UK television channel would accept the broadcast, nor was the Forum even mentioned in most UK newspapers – Walter Schwarz of 'The Guardian' being a notable exception.)

Following the success of this venture, a working party headed by Evgeni Velikhov, Vice-President of the Soviet Academy of Sciences, is now exploring the potential of such broadcasts to educate and inform, globally, on issues which affect our survival.

The Forum also held a special media forum, in which some 57 delegates from the world's news services, along with many other journalists and observers, met to discuss the responsibility of the media in communicating global issues. They criticised the 'Man bites Dog' definition of news – reporting only the ephemeral and sensational – and suggested that the media have a responsibility not only in educating and informing the public, but in helping to create a climate of opinion. In their final statement Varindra Tarzie Vittachi of Sri Lanka, Chairman of the Media Panel said that the conference had "recognised that there were two kinds of media; the news media... and a non-news media, consisting of clergy of every denomination, and schoolteachers who have been in the business of communicating messages of value for more than 2000 years."

Poverty and Technology

Another area of major concern was the downward spiral of poverty, population increase and environmental degradation. Delegates deplored the fact that during the last decade living standards in the world's poorest countries have actually fallen. Urgent action was recommended to remove the debt burden; to provide the technical assistance needed to design sustainable development strategies; and to transfer environmentally sound technologies along with the financial aid to adopt them. "Many choices which degrade the environment, such as cutting down forests for fuelwood and farmland, are

more environmentally friendly, not eliminate technology itself."

Science and Religion

At the outset of the Forum an international group of 23 distinguished scientists, organised by the astronomer Carl Sagan, released a written Appeal for a Joint Commitment between Science and Religion.

"Problems of such magnitude, and solutions demanding so broad a perspective, must be recognised from the outset as having a religious as well as a scientific dimension... As scientists, many of us have had profound experiences of awe



Dr Karan Singh. Photo by Mary Bloom © 1990

made in the developing countries because of the imperative of immediate survival, not lack of concern for the future", pointed out William Draper, the administrator of the UN Development Programme. "Similarly, rapid population growth in the developing world will be reduced not by rhetoric, but through human development. Lack of development, not excess of it, causes most environmental problems in the developing world".

Draper also emphasised the importance of understanding and using technology properly. "Let us not forget, in the midst of our present concern with some of the ill-effects of technology on environment, that human life is much safer today than two centuries ago... We need to make technology

and reverence before the universe. We understand that what is regarded as sacred is more likely to be treated with care and respect. Our planetary home should be so regarded. Efforts to safeguard and cherish the environment need to be infused with a vision of the sacred. At the same time a much wider and deeper understanding of science and technology is needed. If we do not understand the problem, it is unlikely we will be able to fix it. Thus there is a vital role for both religion and science." (3)

This Appeal was circulated to religious leaders worldwide, and within a matter of days nearly 100 prominent leaders had signed a letter resolving to "explore as soon as possible concrete, specific forms of collaboration and action."

Future

In their final statement, the 'Moscow Plan of Action', the Global Forum appealed to governments, organisations and individuals to raise their awareness of the problems and solutions that had been discussed, and made specific proposals for future action. These included endorsing the UN World Environment and Development Conference in Brazil in 1992 (at which, it was felt, a number of the proposals made here could be put into practice and receive international ratification), and calling for a council of spiritual leaders to take place in 1993 to consider questions of environment and development.

If the Forum exhibited a weakness, it was in its identification of spirituality with religion, and its failure to exam-

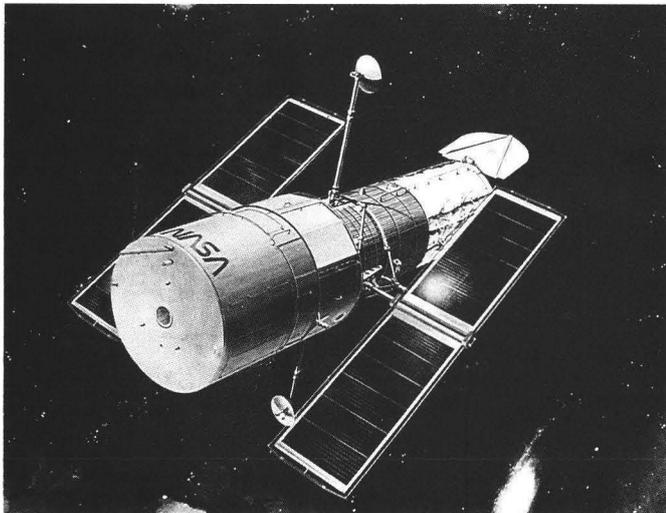
ine directly the possibility that new forms of spiritual understanding are being demanded by the times. However, as Roland Smith pointed out, the Global Forum has only just begun. If the meeting in Oxford was its conception, then Moscow is its labour and birth, and much remains to be done to enable it to grow up. Perhaps addressing this question will be one very important factor in its maturation.

Alison Yiangou

1. *Former Prime Minister of Norway and Chair of the World Commission on Environment and Development (The Brundtland Commission).*

2. *See report in Beshara Issue 6, 1988.*

3. *'Preserving and Cherishing the Earth: An Appeal for Joint Commitment in Religion and Science'.*



Artists impression of NASA's space telescope Photo Perkin-Elmer Corporation/Science Photo Library

Looking Into Time

THE IDEA OF putting a large optical telescope into space has been around for more than 15 years, but it is to be finally fulfilled this spring when the Hubble Telescope will be launched by the Space Shuttle (1).

A joint venture between America and Europe, the telescope will carry a 2.4m mirror and has a life expectancy of about 15 years. Although smaller and less technologically advanced than some of the present ground telescopes, it

will have a major advantage in that the light that it receives will not have to pass through the atmosphere, which causes it to become scrambled up – an effect which we normally call 'twinkling'. This scrambling makes it difficult to disentangle objects which are close together – a distant planet moving around a star, for instance – or to focus on objects a long way away. The telescope, staring into a space of unblinking stars, will allow astronomers to study objects

that are 50 times fainter and 7 times farther away than at present, and to survey a volume of space 350 times greater.

One of the big excitements of this project is that, because of the finite speed of light, looking out into space is also looking back in time. The improved resolution should therefore allow astronomers to study distant galaxies and quasars as they were soon after their formation in the 'Big Bang' 15 billion years ago. A second hot topic, which meshes with current interest in finding other life in the universe, is the hope of discovering extra-solar planets. If there was a planet the size of Jupiter going round a near-by star, for instance, then the space telescope could conceivably spot it.

A third major project is the study of the other planets in our own solar system. The space telescope can take pictures, which, whilst not quite

as good as those taken by the Voyager missions, are nevertheless very good and will allow monitoring of moons and rings over a longer period of time. There is also the planet Pluto, not visited by Voyager and about which at present we know almost nothing.

Observation time on the telescope will be shared between American and European scientists in the proportion of financial contribution – 85% to 15% – and the signals will be picked up by special space laboratories in Baltimore and Germany. The telescope will be serviced in space; each instrument is modular in nature, and every five or so years astronauts will take it back into the space shuttle and replace certain of them with updated versions.

1. *The launch is scheduled at the time of going to press for April 19th, although scientists phlegmatically anticipate delays.*

One World

AN IMPORTANT step towards 'Global Education' will be taken this May, when a week of programmes dedicated to the idea that our world is 'One World' will be transmitted simultaneously throughout Europe – with some being broadcast worldwide.

Initiated by Rolfe Seelman-Egbert of ARD Germany, the 'One World' project has brought together nine of Europe's largest public service networks. Over the past year they have co-financed and co-produced a series of programmes aimed at raising "public awareness and understanding of the political, social, economic and moral factors that underlie the... crises facing the world today."

Scheduled for the week May 20th–26th, these programmes include a specially-commissioned drama about environmental refugees; debates from an important conference on the Brundtland Commission report taking place in Bergen on 6th – 12th May; and a 'One Voice' musical documen-

tary bringing together classical and rock musicians from across the world.

However the highlight, which is yet to be finalised, is intended to be a live, satellite-linked 'question time' bringing together Presidents George Bush and Mikhail Gorbachev with UN Secretary General Perez de Cuellar. Senior broadcasting journalists from the participating networks will question the leaders, whilst simultaneous translation systems will enable each to answer the others in what is hoped will be 'genuine dialogue'.

'One World' is seen by its organisers as a serious attempt to address the responsibility of the media in educating and creating a climate of awareness. It aims on the one hand to demonstrate "that (people) have an active role in... changing the world", and on the other to balance 'bad news' with 'good news' for, they maintain, "it is only by hope, and not frustration, that the serious problems we now face can be tackled".

Beckett and the Unnameable

Aaron Cass pays tribute to the great writer

"For to know nothing is nothing, not to want to know anything, like-wise, but to be beyond knowing anything, to know you are beyond knowing anything, that is when peace enters in, to the soul of the incurious seeker"

SAMUEL BECKETT, one of the literary masters of the 20th century, died on 22nd December 1989. Born in Ireland on Good Friday 1906, a contemporary of James Joyce and friend of Vaclav Havel, his work spans a period that is one of the most problematic in the history of western literature; a period in search of story, a coherent myth, a time in which, in moments, the world has appeared only a hair's breadth from oblivion.

Self-exiled from Ireland, Beckett wrote in French and translated his own work into English. Success did not come to him until his play, 'Waiting for Godot' was performed in 1955, in spite of the brilliance of his earlier prose works – 'Murphy', 'Malone Dies', 'Molloy' and 'The Unnameable'. Few who have read him will remain unaffected by the rigour and beauty of his sentences, his sheer craftsmanship in conveying a language on the very edge of itself.

Gifted with Awareness

Beckett was one of the very few writers to become famous in his own time, but he nevertheless remains a mystery. He assiduously avoided interviews and publicity, perhaps aware of what might be attached to his silence, his cultivated unknowing. Yet even so, he had many friends, a man much loved.

His are works in which the mysteries of the self are presented untrammelled by mere psychology or the patterns of myth. He had no graspable metaphysic, defiant of categories other than perhaps that of the ever-changing, ever-remaining (both of which he would properly deny). What has been misunderstood as mere nihilism is a

purposeful unbelief, an almost ascetic concentration on the non-particular. The universality in his writings is that of man's search for himself, his meaning, his origin, and more than these – that of compassion in the face of the extraordinary predicament of being gifted with awareness.

His question is the relentless and the impossible one – impossible in this life – for it has to do with destiny; not destiny according to stars and birth, but the destiny of each moment, the very happening of time itself; a pointing to what it means to be present and alive: "an absence less vain than inexistence" "a deeper birth, a deeper death, resurrection in and out of this murmur of memory and dream" (Texts for Nothing).

The Unnameable

In a way, Beckett was too astute, too aware of his own limitations to go beyond the observation and detailing of the essentially inexplicable. He affirms what cannot be limited or affirmed, and nothing else. One senses in his work a fearless eye, sometimes almost mystical, but never confined by the presuppositions of belief.

His humour guards against the testing pretensions that can arise in this sort of contemplative, essentially interior work. His characters, whether disembodied voices or people on stage, express the interminable paradoxes and motion of existence, the awful incapacity and vertigo of being mere possibilities, fictions, as, in some sense, we also may be. The pain of characters like Estragon and Vladimir, or Krapp, is the pain of separation, of otherness, yet held by some unqualified mercy from ever being able to



Samuel Beckett, Paris Dec. 1985

Photo by John Minihan

stand the loneliness, of ever expressing anything but weakness:

"I didn't want to die a stranger in the midst of strangers, a stranger in my own midst." (The Unnameable)

It is as if the very saying of 'I' is its mystification, its burial amidst 'others'; what makes it a real and elusive treasure.

Yet one would like to think of Beckett that it was the sheer unequivocation of silence that moved him, a longing for meaning rather than mere dissatisfaction with the thingness of things. Amidst the the complexities of arrangements, there is always implied the chance of knowledge, an irreducible comic awareness of who and where we are. And in works such as the 'Unnameable' we sense a real interiority, implic-

itly rich, with a presence somehow nearer to the narrator than his own impoverished self – and this because it is his own self, Unnamed: "I who am on my way, words bellying out my sails, am also that unthinkable ancestor of whom nothing can be said." (The Unnameable)

Beckett does not lend himself to epitaphs, because such messages fade. But his writings are a testament to a contemplative poise, a rigorous quietude in the face of unrelenting odds. In his life, he was known to be a man of true generosity and kindness; and so if it were possible to venture an epitaph, I would make it of his own words, from 'Malone Dies':

"It is because I am no longer I, I must have said so long ago, but another whose life is just beginning".

Conferences...

ART CULTURE & THE UNIVERSAL VISION

World Goodwill, London, October 28th 1989

"Art", declared Kathleen Raine, opening this conference, "should concern itself not with every passing thought or negative obsession, but with the vision of the Divine". The speakers who followed described widely differing initiatives, from activism in the Brazilian rainforests to TV satellite spectacles, but the search for a spiritual vision in the forms of contemporary culture remained the inspiration of the day.

An office for a banking corporation might seem an unlikely starting point for such a quest. But for Ton Albert, organic architect and university lecturer, who gave the second presentation, it seems quite natural to apply his ideas to the demands of

Ton Albert's NMB Bank headquarters Amsterdam, designed according to his principles of 'organic architecture'. The pentagonal windows at the top of the towers are huge solar panels which allow the building to use a quarter of the energy of a conventional office block.

urban commercial life in late 20th century Europe. The whole principle of 'organic architecture' which he has pioneered is one of natural and pragmatic adaptation to the demands of users and environment. This is not to imply an architecture devoid of vision. The opening sketches he presented of one of his best known buildings, the NMB Bank in Amsterdam, revealed rose-coloured towers reaching into the sky, reflecting Albert's belief that "the tendency of the mineral kingdom is upwards, seeking light" and that such aspiration communicates itself to the building's users.

A similar attempt to use the means of contemporary culture was described by Bob Duffield, a TV producer working on the forthcoming One World project (see page 12), whilst John Lane of the Dartington Foundation in Devon ended the day with a call for a new approach to creativity in our society. Judging by the warm response from the 300 or so participants, the various speakers had succeeded in demonstrating it.

Kathy Cresswell

FAITH, ECONOMICS & A NEW ECONOMIC ORDER FOR THE 21ST CENTURY

New Economic Foundation, London, December 9th 1989

This conference sponsored by WWF and Christian Aid launched a new venture, 'The Faith and Economics Network' which aims to emulate the highly successful 'Faith and Conservation Network', and cultivate dialogue between religious traditions and groups working towards new models of economics.

James Robertson from New Economics Foundation began by suggesting that there is growing realisation that our economic system is not at all value free, but embodies a particular attitude towards the world which has an immense effect. "It is time for us to commit ourselves to discovering an economics which is subordinate to ethical and spiritual values," he said. His talk was followed by presentations by the different faiths – Bahai', Buddhism, Christianity, Judaism, Hinduism, Islam and Sikhism – on aspects of their economic teachings, and after lunch delegates divided into groups for discussion.

This was very much an initiatory event, working up to the official launch of the network in 1992 in Uppsala, Sweden. There was much talk about the short-comings of our

present economic system, but only two representatives suggested that the religions will also have to change. Aubrey Rose, speaking on behalf of Judaism (in a paper which was read out in his absence) questioned the assumption that the influence of the religions would necessarily have produced a more beneficent economic system. We have to recognise, he said, that religious institutions themselves suffer from many of the defects – massiveness, bureaucracy, inflexibility etc – which people like Schumacher have identified in business and government. Earlier, Ed de la Torre, a Catholic liberation theologian from the Philippines, had delivered a passionate plea on behalf of the poor of the world. It would be a sign of hope, he said, if those who had the most to lose in change (ie. those in the developed countries) should adopt the new values first.

Jane Clark

ART & THE ABSENCE OF GRACE?

Cambridge, January 4th 1990

Questions raised by the Rev. George Pattison in his review of Peter Fuller's book 'Theoria: Art in the Absence of Grace' in BESHARA 10 were raised again at a gathering at St Mary's Convent. George Pattison invited question and comment from a distinguished invited audience, which included theologians, art critics, and artists. Whereas in the original quote by Ruskin, 'The Absence of Grace' referred to Ruskin's own loss of faith in the face of scientific theories such as Darwinian evolution, here the phrase was followed by a question mark, indicating the central point of the day's discussion.

Three papers were given, the first by Peter Fuller himself, in which he described the evolution of his point of view regarding art and transcendence, and mentioned also the ease with which artists and critics now speak about the spiritual nature of artistic creation. Such discussion is, he said, quite the fashion. Curious, because this fashion sig-



nals such a marked change in the climate of the art world, exemplified, perhaps, by the success of Fuller's own magazine, 'Modern Painters', which he launched in 1988. He was followed by Graham Howes, lecturer in Sociology at Cambridge, who spoke on the subject of 19th century religious art, and by painter Oliver Sosskice who, using as an example a painting by Cezanne, talked about art as an immediate response to the luminosity of being.

the coming years.

This event was organised by the Bhaktivedanta Institute, a research foundation with centres in Bombay and San Francisco which, in its own in-house scientific studies, uses paradigms for consciousness from the Bhagavata tradition of Vedanta. This was the second major conference they have organised to which they have invited eminent scientists from different disciplines to talk on or about the subject of consciousness and science.

entirely new kind of science was needed. Other speakers saw no reason why scientific method should not be applied and suggested that there was already in existence a wealth of data which needed examining. Robert Jahn, who delivered one of the only two papers on the study rather than the theory of consciousness, described his work at the Princeton Engineering Anomalies research project. This studies the effect of the consciousness of the operator on a

Where consciousness resided was a question which provided at least as much disagreement. There were those who stated categorically that it only exists in living beings and is dependent on them, dying when they die. Others described a consciousness which is the ultimate ground of all existences, both corporal and mental. Robert Rosen, a biologist from Halifax, asked the question (but did not provide the answer!) "Is consciousness immanent or transcendent?" deliberately using, he said, terms which scientists had abandoned 400 years ago.

This question seems to lie at the heart of why science is beginning to look at consciousness. It perhaps points out also why the event of the conference itself, and the interest it generated, may be more important than any of the papers delivered there. Consciousness, which for so long has seemed to be transcendent, belonging to the fields of philosophy and religion, is now beginning to be seen as inextricably bound up with matter.

Different Beliefs

One of the most exciting challenges was provided by a speaker from the floor in a short paper delivered at the end of the conference. He divided beliefs regarding consciousness into three different camps: materialism, which claims that it can only be understood by science; humanism, in which he included religion, which holds that it can only be felt subjectively; and transcendentalism, which holds that only through self-transformation can consciousness be known. The adherents of each set of beliefs, said the speaker, remain convinced that the other paths can never lead to an understanding of consciousness, but each of them is in fact embraced by it. Only a comprehensive knowledge can see each to be true from its own point of view. He urged science to be satisfied with nothing less.

Jane Carroll



Speakers at The Study of Consciousness within Science. Photo courtesy Bhaktivedanta Institute

Noteworthy in itself was the discussion following each talk. There were debates concerning the role of 'chance', and the potential – if not always actual – spiritual function of abstraction in art. Firm conclusions were not expected; more important was the fact that the meeting generated a lively discussion, and was a conversation begun, no doubt to continue.

Martha Chamberlin/ Adam Dupré

THE STUDY OF CONSCIOUSNESS WITHIN SCIENCE

The First International Conference

San Francisco, February 17th –18th 1990.

Karl Pribram, the distinguished neurologist, declared during the course of this two-day event, that ten years ago the word 'consciousness' could not be used in scientific discussion. A fellow speaker pointed out that at the turn of this century the atom was not considered a suitable subject for scientific study. But just as the atom is now the central focus of modern physics, so, it was suggested, the study of consciousness will become crucial to scientific thought in

A Clear Mandate

There was a clear consensus among the speakers and a resounding mandate given by the audience (a packed hall of 400 people) that consciousness must now be studied by science. Brenda Dunne of Princeton University said that the old distinctions between subjective and objective, mind and body, must be seen to be distinctions made within consciousness, by consciousness. John Searle of UC Berkeley said that the 'mind/body problem' would disappear as soon as it was no longer perceived as a problem, and he urged speakers at the conference to study consciousness from whatever discipline they came, and to leave it to the university deans to make the distinction between philosophy and the natural sciences.

How science is to study consciousness, or how it is to study itself studying itself, was a subject of much debate in the panel discussion. Can the tools of classical physics, the experiments of which assume the objectivity of the observer, be used to study consciousness? Henry Stapp of Laurence Berkeley Laboratories, amongst others, claimed that an

machine which is randomly throwing dice, describing how there is an indication of a positive effect.

Many Theories

If there was an agreement that science, in either new or traditional ways, should be studying consciousness, there was little agreement on what consciousness was, or where it resided, and the conference was disappointing in providing few bold new theories in this area. Definitions were broad in scope. Sir John Eccles posited an 'element' of consciousness called a 'psychon' which he claimed to be the intermediary between the mind and the brain. Karl Pribram suggested that consciousness had parallels with Plato's 'Essences', those quiddities of things which are independent of the states and changes: whilst Henry Stapp stated that the lessons of Quantum Theory told us that the basic realities are not things but events, and suggested that consciousness is the 'felt experience of an event'. He asked: "How do we account for the richness of the felt experience or the feel of self?"

The Bequest of Beatrice

Dante and the 700th Anniversary of 'La Vita Nuova'

by William Anderson

BEATRICE PORTINARI, the love and creative force of Dante's life, died on 8th June 1290. Following her death he compiled the work 'La Vita Nuova' which is an account of the miracle of understanding she brought about in him. Her inspiration returned to him later in life when he wrote 'The Divine Comedy,' she sets the events in motion whereby he is taken through the depths of hell and up to the summit of Mount Purgatory where she comes to greet him. She is his guide through the spheres of heaven and leads him to the final vision of God in the mystic Rose.

This year therefore marks the seven hundredth anniversary of her death – an event which through its effects, first on Dante and then through the recurring influence of his works, has changed and continues to change the imaginative life of western man. These are just some of the effects of her death. In the record of his love for Beatrice set down in 'La Vita Nuova', Dante created the first autobiographical work devoted to the psychological understanding of love: such is the power of the mood he conveys in 'La Vita Nuova' he can also be said to have created the beginning of the western novel. This work is, as well, generally regarded as a landmark in man's awareness of his secret life and of his ability to draw into the light of consciousness the treasures of his deepest self.

Dante was to call Beatrice "the light between the intellect and truth". She could therefore be regarded as the light of consciousness, the transforming power of the awakened imagination, and the ecstasy of unchanging love. It was through portraying her in 'La Vita Nuova' that he first had experience of having to define and express the nature of another human being; that experience was vital to what he achieved in creating the hundreds of varied characters in the Divine Comedy. His achievement there was to invent a new way of describing human beings; this is to make them speak of their own lives and thoughts in such a way that the reader is given an intense picture of the whole individuality of each character.

That invention of Dante's has influenced every form of narrative poetry, fiction and drama, and later opera and film, in our western artistic traditions. He thereby gave dominant forms to our imaginative lives which have profoundly affected our western conception of ourselves as individuals, with all the effects on religion, art, politics and social life that follow from how we have come to think of our individual selves and natures.

IN ADDITION TO THIS, Dante and Beatrice have created a new living myth of ideal love. To thousands in many countries who have never read directly a word he wrote, the names of this couple are as indissolubly linked as those of Leila and Majnun, of Hero and Leander, of Tristan and Isolde, of Romeo and Juliet. A living myth that affects the general imagination of large parts of mankind over many generations is a great civilising force. In this case their myth sets a standard of giving in love and of blessedness in love for all who may not know that Dante's own name means 'the giver' or that Beatrice signifies the 'blessed one'. More than with most myths, theirs is one to which we are close on a factual basis; we can walk on the stones they trod and look at the mosaics their eyes were raised to. Yet, judged by many of our contempo-

***"Many would say as
she went by: she is no
woman but one of the
loveliest angels
of heaven"***

rary views of love, it was a strange relationship; they probably never touched one another except in the most formal of greetings: they both married, according to the conventions of their time, spouses chosen by their families to cement political and financial alliances: there is no record that they ever met alone.

The story set out in 'La Vita Nuova' is this. On Mayday 1274 Dante, nearly nine years old, met Beatrice Portinari, who was then eight, at a festivity in the quarter of Florence where they both lived. She wore a dress the colour of blood. He fell in love with her then, and often used to seek her out under the orders of the angel-like inner instructor he calls 'Amore,' or Love. One day, when he was eighteen, he met Beatrice, this time wearing white and accompanied by two other ladies. She greeted him and the effect of her greeting (*salute* in the original, with connotation of salvation) was to make him experience the bounds of blessedness. This greeting is followed by a dream in which Love appears to him, full of joy, carrying Beatrice naked and asleep, wrapped in a blood-coloured cloth. Love addresses him, announcing himself as Dante's lord and holding a flaming heart in his hand. The heart, he tells him, is Dante's. Love awakens Beatrice and makes her eat the flaming heart. Love's joy turns to the bitterest weeping and he carries Beatrice away to heaven.

Dante writes a sonnet describing this experience and sends it to many of the important poets. The most talented of all Florentines, Guido Cavalcanti, responds with enthusiasm to the young Dante's sonnet and they become close friends.

To digress from the story of 'La Vita Nuova', I have to explain the importance of the friendship. Guido Cavalcanti was the most prominent of a group of poets, thinkers and lovers of poetry known as the *fideli d'amore*, or faithful followers of love. The tradition of poetry in which they wrote was drawn on the one hand from the troubadours of Southern France and on the other from the poets of Sicily, who created the first lyric poems in Italian. Cavalcanti had added something to this tradition; he drew on the faculty psychology of the medical philosophy of the time to analyse the origins and effects of love. Faculty psychology was a much fuller account of the wholeness of relationship of man's nature, his physical constitution, his emotional and mental life, his soul and the way in

which he was affected by astrology and external effects, than anything we possess in the way of psychology today. This faculty psychology was the common property of Christian and Islamic intellectual life. Cavalcanti and his friends created a special language partly based on this psychology as an objective description of their inner experiences. There are certain key words which bear different meanings according to their context: for example the word *donna*, (lady), may mean the object of the poet's adoration or the soul of a member of the *fideli d'amore*.

They had a hierarchy based on the experience of love which they tested against their objective framework of spiritual growth. Only someone who possessed the *cor gentile*, (the noble heart), could understand what they expressed in their poems, and here again there is a double meaning; the social concept of nobility was transformed into a conception of the aristocracy of the soul. Their aim was to awaken within themselves a higher organ of consciousness, *l'intelletto d'amore*, 'the intellect of love', which to them was not a fine phrase, but a potential awaiting development within the human soul. Through this awakening of the intellect of love they would be able to understand the divine Wisdom, Sapiientia, which was incarnate for them in the ladies who awoke their love.

The implications of all this must already be apparent. Sapiientia (the Wisdom of the Solomonic books of the Bible) was, according to theologians, the property of the Church; yet these poets had found a way to her that was independent of the Church. It is no wonder that Cavalcanti was popularly thought to be an atheist. The resemblances between the *fideli d'amore* and certain Sufi groups have raised the question with some that they formed a *tariqa*, or Sufi group, practising in Florence. Others have, of course, bitterly contested this. For myself, I am more interested in demonstrating community of experience between Dante and his fellow Florentines and certain trends in Islamic writers, most notably Ibn 'Arabi, to which we will come later.

TO RETURN TO the story: Dante hides his love for Beatrice under the disguise of loving first one, then another, lady. In doing this he is guided by Love, who appears to him either in the waking state of his imagination or in his



Beata Beatrix by Dante Gabriel Rossetti (1828–1882).
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dreams. Dante's chief joy is in receiving the greeting or salutation of Beatrice whenever they met: its effect on him is to fill him with a flame of charity so that he would forgive anyone who offended him. Beatrice, however, hears that the second of Dante's 'screen' loves has been hurt by Dante's attentions. She denies him her greeting.

Dante is in despair. He goes to a wedding at which Beatrice is present and is so overcome that people, including Beatrice, notice his strange behaviour and mock him. He writes poems of complaint against Beatrice and cannot bear to be in her presence.

Then one day he comes across a group of ladies who question him about the strangeness of his love. If he cannot bear to be in the presence of his beloved, what is the point of his love? He answers that his blessedness now lies "in those words that praise my lady". His inconsistency is pointed out to him; he has been writing poems of complaint. Stung in his conscience, he goes away determined to put matters right. He is walking beside a stream when his tongue speaks as though

moved by itself the words "*Donne ch'avete intelletto d'amore*", (Ladies who possess the intellect of love), and he makes that the beginning of his first great poem, a glorious song of praise of the beauties of Beatrice which foreshadows 'The Divine Comedy'.

The account of how he came to write this poem is one of the most important descriptions of the act of creation in our literature, because it analyses with complete honesty all the self-pity and blame that preceded the realisation of the wrong attitude within him, and how he transformed these emotions into a work that surpasses anything in his achievement to that date. It describes the working of conscience in the artist; it acknowledges for all artists and writers the responsibility they have for what they make of the gifts of inspiration they are given.

This poem marks the beginning of 'the sweet new style' in Dante's work; it is the first of a series of poems which have been described as the poetry of praise. Its influence extended long after Dante's death; he gave voice to conceptions of enjoyment and glory in love

which Petrarch and other poets were to follow, and without which our literature would have been permanently impoverished.

Beatrice's father dies and shortly afterwards Dante himself falls very ill. In the course of his fever he has a terrifying vision of the death of Beatrice, of portents on earth that recall the earthquakes and hauntings at time of the Crucifixion, and of the ascent of her soul to heaven. He writes a long poem describing this vision. The dreadful significance of it is then forgotten as on his recovery he turns to even more delightful descriptions of her effect on the world.

One day Love warns him that Beatrice is approaching. Dante sees her preceded by Cavalcanti's beloved, Giovanna, and he draws out the resemblance of Giovanna to St. John the Baptist as the forerunner of Christ. Giovanna he also describes as Primavera, the Spring or 'Prima verra,' she who will come first; while Love whispers to him that Beatrice could also be called 'Amore' because she resembles him so much. This scene is the climax of the earthly revelation of Beatrice in the book.

IT WAS NOT only Dante who felt Beatrice's grace and marvelled at her beauty and nature. "Crowned and clothed in humility, she walked, showing no pride in what she saw or heard. Many would say as she went by: she is no woman but one of the loveliest angels of heaven. And others said: she is a miracle: Blessed be the Lord who works such marvels" (1).

Then comes news of her death. Dante does not describe this event directly. His grief is to be felt in all the poems that follow throughout the rest of the book. Instead he concentrates on proving through astrology that Beatrice was a divinely intended miracle; the stars at the time of her conception were so disposed as to create a wonder on earth. She is associated with the number nine (*nove* means both nine and miracle); she is a nine because that is the product of the Trinity, three times three. The pattern of the arrangement of the poems in 'La Vita Nuova' is also based upon recurrent patterns of nine. In his grief Dante seeks consolation in writing poems, and in painting.

After some time has passed, he notices that a certain lady is looking at him with great pity. Later in another work, the 'Convivio', he will identify this lady with Philosophy. He finds

himself more and more drawn to this lady, but is drawn back to Beatrice by a vision of her in glory clothed in the same blood-coloured dress and at the same age as when he had first seen her. He repents of his disloyalty to her. The work ends with a sonnet in which he describes how a sigh issues from the new intelligence that Love has placed in him and ascends to Heaven where it sees Beatrice in glory. He speaks of another vision he has had which has inspired him to write of her what has never been said of any woman.

This last passage, of course, indicates a promise of 'The Divine Comedy' in which Beatrice plays a very different

***"Dante's experience of
love... is one that
transcends the barriers
of religion"***

part. In 'La Vita Nuova' Beatrice is seen, described and glorified but she never speaks directly. In the chief work of Dante's middle period, the unfinished 'Convivio', she is, though mentioned, only a silent presence. In 'The Divine Comedy' she reappears out of the vision of the rising sun at dawn on Mount Purgatory, to berate Dante for forgetting her and for ignoring all the inspirations she has sent him. She is the woman priest who presides at the procession of the Holy Sacrament and who hears his confession. She is witty, intelligent, formidably learned in all the works of the Fathers, and the accumulated science and knowledge of the earthly and heavenly worlds: her beauty grows with the beauty of his verse as they ascend together through Heaven. He ascends from sphere to sphere only by looking at her. Beatrice is she "who imparadises my mind"; the point of light round which all creation revolves he first sees reflected in her eyes; and it is through her that he comes to experience in himself "The Love that moves the sun and other stars."

COULD A FLORENTINE girl, married to a banker, who dies at the age of twenty-four, really have been all this to Dante? There are nearly as many different interpretations of Beatrice as there are commentators. They range from the literal positivists who insist on her

being Beatrice Portinari, to orthodox interpreters who see her as the Church or as Theology, to unorthodox interpreters who see her variously as Sapientia, the Gnosis of the Templars, and the forms of the Church according to followers of Joachim of Fiore that dies with the coming of the Age of the Holy Ghost. Some object to her identification with Beatrice Portinari on the grounds that it was Boccaccio who first said that she was such a lady, writing fifty years after Dante's death. Both of Dante's sons in their commentaries on the Divine Comedy said she was Theology, though his son Pietro, later and probably after reading Boccaccio's life of his father, altered his commentary to state that she was based on the historical Beatrice Portinari. On the other hand an earlier commentator who probably knew Dante, Guido da Pisa, writing in the 1330's, said that she was "a noble Florentine lady who in this life gave out a miraculous radiance by her beauty and the purity of her morals"(2). He also gives other spiritual meanings to her: she is the sacred science of theology, she is the spiritual life and, mystically, she is divine grace infused in man in this world and the life in glory – *vita beata* – man may expect and hope for.

This is my own view of how best to interpret what Beatrice was to Dante. Interpretation, however, should not be allowed for the sake of intellectual neatness to deaden the totality of Dante's experience as a lover, or our own experience in reading him and recreating Beatrice in our own souls. There are several examples known of a child falling in love so deeply that the experience is the beginning of the mystical way. Thus the Russian poet Vladimir Solovyov at the age of nine fell in love with a girl in a Moscow park who was the first of three revelations of the Divine Sophia to him in the course of his life. There are many descriptions of the effect of being in the physical presence of a saint that resemble Dante's descriptions of Beatrice in 'La Vita Nuova'. The weight of the western mystical tradition, with its emphasis on the monastic way and the celibate life, has been to mask the consideration that human love is the gateway to the love of God. Art and literature – chiefly in the Neo-Platonic tradition that pours to us through Dante – have given life to this thought, but the open and hidden censors of our minds are still at work.

They were certainly at work when

'La Vita Nuova' was first printed in Florence in 1576. The parallels between Beatrice and Christ to which I have drawn attention would have been so offensive to the Inquisition that extensive modifications were made to the text before it was printed. The same attitudes are still often apparent in writing about Dante and Beatrice today, if not to the extent of rewriting the poet's words. Even though the Church would have had Dante burnt alive had its emissaries been able to catch him; even though Christians were at times forbidden to read some of his works; even though a Cardinal had his political work, the 'Monarchia,' burnt in public and wanted to do the same to Dante's bones; since the last century, when Pope Leo XIII proclaimed Dante as the supreme poet of Catholicism, a blanket of approval more deadening than the former rejection has meant that some of the most interesting questions about Dante and Beatrice have been rarely discussed. This is because of the fear of direct experience felt by those who are the guardians of revealed religion; who would not have liked at any time the words of Ibn 'Arabi "It is He (God) who in every beloved being is manifest-

ed to the gaze of each lover"(3).

ONE OF THE MOST fascinating parallels with Dante's love of Beatrice appears in the writings of Ibn 'Arabi where he describes the Iranian girl, Nizam, he knew in Mecca.(4). In her were joined great physical beauty and deep spiritual wisdom. He allegorised her as a princess of the Greeks, and makes her into a Christian to draw out her resemblances to the nature of Christ, even as Dante did for Beatrice (5). I will not go further here into the remarkable parallels between Ibn 'Arabi's description of the afterworlds and the Divine Comedy. My point is that Dante's experience of love, though so important for the development of our own civilisation, is one that transcends the barriers of religion and can only be fully discussed in the context of the Perennial Philosophy.

In this context, Beatrice can be seen as the joy of the creative imagination. Her influence through Dante has spread down to our own century into numerous cultures – to Alexander Blok and Osip Mandelstam, to Rainer Maria Rilke and James Joyce, to T.S. Eliot and many others. We often think

of the inspiration of the artist or poet, but what of the inspiration behind the inspiration; the light of beauty and of goodness that was in Beatrice Portinari who lived so short a while and died those seven hundred years ago?

1. *La Vita Nuova* xxvi 5-100. See either William Anderson's translation (1964) or that by Barbara Reynolds (1969) in Penguin Classics. The standard translation is by Dante Gabriel Rossetti and is to be found in his 'Collected Works'.
2. Guido da Pisa (1974) 'Commentary on Dante's *Inferno*.' Ed Vincenzo Ciuffari. New York, pp31-2.
3. Quoted in Henri Corbin (1970) 'Creative Imagination in the Sufism of Ibn 'Arabi'. p146
4. See particularly his collection of love poetry 'The Interpreter of Ardent Desires' (*Tarjuman-al-Ashwaq*). 1978.
5. Corbin (1970) pp140-5 and p165

William Anderson is the author of 'Dante the Maker' (the paperback edition, published 1983 by Hutchinson is now available through Unwin Hyman) which won the Silver Pen Award of the International PEN Club in 1981. His last book of poems was 'The Waking Dream' (1983) and he is also the author of a recent book on Cecil Collins. His book on the theme of the Green Man will be published next October.

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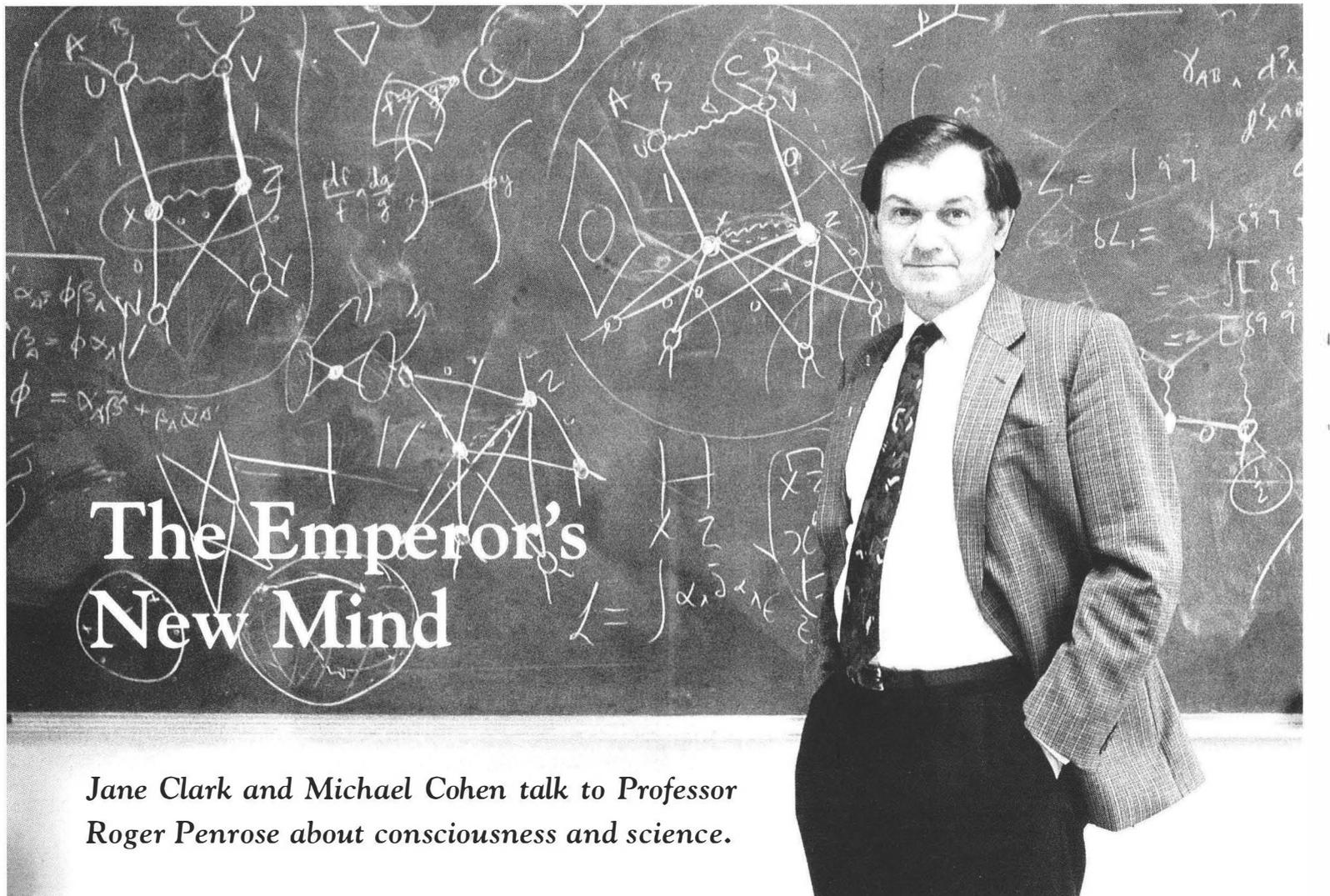
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The Emperor's New Mind

Jane Clark and Michael Cohen talk to Professor Roger Penrose about consciousness and science.

Photograph by Graham Turner © The Guardian

THE DISTINGUISHED mathematical physicist, Roger Penrose, Rouse Ball Professor of Mathematics at Oxford, has long had a reputation among his colleagues for being a man with wide-ranging scientific interests, and for bringing to each a powerful and original vision. With Stephen Hawking and others in the 1960's, he developed the theory of Black Holes, showing how their existence followed inevitably from Einstein's Theory of General Relativity – for which work he was awarded, with Hawking, the Eddington Medal in 1971 and the prestigious Wolf Foundation Prize for Physics in 1988.

Earlier in his career, he invented, with his father, the geneticist L. S. Penrose (1898–1972), some 'impossible' drawings which were worked up into engravings by M C Escher. His abiding interest in geometry also led him to develop some striking aperiodic plane tilings, now known as 'Penrose Tilings' (see box on page 24), which seem to have anticipated a whole new class of extraordinary substances called 'quasicrystals'. His current work includes a theory of 'twistors' which attempts to unify some of the problem areas of physics and proposes a concept which is more fundamental than space or time. In 1989 he was awarded the Dirac Prize by the Institute of Physics.

About ten years ago, Professor Penrose saw a programme on the television about artificial intelligence. He was struck by the fact that intelligent people believe that it is possible to make machines that think, feel and even know they exist. Believing himself that the human mind is capable of things that machines will never achieve, he set about refuting their claims, and in 1989 published a popular book 'The Emperor's New Mind' (Oxford University Press) which was described

by the New York Times as "among the most innovative and exciting science books to have been published in the last 40 years" (1).

Combining philosophical and psychological discussion, in 'The Emperor's New Mind' Penrose investigates whether present day physics is adequate to accommodate the phenomenon of consciousness, and, concluding generally that it is not, indicates some of the ways that science needs to develop. The book is also a detailed tour of modern physics, set in an historical context and replete with original insights, which has been appreciated even by those who do not accept the arguments – Frank Tipler, a confessed supporter of artificial intelligence, has gone so far as to say that he expects it to become the standard textbook for those who wish to refute the claims of strong AI (2).

We spoke to Professor Penrose about his ideas in his office at the Mathematics Institute in Oxford.



Can we ask you first of all about your relationship with the artist, M. C. Escher. Did you actually work with him?

I did not work with him, but I have met him. Earlier, I had attended a conference of the International Congress of Mathematicians when I was a research student. It was held in Amsterdam, and in conjunction with it they mounted an exhibition of his work, which I went to see. That was the first time I had heard of him, and I went away from there wanting to do something weird and impossible. So I developed an impossible triangle – the tri-bar – whilst my father

later developed other shapes, including an impossible staircase. Then we wrote a paper together, in which we referred to the exhibition catalogue, and sent a copy to Escher, who then developed the tribar and the staircase into 'Waterfall' and 'Ascending and Descending'.

Another connection was through my interest in tiling and tessellations. And actually, what was, I believe, the last picture that he ever made, called 'Ghosts', was based upon a kind of tiling pattern that I had shown him. Unfortunately he died before the non-periodic tiling patterns came along, as I am sure that they would have fascinated him.

Was he mathematically trained?

He certainly didn't consider himself to be. If you asked him, he would say that he had been very bad at maths at school and so on, but there is no doubt that he had a very great feeling for geometry. Some people have gone into the matter in some depth, and it seems that he had an extremely thorough grasp of the mathematics underlying repeating patterns, and he produced examples of every type that is possible.

To go on to talk about 'The Emperor's New Mind'; your starting point for the book was to challenge the proponents of Artificial Intelligence who say that the human mind is just a machine whose functions will one day, perhaps quite soon, be duplicated by a computer. Can you summarise your grounds?

There are several grounds, which are somewhat independent of each other. The strongest reason has to do with mathematical understanding and in particular Gödel's Theorem (See box below).

The debate about this, of course, has been going on for many years – twenty or more. As you may know, Gödel's Theorem exhibits a mathematical proposition which you can see is true, but yet the way it is produced makes it clear that it is not derivable from a pre-assigned system of rules to determine the truth. This implies that whatever system of rules you are working to, you can always find ways of deciding that a mathematical statement is true or false which lie outside those rules. Questions arise from this, because if the mind or the brain is working according to pre-set rules of this

Algorithms and Gödel's Theorem

An algorithm is a mechanical rule or procedure for solving a problem. They occur at every level in mathematics; simple examples are the rules for long division and multiplication which are taught at school.

Furthermore, the proof of any mathematical theorem takes the form of a logical sequence of steps which could in principle be checked (if not discovered) by a machine. In the 1920's, the great German mathematician David Hilbert (1868-1943) suggested that it should in principle be possible to formalise mathematics in such a way that there should be an algorithm that could determine the truth or falsehood of a mathematical proposition without reference to any intended interpretation. By doing this he hoped to resolve certain philosophical difficulties which had plagued the foundations of mathematics since the 19th century. If his vision were true, it would be possible to construct a machine which, when fed with a statement about, say geometry or arithmetic in a suitably coded form, could indicate whether or not the statement was true.

In 1931, the Austrian mathematician Kurt Gödel (1906-1978) showed that Hilbert's dream was impossible. Gödel's Theorem states that, for any potential algorithm for determining mathematical truth, no matter how intricate, there must be propositions whose truth it cannot determine. Gödel's argument shows how such undecidable propositions (called 'Gödel Sentences') may actually be constructed.

In fact, a Gödel sentence for a particular algorithm must be true, but the algorithm itself cannot determine this. A human mind, however, can perceive it, and Professor Penrose maintains that this is an indication that the human mind has a capacity which is not wholly algorithmic.

nature – as a computer does – then Gödel's Theorem means that you can always leap outside of those rules, and this gives you a contradiction.

So if the mind is no more than a very complicated machine for doing calculations, then it has no way, in itself, of judging truth. If I was doing long division, for instance, according to a rule which was slightly wrong, I could go on and on doing sums and producing answers, without ever realising that they were wrong.

Yes. You see, from the knowledge that the algorithm you are following is a good one, you can go on to produce something else, some other rule, that lies outside the scope of that algorithm, and which you also know to be a valid truth. The question is, how do you know the nature of the algorithm you are using? If you don't know whether it is good or bad, you can't apply the argument. One of the reviews of the book in America, by Frank Tipler, the cosmologist, ended by saying that "any mathematical truth that any human being has ever come up with can be reproduced on a computer". But my point is that you can also make a computer which produces garbage, and who is to tell which is which?

My contention, therefore, is that what one does when one perceives truth in mathematics is not dependent on formal rules, but is something which necessarily lies outside any algorithmic action.

The book is also an amazingly comprehensive tour of modern physics, including areas like cosmology, chaos and quantum mechanics. Where do these come into the picture?

There are two sides to what I do in the book. One is to present arguments about conscious thinking, because it seems to me that to be convinced about mathematical truth, as with Gödel's Theorem, one needs to think about it consciously. Unconscious thinking might be algorithmic – I don't know – but I'm trying to argue from such mathematical considerations that conscious thinking must be non-algorithmic in nature.

The other side is to ask – if conscious thinking is not algorithmic, then can one still find room for it in physical phenomena, or does one have to appeal to some sort of mystical thing that lies outside science? In other words, can scientific explanation accommodate non-algorithmic behaviour? And I try to explore physical understanding as it is at the moment in relation to this question.

I know that much of your own work – I'm thinking particularly of the tiling patterns you have developed – has been concerned with non-algorithmic mathematics.

Yes. You see, there is a general feeling which amounts almost to an assumption, that anything that can be reduced to a set of scientific equations can be put on a computer. But there are things in mathematics which are not of that character, of which the tiling problem is a good example. It might well be that the way a physical object behaves in some circumstances lies outside the computable part of mathematics, so it is really a question of exploration of physical laws; what is the state of our physical understanding and to what extent is it algorithmic in character, ie. imitable by computer?

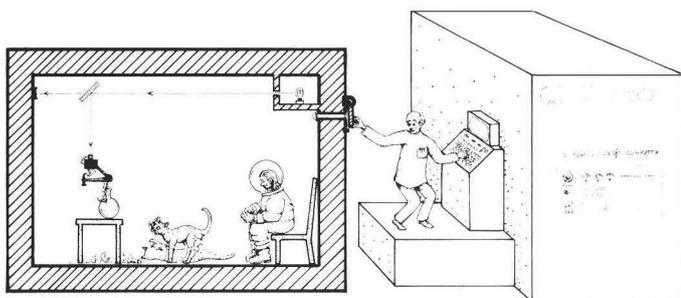
This is almost a totally ignored subject at the moment; there is a little bit of work but it amounts to hardly anything at all. My general conclusion – although a lot of it is not terribly rigorous – is that classical physics, in which I include

The Collapse of the Wave Function

Classical Newtonian physics deals with a commonsense universe of determinate particles and fields, each with various attributes (position, momentum, etc.) taking definite values. It has been known since the 1920's that this picture is inadequate. In the modern quantum picture, a physical system is described by a 'wave function' which specifies only the different probabilities of different values of the attributes being attained. According to the conventional Copenhagen Interpretation which was that of the great Danish physicist, Niels Bohr, it is only at the moment of observation that the wave-function collapses and specific values of each attribute are actualised.

One of the criticisms of the Copenhagen Interpretation is that it leaves unresolved the precise relationship between microscopic quantum systems and the determinate macroscopic events we see. It was pointed out early on that this is not satisfactory by Ernst Schrödinger, who demonstrated a paradox which has become known as 'Schrödinger's Cat'. Penrose's version of this in 'The Emperor's New Mind' has a cat in a sealed tank with a phial of cyanide gas which may or not be released, killing the cat, depending on the path of a single photon of light. According to Bohr, the path of the photon and consequently the death of the cat, are only determined when the tank is opened and observed. In the meantime the theory places the cat in a 'half-alive, half-dead' state which, while acceptable for particles at the microscopic level, is not possible at the scale of the everyday world.

The Copenhagen Interpretation also begs important questions about what constitutes observation; such as "does it have to be a mind which collapses the wave function?" Various alternative theories have been proposed; one of them is the 'Many Worlds Theory' which avoids the collapse of the wave function by suggesting that all the possibilities are actualised, but in different universes. Penrose prefers the view that the collapse of the wave function is an objective event in the external world which occurs whenever the energy difference involved in physical phenomena become sufficiently large. He suggests the point at which this may occur, but emphasises his belief that this whole area has not yet been properly understood.



Schrödinger's cat – with additions by Roger Penrose

not just Newtonian Mechanics but also Maxwell's Equations and Relativity Theory, seems to have an algorithmic character (although this is a little bit of a delicate issue). Now, what about quantum mechanics? It consists of two parts. One is Schrödinger's equation which describes the way quantum systems behave when left to themselves, which is algorithmic, and the other describes what happens when you magnify a quantum event to the macroscopic scale, so that you can actually see it. There, one has to introduce the mysterious side of quantum mechanics, which is sometimes referred to as 'the collapse of the wave-function'. (See box above). And this, in our present understanding, is regarded as entirely probabilistic. So in quantum mechanics, one has either the algorithmic end or the probabilistic end, and neither of these seem to be much use from the point of view of getting outside algorithmic action and therefore allowing one to approach the problem of non-algorithmic consciousness. Probabilistic action in itself, you see, is not much use to you.

So I maintain that there is a delicate border-line between the quantum level and classical action; somewhere between

these two is something we simply do not understand. I am just trying to say not only that we do not understand it, but also that it contains an essential ingredient which is non-computable and the brain, or the mind, is somehow taking advantage of that ingredient.

Would you say that this relates to what you also say in the book about insight? That the human mind does have the capacity to directly perceive the truth?

I think that there is one point that I should make clear here, because there are so many different ways one can think about quantum mechanics. In the book, I present it very much in the way that I personally see it; and that is that there is an area of unknown physics here. Some people take a somewhat different line on this – and indeed there are different forms of this different line.

The essential problem can be summarised by saying that it concerns making an observation of a quantum system; and the question is, need this observation be taken by a conscious being? My view is that whatever is going on is something which does not need consciousness, but is entirely part of physics and going on all the time. However, it is clear that conscious beings are making use of that particular physics.

But some people take the line that it is actually the conscious perception of a quantum system which brings about the reduction of the wave function – a point of view with which the name of Wigner is perhaps most associated.(3) That is not my point of view. My feeling is that consciousness is something which comes along and makes use of whatever non-algorithmic physics is going on in wave-function collapse. But to understand consciousness, we shall need something that goes beyond even that physical understanding.

So taking your view, even if one had a better understanding of the reduction of the wave function, then this would only be the very first step towards a scientific theory of consciousness?

Yes indeed; although I think that this theory is needed if we are ever to have any understanding of consciousness at all.

It is fascinating to envisage what such a physics would be.

Well, I make an attempt in 'The Emperor's New Mind' to delineate some of the properties I feel it would have. Again, there are lots of areas in the book where I know that people differ from me, even in the physics. Some people, for instance, do not acknowledge that there is a gap in our present understanding. The conventional view of Quantum Theory – the Copenhagen viewpoint – is that there is no gap and we should not be worrying so much about this problem area. The trouble is that you can't use that apparently very pragmatic viewpoint to talk about brains at all, because when one is conscious of something, one is making an observation, and that part of it is all built in to what one is trying to explain. And so it seems to me that there is no way of using the Copenhagen Interpretation to talk about conscious perceptions. One day, this problem will have to be tackled seriously.

What, then, are the elements of the new physics which you think are required?

In the book, I argue strongly for what I call 'Correct Quantum Gravity'. That is, a theory which will unite relativ-

ity and quantum theory, which as you may know, contradict each other in places. The name is partly a dig at all those people who currently think they have a Quantum Gravity Theory, because it is my feeling that there is no theory at the moment which does all the things one would like it to. One of the things that it is going to have to explain, for instance, is singularities; the singularity of the Big-Bang which is the origin of the Universe, and the singularity which resides in the collapse of black holes. These are places where a concept of quantum gravity is accepted as having to be brought in to explain what is going on.

And the important ingredient which I deduce (although, surprisingly, not everyone does so) is that, because the behaviour of singularities in the universe one way round in time is completely different from their behaviour the other way round, the theory must be time-asymmetric. And this seems a very strong indication that it relates to the asymmetrical part of quantum theory, ie. the collapse of the wave-function. But this asymmetric part of quantum gravity is something which is very, very rarely talked about within our present physics.

One of the things which I most enjoyed about the book is your assertion that physics is a unity, and therefore that all the problems we face in the different areas, from cosmology to quantum mechanics, are ultimately part of the same problem. And particularly interesting was your argument that the reason that we see time going forward is because of the initial nature of the Big Bang.

It has been a hobby horse of mine for many years to make the connection between the Second Law of Thermo-dynamics (4) and the Big Bang singularity. Although I have been talking about it for a long, long time, it is only very gradually being taken up by people. You see, the puzzle about the Second Law is why the past is such a special state. The further into the past you go, the more special it becomes, and so obviously, at the Big Bang, which is the furthest we can go back, it was in the most extraordinarily special state of all. But it is only since the Becktenstein-Hawking formula (5) for black-hole entropy that one can actually put a figure on how special it was, and that is one part in $10^{10^{123}}$, which is a most stupendous figure. It means that there was an extraordinary degree of organisation in that initial state, and I think that people just did not appreciate that before. They thought "Big Bang, that means chaos". In fact there are many cosmological viewpoints, which still have a following, which assert that the initial state was somehow maximumly chaotic, but that is just completely against what you see from the Second Law, and from the extraordinary precision of the initial conditions.

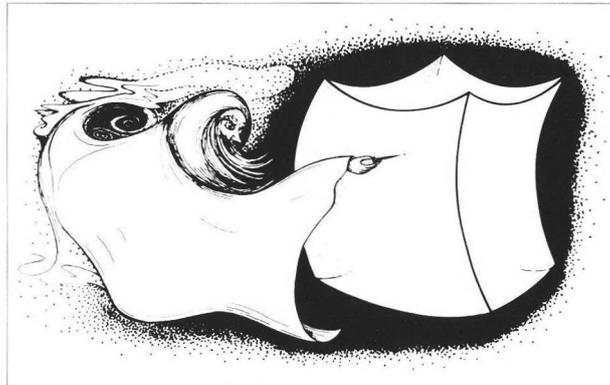
So you are saying that the Second Law is asymmetrical because of the particular, very special universe we are in.

Yes. Theoretically, one could have had a universe with all the dynamical laws exactly as we have them now, but with no Second Law of Thermodynamics. Therefore, one can say that the fact that the Second Law holds depends upon an enormous constraint on our universes. My view is that this enormous constraint is part of physics – an additional part to the physics we have had to date, and one which is tied up with what we need in other areas. As you say, the whole thing is a unity.

And I think it is important to realise that one does not need to know what that unity is in order to see inter-connections. People often say, well, if you don't know the theory, then what can you do? But it is not really like that. One can pick out certain things about a theory and make logical connections.

Consciousness is a good example here; we don't know what consciousness is, but nevertheless, there are certain features that one can pick out and fasten attention upon. I think that the role of consciousness in judging mathematical truth is one of these features – it is not, of course, all that consciousness is, but it is an aspect from which we can make some deductions.

Can we go a little further into the question of insight, and some of the things which you mention particularly towards the end of the book, about the importance of aesthetic criteria in judging mathematical truth?



Professor Penrose's drawing of the creation, from 'The Emperor's New Mind': In order to produce a universe resembling the one in which we live, the Creator would have to aim for an absurdly tiny volume of the phase space of possible universes. (The pin, and the spot aimed for, are not drawn to scale!)
Courtesy of Oxford University Press

Yes, this is a very intriguing aspect of the matter. I think that I should say that there are parts of the book where I talk more to the people that I think agree with me, particularly the parts where I explore aesthetics and insight. I expect the people who think that we are just computations to go blank at this point!

There is no question that if you want to do mathematics or physics – or indeed, other branches of the sciences, whilst it is obviously the case in the arts – aesthetics are a very powerful guide. Perhaps, even, the strongest guide, because aesthetics are very much connected with truth. Truth and beauty go hand in hand, and whilst I would perhaps not feel that they are absolutely the same, I would certainly say that although without beauty one can do true things, they are boring truths. This is of course connected to the question of computation, because once something is reduced to computation, in some sense the aesthetics are drained out of it. Although the results of the computation may be beautiful – computers often produce wonderful pictures, for instance – or one may be interested in the result of a calculation, or even though, now I think of it, one can take pleasure in doing a calculation, so perhaps 'drained' is a bit strong; nevertheless, for a mathematician, the beauty is rather diluted at that stage.

In the book you quote a marvellous passage from Mozart in which he talks of the ability of the creative mind to see globally, which I am going to take the opportunity to quote fully:

"When I feel well or in good humour, or when I am taking a

Aperiodic Tiling

The two shapes 'dart' and 'kite' in Figure 1 are one of a number of sets of tiles devised by Roger Penrose which can form so-called 'aperiodic' tiling patterns. An infinite plane can be completely filled with these tiles, as is shown in Figure 2.

In an ordinary periodic pattern, such as is found on wall-paper, the pattern repeats at regular intervals. In the dart/kite tiling, providing certain rules are followed, it is possible to tile the plane in a non-periodic way. The patterns have extraordinary holistic properties. Although there are an infinite number of such patterns, any finite area of one of the patterns must occur somewhere in any other pattern. So there is no way of determining which pattern we have from any finite portion, no matter how large. In other words, the individuality of the pattern is a property only of the entire infinite pattern, and is not captured by any finite part of it. They also exhibit 5-fold symmetry, something which is impossible for periodic patterns.

Considered for a long time a mathematical curiosity, interest in Penrose Tiling has been intensified by a recent discovery of crystals which appear to exhibit a three-dimensional aperiodic structure. Called 'Quasicrystals', their relationship to Penrose tiling is still controversial, but should it be confirmed, these would present a challenge to accepted ideas about the formation of crystals and constitute a strong indication of global, holistic action on the part of nature.

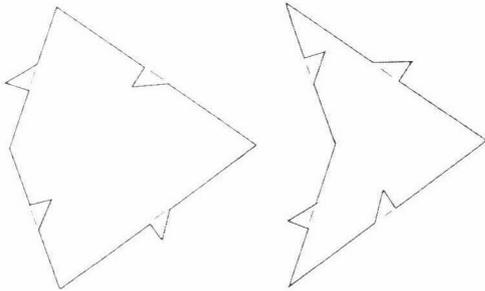


Fig 1.

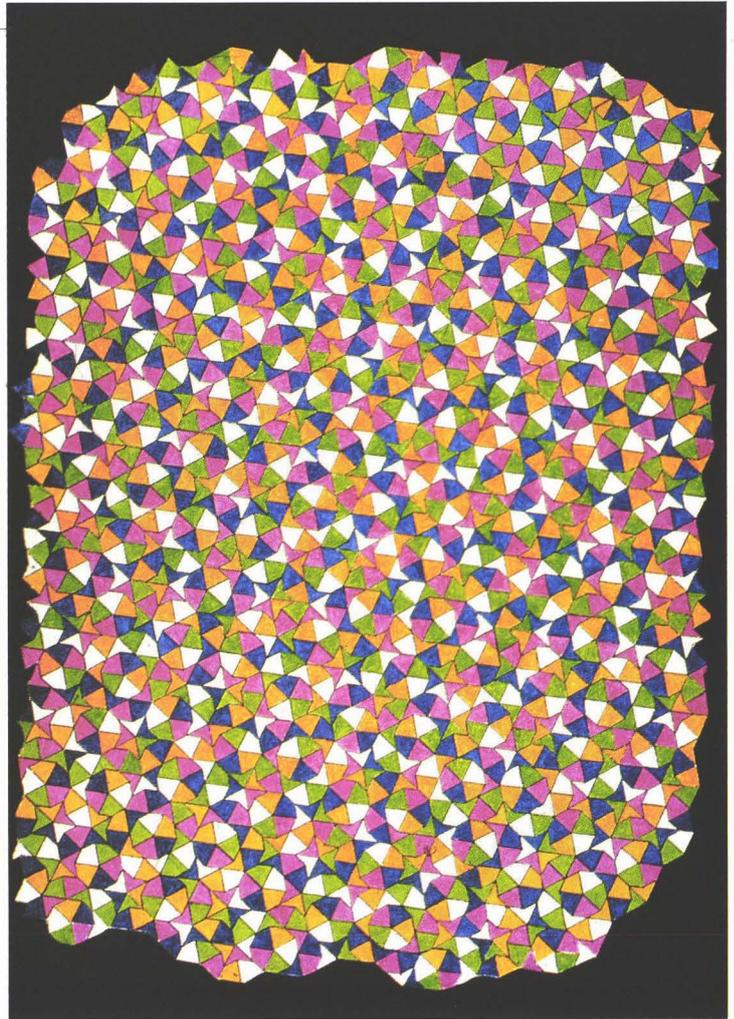


Fig.2 Aperiodic tiling pattern.

Courtesy of Roger Penrose

drive or walking after a good meal, or in the night when I cannot sleep, thoughts crowd into my head as easily as you could wish. Whence and how they come? I do not know and I have nothing to do with it. Those which please me I keep in my head and hum them; at least others have told me I do so. Once I have my theme, another melody comes, linking itself with the first one, in accordance with the needs of the composition as a whole; the counterpoint, the part of each instrument and all the melodic fragments at last produce the complete work. Then my soul is on fire with inspiration. The work grows; I keep expanding it, conceiving it more and more clearly until I have the entire composition finished in my head though it may be long. Then my eye seizes it as a glance of my eye, a beautiful picture or a handsome youth. It does not come to me successively, with various parts worked out in detail, as they will later on, but in its entirety that my imagination lets me hear it" (6).

Yes, indeed, it is a marvellous passage. My feeling is that in order to produce something which is beautiful in that way, it is necessary to see things globally. This is especially noticeable, for me, in Mozart's music; it would not have happened as it did if he had simply seen lots of little bits.

In this respect, you confess in your book, to being a 'blatant Platonist'. In other words, you believe that mathematical truths – and, presumably, pieces of music – are not just created in the minds of individuals; they are pre-existing and independent intelligible realities. Therefore you see mathematics as a process of discovery rather than one of invention, in which mathematicians

are like explorers finding new continents which they then map out and understand.

I do have a slight qualification about the Platonism in the book, in that I do somehow feel that certain things have a deeper Platonic reality than others. Some things in mathematics are just brought in to do a specific task, and are just one of many things that one might have done at that point. The things which are really interesting are those which do so much more for you than you could originally have had any conception of; one of the examples I bring in the book is of complex numbers. These are things I feel have a very deep Platonic existence. In saying this, I suppose I have implicit the view that the physical world is intimately connected with this Platonic world, and these 'deeper' Platonic truths correspond to deeper physical realities, and bring one into contact with them.

I say this because there is a very common reaction to Platonism, in which people say, well, if the physical world is rooted in the Platonic world, why don't we see all these enormous infinite sets that don't seem to have any physical existence.

I have heard you say that both Maxwell and Einstein, whose theories you consider 'superb', arrived at their equations on purely aesthetic criteria. Would you relate this to what we are talking about now?

Yes. Sometimes people think that there is a kind of natural

selection of scientific theories going on; and all that happens is that the ones that fit experiment a little better survive, and the ones which don't fit so well die off. But this does not explain the extraordinary precision which some of these theories achieve. Einstein's Theory of General Relativity is a superb example. The point about it is, that when Einstein produced the theory, it wasn't needed at all. The only problem it seemed to address was that of the perihelion of Mercury (7) but people were not really too worried about that, and in fact it was suggested that it could have been explained in other ways. The only sense in which one could say that General Relativity was needed was on aesthetic grounds; Einstein just had a feeling that some completely new concept of gravity was needed in order to make sense of Galileo's observation that all objects, regardless of their weight, drop to the ground at the same speed. This was something which no-one else felt needed further explanation, but in order to fit it into Special Relativity, which was needed for observational reasons, Einstein produced the theory.

For many, many years, General Relativity was regarded as something which was beautiful, but which really didn't do very much for physics. There were three experimental tests which were not very conclusive. But now, we find that General Relativity is the most accurate theory known to science; it is even better than quantum electrodynamics. The observations that lead one to say this concern a pair of neutron stars which are spiralling into one another, producing gravitational waves as they do so. The rate at which they spiral into one another can be very, very accurately timed, and it agrees to Einstein's Theory to something like one part in 10^{-10} – an extraordinary degree of correspondence which effectively kills off any rival theories.

Einstein produced this theory in about 1915, essentially on aesthetic criteria together with physical feelings about how things should fit together. There is no explanation, in a normal way, as to why this should produce such accuracy.

It does seem that what is indicated is that there is indeed a real correspondence between these Platonic forms which can be perceived through insight, and the physical world.

Yes, indeed. The exposition which perhaps comes closest to my own view on this was a lecture given by Peter Atkins, the Oxford chemist, a few years ago. I mention it in the book, but unfortunately there does not seem to be anything written down. Peter Atkins mentioned then not only the Platonic world and the physical world, but also the internal world of one's perceptions. He was trying to argue that in some sense, all these three are the same. I'm not sure that I wouldn't feel that 'the same' was to put it too strongly, but there is certainly an intimate connection between them.

You have also said some very intriguing things about time and consciousness.

The question of time is certainly a profound one. One thing is that time in relation to consciousness seems to be almost totally at odds now with the physical picture that we have – more so, in some ways, than it was in the Newtonian picture, because there, at least, it was possible to think of a world which evolved with time. Whereas with relativity one seems to be forced into a static four-dimensional space-time picture which does not seem to relate at all to one's perception that time flows. This is a puzzle which seems to me to indicate that there is something about the physics which must be involved with conscious perceptions which is not quite in accord with Einsteinian space-time. Therefore, I try to suggest, the missing ingredient of the quantum theory has to have a different relation to time.

One of the factors that has to be taken into account, certainly, is the phenomenon of 'non-locality'. This is a phenomenon which has been experimentally confirmed by people like Alain Aspect (8. during the last ten years, in which it seems that something that happens at one end of the room can instantaneously affect something at the other end. This seems to be in violation to the spirit, at least, of Relativity, and so if, as I suggest, the physics which is needed here is something which relates General Relativity to Quantum Theory, then this would have to upset the very structure of space-time. So even though I say that Relativity is the most accurate theory known to science, it is still not quite right.

Would this relate back to what we said before about time asymmetry?

The asymmetry is connected to our perception that time flows forward and not back. But I am also saying that there has to be a non-local component; and this comes back to the question of consciousness, because consciousness is not something one can localise and pin down in this space/time picture.

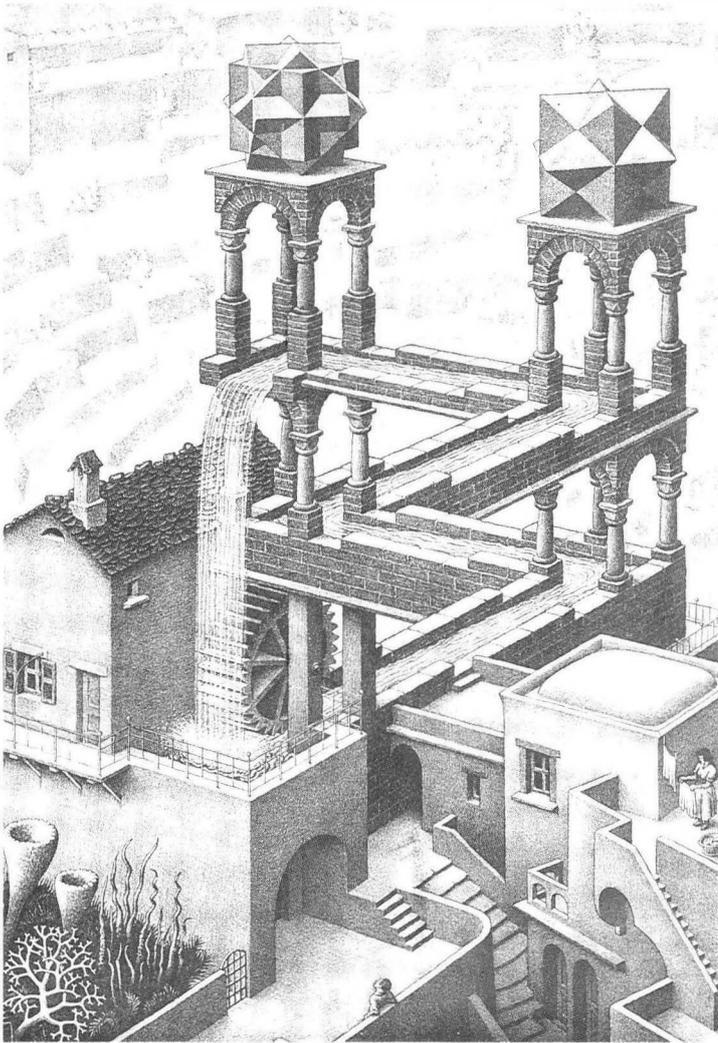
You make the point in the example of Mozart that the ability of the mind to think globally includes time.

Oh yes. When I speak of 'non-local', I don't just mean it spatially. There seems to be a temporal non-locality as well. And this leads to all kinds of questions about what it means to be a person; are we the same person that we were in our past? and such like. These are things which are hard to talk about.

Perhaps, until we have this new physics, we don't have the right words or the right descriptions to talk about them properly.

Yes, I think it may well be so.

The question of language raises another interesting question. Many people who are thinking about these matters suggest that should we arrive at this new physics, then the split between the



M.C. Escher –Waterfall ©1990 MC Escher Heirs/Cordon Art –
Baarn Holland

arts and the sciences would begin to vanish, because we would begin to see that the nature of the process in both cases is the same.

I would certainly hope so. There is a lot more in common between the arts and the sciences than people usually acknowledge, and all that we have said concerning the role of aesthetics in at least the really important theories is relevant to this. And perhaps, the other way, there are things which science can bring to the arts; music, for instance, is still almost totally mysterious. There are certain things which we know, like harmony which goes back to the Greeks, and certain general patterns, but coming to any deeper understanding doesn't seem possible at the moment.

I found this sense of there being a great many things that we still do not know a very refreshing flavour in your book. I was reminded of a saying I have heard to the effect that in the end the real difference between a human being and a computer is that the human being has a sense of not knowing, of there being always more to know, whereas a computer thinks that it knows. In other words, the human mind has a taste for the infinite.

Yes, that's very interesting. And in a way, there is similar distinction between people. The review of 'The Emperor's New Mind' in the New York Times included a point which I think

is a valid one to mention here, which is that there are two areas at the moment in physics – artificial intelligence and fundamental particle physics – where people think that they are very close to solutions, and there is perhaps a degree of arrogance there. This is not to detract, of course, from the very real achievements which have been made, but it has resulted in people feeling that they have some sort of position to maintain.

You see, many of these people who do say "We are all computations" have a certain authority, and so people who don't know much about it, who are on the outside, suspect that they may not be right, but find it hard to tackle them. So I felt – and this was my original reason for writing the book – that it was my duty to try to say something.

You presumably know the quotation from Newton, where he describes himself at the end of his life:

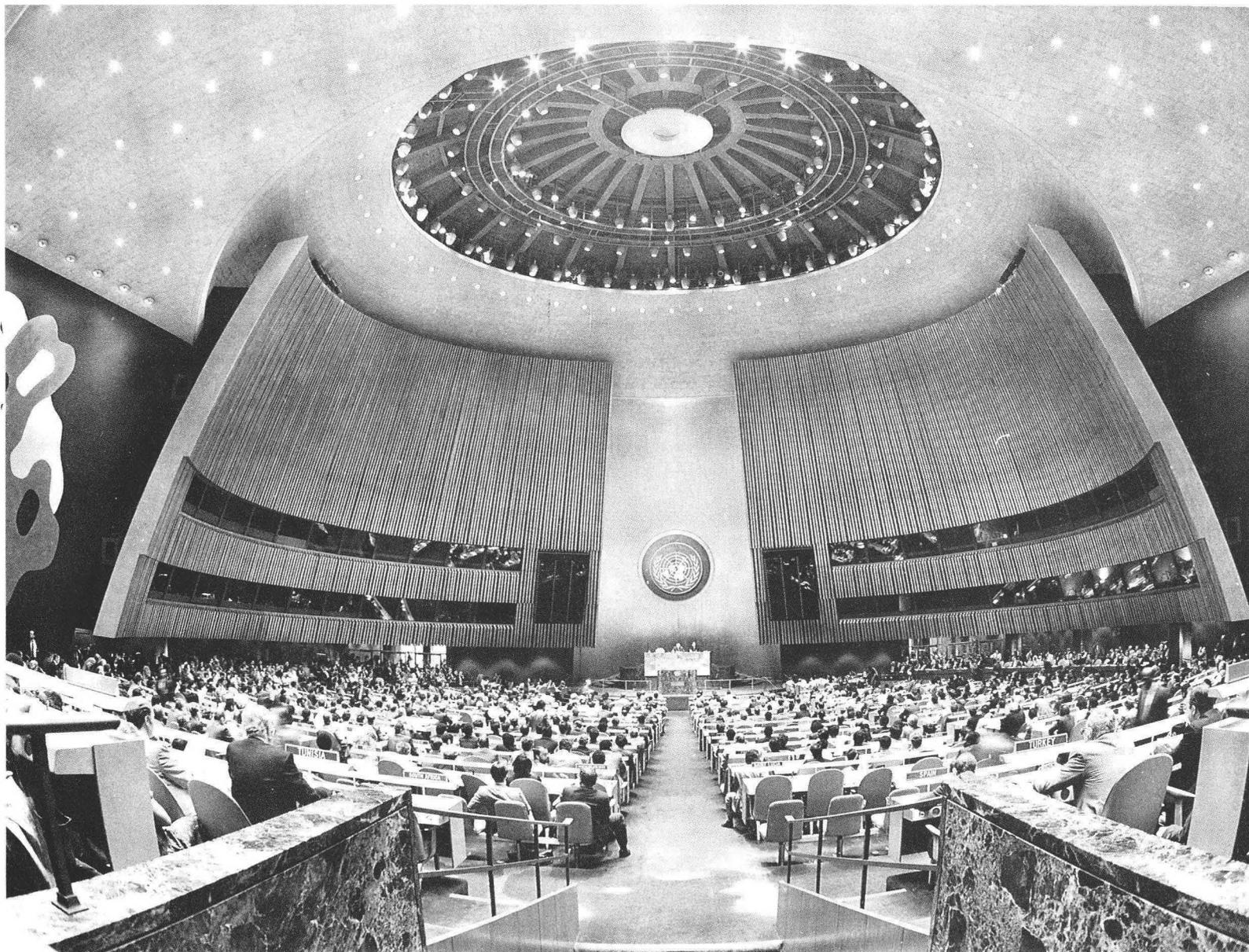
"I do not know what I may appear to the world; but to myself I seem to have been only like a boy playing on the sea-shore, and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary, whilst the great ocean of truth lay all undiscovered before me".

And Einstein expressed similar sentiments time and time again.

It does seem that people like that, who really did see, have this very great sense of humility. In fact, at one point I was going to use that quote from Newton as part of the prologue of the book. My idea was to say, well, that it is how it was for Newton, what is it like now? how much of this shore has been explored? and relate some further pebbles like Maxwell's equations and Einstein's, and then say, but there is still the vast ocean of the unknown.

In the end, the prologue took another course. But it is because of this feeling that, when the question of a 'theory of everything' comes up – you know people say that we shall soon have a theory which encompasses all the different aspects of physics – whilst some feel that it is optimistic to anticipate such a thing, I regard it in many ways as a rather dismal prospect; particularly with the sorts of theories – String Theory and so on – that people have come up with. It is inconceivable to me that any physical theory I have seen so far should be able to fulfill what is required and provide the answer to problems such as "Who are we? Why are we here?" etc. These theories have nothing like the character that such a theory should possess.

1. 19th November 1989.
2. *Physics World*, November 1989. *Strong AI is the claim that any mental attribute can be reproduced by a computer programme.*
3. See 'Reflections on the Mind/Body Question' (1962), reprinted in 'Quantum Theory and Measurement' Ed J A Wheeler and W H Zurek, Princeton, 1983.
4. The Second Law of Thermodynamics states that the level of entropy (disorder or sameness) of an isolated physical system, such as the universe, increases with time. It is the only law of physics which is not time reversible, and therefore the one most in accord with our own perception that time goes forwards but not backwards.
5. See page 340 of 'The Emperor's New Mind.'
6. *Ibid* page 423.
7. The perihelion is the point of the orbit nearest to the sun. In the case of Mercury, this precesses each year by a very small amount – about 43' per century – more than is predicted by Newtonian mechanics.
8. Paris, 1982.



42nd Session of the General Assembly 15th September 1987 UN Photo 169,836/Milton

Not to bring us to heaven...

Martin Notcutt looks at the changing role of the United Nations

THE PRIME FUNCTION of the United Nations is to bring order to international relations so that basic human goals of life can be realised. It has many practical agencies and programmes, which regulate different aspects of international activity and co-ordinate vital functions, like so many human organs. But at its heart it is a meeting place, where the governments of the world can speak and be heard, where it may be possible for something like a world consciousness to appear. Peace and security are its first objectives, because without these all

other efforts are nullified. It is, as Brian Urquhart put it in 1985, "at its best, the nearest thing we have yet to a working framework of a world community."

Soon after its foundation, the UN was paralysed by the divisions of the Cold War, and this has led many people to feel that its aims are too utopian, implying that they cannot be put into practice. Changes in the relationships between the great powers of the East and West in the past two years, however, have allowed a recollection of the original hope on which it was founded in 1945.

Intentions

Like its predecessor the League of Nations, the United Nations was established at the end of a war of sickening violence. In response to that horror, the Charter begins with a moving statement of intention: 'We the peoples of the United Nations, determined to save succeeding generations from the scourge of war...'

This is the preamble, which sums up the aims and basic methods of the organisation, which encompass peace, human rights, international law, and fullness of life for all. They are to be achieved through living as good neighbours, uniting to maintain peace, giving up the use of force to settle differences, and by the employment of international organisations to promote that fullness of life. All of these are things which look beyond narrow self-interest.

These sentiments moved not only those who drafted the charter, the representatives of 51 countries. At the time when it was adopted, the Charter epitomised the general sense of a fresh

We the peoples of the United Nations determined

to save succeeding generations from the scourge of war, which twice in our lifetime has brought untold sorrow to mankind, and to reaffirm faith in fundamental human rights, in the dignity and worth of the human person, in the equal rights of men and women and of nations large and small, and to establish conditions under which justice and respect for the obligations arising from treaties and other sources of international law can be maintained, and to promote social progress and better standards of life in larger freedom,

and for these ends

to practice tolerance and live together in peace with one another as good neighbours, and to unite our strength to maintain international peace and security, and to ensure, by the acceptance of principles and the institution of methods, that armed force shall not be used, save in the common interests, and to employ international machinery for the promotion of the economic and social advancement of all peoples,

have resolved to combine our efforts to accomplish these aims

Accordingly our respective Governments, through representatives assembled in the City of San Francisco, who have exhibited their full powers found to be in good and due form, have agreed to the present Charter of the United Nations, and do hereby establish an international organisation to be known as the United Nations

26 June, 1945

beginning and hope for a new era of peace and freedom throughout the whole world. Margaret Thatcher has said that "... the establishment in the aftermath of that war of the United Nations... was seen both as a symbol of that hope and as a practical means towards its fulfillment."

But the mere establishment of the UN could not be the same as the achievement of those aims, and since then the world has seen many wars: almost every government can still be held accountable for violations of human rights, and poverty and disease continue to oppress hundreds of millions of people.

The United Nations is not a super-state. It is an organisation of independent, sovereign nations, and has no power to enforce decisions on its members. Its function is to harmonise, encourage and initiate, and therefore it depends for its effect upon persuasion, agreement, consent and compromise. There have been two particular stumbling blocks to such co-operation in the life-time of the UN. The first was the great power struggle which arose after the Second World War, as the old geopolitical patterns gave way to new ones, and the USA and the USSR jockeyed to extend their spheres of influence. The second was greater diversity and complexity of international relations in the post-war world which the organisation encountered as it became increasingly universal in its membership.

At the heart of its peace-keeping role, for instance, is the security council, whose five permanent members are the victorious Allies of the Second World War – Britain, France, USA and USSR – together with China. It was thought that the great powers who had acted together to win the war would continue to act together to prevent it happening again. But the Allies, who had been brought together by common enemies, were soon divided in peacetime, and fell back into the massive regional military-economic groupings of East and West.

A World Forum

Meanwhile, the rapid de-colonisation of the European empires was taking place. In a short space of time, nearly one thousand million people living in Africa, Asia and the Caribbean emerged from government by Western countries to the trials of self-determination. More than 80 nations whose peoples were under colonial rule when the UN was founded have since joined it as

independent states. The General Assembly now has 159 members, representing 95% of the world's population, and the system of one country one vote, regardless of its size or political power, means that the original signatories of the Charter were quickly outnumbered.

The presence of these new members signalled the arrival of a global society, mediated by all the modern forms of communication. This has far more complex inter-relationships, and common needs, than ever before. Though the UN was established to prevent the outbreak of a third world war, to the countries of the so-called 'Third World', the concept of 'international peace and security' meant something quite different. Their concerns have often focussed on areas of unresolved tension from the colonial era, such as the Middle East and Southern Africa. They have also been articulated in the demand for the creation of a 'new international economic order' – a demand based on awareness of the vast differences between consumption in the industrialised world and the poorest countries. Despite their independence, the economic development of the poor still seems to be subject to the priorities of the rich and East-West opposition has been of small consequence to those who suffer the results of the North-South divide.

Such differences of priority have been reflected in many of the conflicts which the UN has been called upon to settle, where it has faced a dilemma of aims between its obligation to maintain peace and that of justice. Should it call for an immediate cease-fire and return to former boundaries, when those boundaries contributed to the conflict?

Even those who knew best the real value of the organisation felt its incapacity to deal with such questions. Writing in 1987 at the end of a career of service to the organisation, Sir Brian Urquhart said:

"In the United Nations, the only global design we have for this daunting task, the enormity of the challenge, the feebleness of the general will, and the smallness of the means were all too evident. As the years went by, the obstacles often seemed overwhelming and the spirit alarmingly weak. But then a disaster, or a near-disaster, or sometimes even an exceptional leader, would remind the nations that they must cooperate or perish."

NewVisions

The 1950's saw the emergence of an outstanding advocate of the UN, Dag Hammarskjöld, who was able to articulate the role of the organisation afresh. Secretary-General from 1953 until his death in an air crash in 1961, Hammarskjöld came to the UN at a time when it was in crisis, and gradually won the confidence of a great number of its members. For him, the charter was an expression of moral purpose on which all could agree. Speaking from his own unshakable integrity, his vision sometimes sounded idealistic, but in fact it embodied a new realism about what could be achieved. The United Nation represents, he said:

“the beginning of an organic process through which the diversity of peoples and their governments are struggling to find common ground upon which we can live together in the one world which has been thrust upon us before we are ready”.

In a memorable phrase, he called it an organisation “not created in order to bring us to heaven, but in order to save us from hell”, and was convinced about its eventual value:

“The UN reflects both aspiration and a falling short of aspiration, but the constant struggle to close the gap between aspiration and performance, now, as always, makes the

difference between civilisation and chaos”.

The present Secretary General, Perez de Cuellar, took office in 1982. He is also a man of great vision and stature. Beginning at a time when there was still great hostility between the super-powers, he has consistently championed the principles of the Charter and aimed at establishing low-key negotiations between hostile parties, preferring effective action to rhetoric. His patient work is responsible for the increasing confidence that many governments now show in the UN. “The Charter and the working of the world organisation do not promise a problem-free world,” he has said. “What they promise is a rational and peaceful way of solving problems. Perfect justice in relations between nations may be unattainable, but inequalities can be reduced.”

Changes

The improved relations between the United States and the Soviet Union have had profound consequences in world politics as a whole. In both cases, the decision to change policy has resulted from a more mature evaluation of each country's role as a military world power, which has led them to place a greater emphasis on the UN. This new attitude was first expressed by Mikhail Gorbachev in the General Assembly in 1987, and was strongly

underlined in his address in December 1988, the day of the Armenian earthquake, when he said:

“We have come here today to show our respect for the United Nations which has increasingly been manifesting its ability to act as a unique international centre in the service of peace and security. We have come here to show our respect for the dignity of this organisation, capable of accumulating the collective wisdom and will of mankind. Recent events have been making it increasingly clear that the world needs such an organisation, and that the organisation itself needs the active involvement of all its members...”

Perez de Cuellar was able to deliver an optimistic message in his annual reports to the General Assembly in 1988 and 1989: that as a result of the easing of Cold War tension, the possibilities of bringing peace to some of the most troubled regions of the earth had substantially increased. In Afghanistan, the Iran-Iraq war, Cyprus, Namibia, Cambodia, and the South-West Sahara, the UN had been involved either directly or indirectly in facilitating settlements. He pointed out that crucial elements of the United Nations such as the Security Council had increasingly functioned as they should.

There is also increased appreciation of the UN within the United States' administration, which only three years ago was withholding part of its assessed financial contribution to lend weight to its demands for administrative reform. (Indeed it still owes more than \$400m in arrears.) In an unusual comment at the close of 1989 Autumn session of the General Assembly, the American Ambassador Thomas Pickering described the session as “highly productive”, listing among favourable developments the first joint American/Soviet initiative in United Nations history, calling on member countries to help ensure peace within the framework of the organisation.

The renewed directedness of the great powers in the Security Council is beginning to be echoed in more responsive behaviour amongst the interest groupings in the General Assembly.

Global Problems

A great impetus to governments coming to understand their need for some kind of international body arises from the increasingly interconnected nature

Dag Hammarskjöld (right) at a Security Council Meeting, N.Y. 1960

U.N. 66484



of modern life.

A new class of problems is pressing upon us. These do not respect political boundaries. They can afflict rich and poor alike, and no government acting alone, not even the most powerful, can protect its citizens from such threats. One of these is the threatening ecological crisis. There are in addition such problems as terrorism, international drug trafficking and diseases such as AIDS. The UN has been concerned with all these problems in their very early stages and agencies such as UNEP (United Nations Environmental Programme) play a crucial role in stimulating awareness and achieving international standards in such areas as pollution control. (1)

All of these require a wider concept of security, and imply the collaboration of virtually all countries for their solution. Nor can they be resolved without substantial progress on military and economic issues. As the late Olof Palme, President of Sweden, said, "There is simply no alternative to international co-operation. Only through joint endeavours can we hope to move from common fear to common security."

A Place Prepared?

The United Nations is not an ideal organisation, but even if not a perfect design, it represents the essential condition of world order. The Preamble to the Charter sets before us high aims. They can be called idealistic, but as Brian Urquhart says:

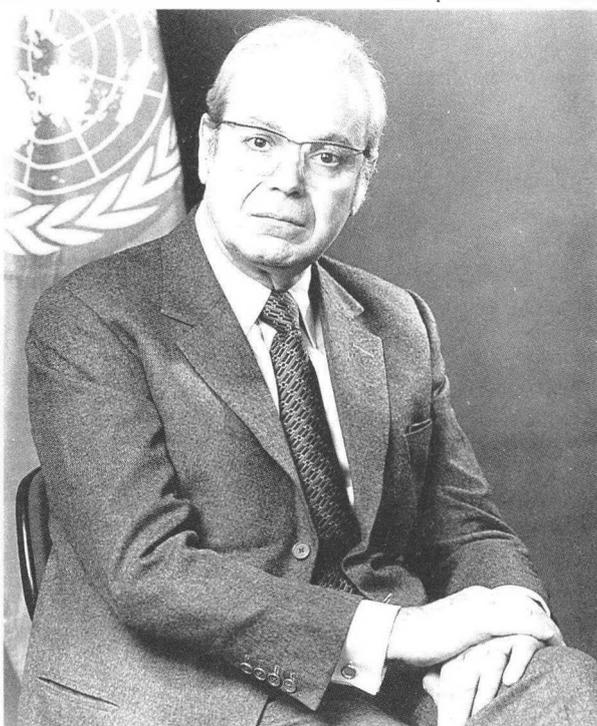
"Idealism, which is the distillation of human experience, is far more realistic than cynicism".

Perez de Cuellar expects governments to make more purposeful use of the organisation in the future "not as an exercise in piety, nor in a sudden and passing burst of idealism" but because they understand that it is in their interests. Stable solutions to long term problems will only be reached through action which concords with the principles of the charter.

If the aims of the United Nations are not unrealistic, our expectations of it often have been – in particular, that it can act when its members do not. It is said that those who ignore the lessons of history are condemned to repeat them, but there is less and less scope

now for learning through error. Perhaps there has been a crucial evolution in what is understood by peace and security during the last 40 years, which is leading this generation to re-affirm the basic realism of the Charter.

Even if the UN is increasingly, and better, used by the nations, this does not mean a conflict-free world. The ending of the Cold War and the liberation of Eastern Europe has delivered the world from an enforced political



Javier Perez de Cuellar UN Photo 169681

simplicity into a situation full of unknowns and uncertainties, in which many strong forces are at play. An international mediating body – and indeed, a strong security system – will be of great importance.

We are at one of those historic moments which abound with opportunities. Agreement between the major powers is a basic condition for action, but the changing times demand more. The movement which has engaged the super-powers must draw in the majority of UN members if it is to come to terms with the world situation. The United Nations stands ready as the instrument for the effort, but if it is to be capable of carrying out its tasks properly, then it must be strengthened; specifically, its finances need to be put on a sound basis, and there are currently proposals for the transformation of the Economic and Social Council in the face of global environmental problems. The following words of Perez de Cuellar need to be fully acknowledged:

"A fearful, fatalistic sense attended an unending arms race. This sense of a loss of purpose lasted for decades. Now that it has begun to lighten, there is a return to the earlier hope that had greeted the birth of the World Organisation, but a hope tempered by a firmer sense of realities.

" Within the Organisation, we have a foundation on which to build a system that, while fully recognising national sovereignty, would also recognise that international co-operation, however difficult to organise, is not a choice but a necessity".

1. For instance, at the conference of the Club of Rome held in Hanover in June 1989, the greenhouse effect was identified as the most imminent environmental threat facing the planet. Whilst the heating effect cannot now be prevented, many measures could be taken to slow it down and eventually bring it to a halt. To implement these, a global strategy is indispensable, and the Club recognised that any solution is intimately linked to the issue of the North-South divide.

Two of the conference's recommendations directly involved the UN:

1) to create a working group of The Club of Rome, UNEP, UNESCO, UNDP and educators to elaborate a teaching programme and information campaign on action at every level, including that of the individual.

2) the organising of a North-South conference on the common environmental imperative, aimed at the creation of a UN Environmental Council, parallel to the existing Security Council on military matters.

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Means of Expression

Shobana Jeyasingh talks about her work as a dancer and choreographer

"The dance is occasioned by no specific need. It has come into use because it creates beauty."

Natya Sastra, 4AD, written by the sage Bharata

Shobana Jeyasingh, dancer, choreographer and director of dance theatre, was born in Madras and started learning Indian classical dance, Bharata Natyam, when she was about seven years old. She came to England in the seventies to study English Literature at Sussex University, specialising in the Romantic poets before doing an MA. in Renaissance studies. She is a South Indian Christian. Although she is now based in London, she returns to India each year to work with dance-master and choreographer, Valluvoor Samaraj Pillai.

Shobana has become known for her ability to re-interpret classical forms into a modern idiom; her choreographic collaboration with the well-known modern composer Michael Nyman in 1988, resulted in 'Configurations' which was hailed by the Guardian as "the most innovative artistic event of the year". In 1989 she was

chosen to represent Great Britain as a choreographer in the celebrations of the bicentennial of Bastille Day in Paris.

CLASSICAL DANCE has always played an important role in Indian society, in the temple and in the court and also as entertainment in the villages and cities. It's different to European dance where the history of ballet is quite recent and can be traced back to Louis XIV's court. Apart from its ritualistic function, dance was encouraged in India as a pure art form. Where everything is done by ritual, it's not possible to separate the religious from the non-religious. In India, prayer and ritual govern all sorts of actions, not just dance, and there isn't the separation which you find in western society between the religious and the secular.



Dance is a dynamic thing. That *Bharata Natyam* has survived so many years and can be used to please the audiences in twentieth century Britain shows that it is extremely resilient and can change with the times. Even though one part is ritualistic, a strong technique has been developed which can be taken and used in many different ways. The technique itself is not adapted: if one changes the technique, one changes the dance. The technique is the skeleton of the dance, but you can take that skeleton and clothe it in different ways and this is something I have done in my work.

Dance has to be rooted in a context in order to have a form, but those forms can then be applied in non-specific areas. People think that ballet is a universal language – they are happy to have a Japanese dancer doing ballet and see no contradiction, as ballet has a strong universal form that can be learnt and performed by everybody. But when it comes to *Bharata Natyam*, people in the west often think that it is so specific to India that only Indians can do it. They aren't willing to look at that form and see the universality in the form itself. In modern dance there is a great deal of borrowing from the east, but this is seldom acknowledged, or else it is trivialised and dismissed as bogus spiritualism. There seems to be a reluctance to actively acknowledge the contribution by non-Western cultures.

If I didn't find the form of *Bharata Natyam* convincing, I would probably go and do modern dance where there is much more obvious freedom. If I wanted to do a dance about the nuclear holocaust I would do modern dance; but I am not that interested in temporal ever-changing patterns – I am interested in general patterns, in the distilled form that is in classical dance. Dances about social concerns have relevance within their own terms but everyone has to do what they find most fulfilling for themselves, and I find the distilled essences of emotion that you find in classical dance far more satisfying than the transitory ones.

In modern dance the virtue is in being totally flexible so you can do almost anything you want, but ballet and *Bharata Natyam* are about making sure you only want one thing: to conform your body to that particular form. You learn the lesson that ultimate freedom only comes from ultimate imprisonment. In Indian dance the whole focus is different. It seems contradictory, because in one way it's very fixed and in another way it's very free. It's a solo dance form and what is being encouraged is something that is unique to you, not what you share with the next dancer. Ultimately it is yourself that is responsible for the movement: you are not dancing with other people, you are not trained with other people and what you are encouraged to do is to bring that quality which is unique to you, and unique to your physique.

CLASSICAL DANCE forms are about a certain kind of aesthetic. Even when dance is done for political reasons, social reasons and individual reasons, ultimately there's got to be an element of beauty in it. But how you define beauty can be completely different. In India everybody still agrees that in dance certain things are beautiful, but in the west the classical ideal was challenged by people like Graham, Ruth St Denis and Wigman, and once one says, "I don't find dancing on point beautiful, I don't like the whole ethereal quality – it's mechanical and precious", then immediately you have fragmentation.

“... the emotion for pure dance is ‘active delight’, just as in ballet it is a quiet serenity”

For me that doesn't arise. I am totally satisfied with the form of Indian classical dance, and in my own country, I am considered a traditional dancer. When I perform there I take courage and strength from the fact that all admire the same ideals of beauty that I acknowledge in the dance. In the west there's a problem because many people might not find Indian movements beautiful. But I am not trying to change the form in order to please them; I am only trying to communicate the beauty of the form by methods that will speak to them. I worked with Michael Nyman because I wanted to explain the mathematical structures to a non-Indian audience, because few of them realise that in *Bharata Natyam* one has a very rigorous idea of pure form: the pure circle, the strict diagonal, the straight line, the curve – it's very geometric. All shapes are born out of those pure Platonic ideals. For me that is what *Bharata Natyam* says to the audience: it reminds them of those eternal forms, the essence behind all forms, and I find that a very beautiful concept. And so I want to evoke in them a sense of timelessness, a sense of shape and form which are archetypal.

'Configurations' is a totally mathematical dance, which uses the same Indian dance vocabulary but with western music. The structure of *Bharata Natyam* follows the compositional structure of Indian classical music, which is based on arithmetical patterns. To express arithmetical ideas in dance is therefore not very revolutionary or difficult, since that's what we do traditionally anyway. The only new thing is to take those arithmetical structures and translate them into a different context.

The percussive structure of the music, apart from space and shape, is expressed through footwork. That is where the music and the dance meet. The structure of the dance is also the structure of the music, so we don't dance to the music, we dance the music. With Michael Nyman, I had to notate the footwork for the dance and give it to him, and he then translated it and made musical sense out of it. If I gave the same structures to an Indian musician he would produce very classical, conventional Indian music. The drummer plays what you are doing with your feet; he embellishes it and creates his own patterns round it, but he can't make patterns outside of what you've given him.

In my new pieces, where I use more than one dancer, I have also tried to develop a new kind of spatial dynamics for the dance which is not there in the traditional form. Choreography is like a language. The dance is like learning the ABC and the rules of the language, then the choreographer is like a poet who takes the language and creates what he wants out of it. The greater your vocabulary, the more articulate you are, the greater a poet you will be.

AT THE MOMENT I am working on 'Ramanujan', a dance opera to be performed in November 1990. Not a lot is known about Ramanujan's life.⁽¹⁾ He came from a very poor background and died when he was 32. But there was an amazing uniqueness about his life; he was a totally intuitive mathematician, not a nurtured, taught mathematician – whatever came, came naturally out of the imagination. Because we don't know much about him, he's there for us to create him, so he is a kind of mythic character more than a historical one.

My first collaboration with Michael Nyman explored how the form of the dance could be translated into a contemporary western medium, and 'Ramanujan' is in some ways an

attempt to do that in mime, in the expression of emotions which is the other side of the dance. Like acting, Indian mime springs out of words; we don't mime to only music, neither do we mime to silence. I had the idea that 'Ramanujan' would be an opera and the acting will come out of the text.

Pure dance (*nritta*) and expressive dance or mime (*nriitya*) are two different techniques in Indian dance. In a performance, there are some items which are pure dance and some items which are expressive dance, perhaps telling a story or creating a particular mood or theme. Some dances have both, but they're separated – we never use one technique for another. In pure dance, which is shape and rhythm, there is no emotion. It's very abstract. The closest example I can give is something like Merce Cunningham's work where there are pure exercises in form. Fifty per cent of our dance is that. Because we use our eyes and our face, Western audiences often get confused and think we are trying to express some specific emotion.

Our faces are pleasant because the emotion for pure dance is 'active delight', just as in ballet it is a quiet serenity and in flamenco it is a suffering pride.. The delight comes from this idea in Hinduism of play (*lila*): that creation comes out of play, out of a general happiness. In the west, creation often seems to come out of a very angst-ridden, painful process; a person creates because he is alienated from his surroundings. But in India it's the opposite. People create out of the joy of belonging. It's an approach that comes from belonging to your society and your environment rather than being alienated from it. Creation comes out of the *lila*, the play of the gods, and in dance you create through this play, so it's quite logical that Indian dancers should be happy and smiling.

Letters

Chief Seattle's Testimony

WE HAVE received a letter from Maria Brown of Cumbria, UK, concerning the version of 'Chief Seattle's Testimony' which we printed in BESHARA 9. She encloses copies of a letter from Friends of the Earth and a report from the Swedish journalist Carl Ross which point out that the version of the speech which is most commonly circulated is not the original.

The story which emerges from these papers is as follows. In 1854, Chief Seattle, the head of the Suquamish tribe, had a meeting with Governor Stevens, the Commissioner of Indian Affairs for Washington Territory, in which the latter was to present proposals for buying the Suquamish lands. Chief Seattle arose and "plac-

ing one hand upon the Governor's head and slowly pointing heavenwards with the index finger of the other..." commenced a memorable address to the assembled company. This was transcribed by Dr Henry H Smith, who translated simultaneously from the Suquamish tongue, and some thirty years later published a description of the event and a version of the speech in 'The Seattle Sunday Star', on October 29th 1887.

However, this is not the version which has become known as 'Chief Seattle's Testimony' which is reputed to be taken from a letter which the Chief wrote in 1855. According to Carl Ross, no such letter has ever been found, even though 'The Seattle Times' investigated the matter in 1975. Ross's research revealed that the speech was in fact written in 1970/71 for a film produced by a religious group in the USA. The script-writer, Ted Perry, has never attempted to pass it off as authentic, but it was published in the magazine 'Environmental Action' in 1972, and

TO GO UP ON STAGE and perform on your own for two hours, to have the confidence to believe that 400 people are happy to watch just you for two hours, says a lot for the richness of the form of the dance. It also says a lot for the potential that a human being has. That's the beauty of this form; it brings out the richness of one human being in all its manifold forms, in communication and expressiveness, because ultimately that's all the resources you have; just your body. We don't have wonderful setting and lighting and decor in traditional *Bharata Natyam* performance. There is the dancer and the music for a whole evening. It teaches a lesson about yourself and your potential because it really comes from inside.

However, my favourite activity is practicing rather than performing because you don't have the same pressures. What I love is to go through a movement over and over again. I just like doing it and being moved by it, or if there is a song I'm dancing to, it may be so beautiful I just like to listen to it over and over again. It may be a dance I haven't done for a very long time and sometimes the beauty of it is overwhelming to the point of tears.

1. Ramanujan was born in South India in 1887. His mathematical genius led him to be 'discovered' by the eminent English mathematician G.H.Hardy who persuaded him to join him at Cambridge University. Hardy described his meeting with Ramanujan as the only significant incident in his life. The importance of Ramanujan's work is still emerging.

Interview by Cecilia Twinch

Photograph on page 32 from 'Configurations', choreographed by Shobana to music by Michael Nyman. Photograph by Eric Richmond.

since then confusion has resulted – not least, it seems, because of the great popularity which his version has enjoyed.

There are radical differences between the two texts. The most obvious one is that whilst Dr Smith's version conveys a great sentiment for the land, the overtly ecological content which has so caught the public imagination is largely absent; what predominates, rather, is the Indians' feeling for the land as the sacred place where the spirits of their ancestors reside.

Secondly, whereas the version we published is conciliatory and unifying, Smith's version shows more bitterness:

"Your God is not our God. Your God loves your people and hates mine! He folds his strong arms lovingly around the whiteman... but He has forsaken His red children, if they are really His".

Yet other parts remain almost the same, such as those which show the Chief's ability to look beyond individual or trib-

al destiny, to the larger picture:

"Men come and go like the waves of the sea... It is the order of Nature. Even the white man whose God walked and talked with him as friend to friend is not exempt from the common destiny. We may be brothers after all. We will see".

In the light of this information, it is clearly inappropriate that the text we printed should be attributed directly to Chief Seattle. Dr Smith's version also may not be a word for word transcription; he himself said that it was "but a fragment (which) lacks the charm lent by the grace and earnestness of the sable old orator..." What does remain after reading these papers is the sense of the greatness of this noble chief, who has succeeded, it seems, in communicating, by whatever means, something of the wisdom of his people to our generation.

Jane Clark

Reviews

Books

... in brief

SCIENCE

Infinite in All Directions

by Freeman Dyson

Penguin 1989

P/back, 320pp, £5.99

"... so far as modern science is concerned, we have to abandon completely the idea that by going into the realm of the small we shall reach the ultimate foundations of the universe. I believe we can abandon this idea without any regret. The universe is infinite in all directions, not only above us in the large but also below us in the small. If we start from our human scale of existence and explore the content of the universe further and further, we finally arrive, both in the large and the small, at misty distances where first our senses and then even our concepts fail us".

These are not the words of a modern scientist, but are from a talk by the physicist Emil Wiechart speaking in 1896, the year after Röntgen discovered X-rays. They are quoted in chapter 3 of this book, which is an edited and revised version of the 1985 Gifford Lectures given in Aberdeen under the title "In Praise of Diversity". Dyson points out that Wiechart's point of view has not been dominant in modern physics, the emphasis being towards unification of physical laws rather than

on the diversity of nature. It has been somewhat different in biology. Dyson believes that a balanced science needs both unity and diversity. Professor of Physics at the Institute of Advanced Study at Princeton since 1953, he is one of the world's leading scientists, and as befits its title, the book ranges widely and deeply over physics, biology, cosmology and ethics in what is one of the best collections of science essays published in the last few years.

Mind, Brain and the Quantum

The Compound 'I'

by Michael Lockwood

Basil Blackwell, 1989

H/back, 365pp, £25

Can there be a physics of consciousness, and what would it be like? Those who wish to investigate this matter further could well start with Michael Lockwood's exposition, which gives an excellent and detailed account for the general reader of current thinking, physical and philosophical, on the subject. It is remarkably easy to read considering the sometimes technical nature of the subject matter, and is often stimulating and provocative. Lockwood's own views on the mind-brain problem and the interpretation of quantum mechanics, partially derived from Bertrand Russell, are particularly interesting; right or wrong, one feels that they address issues which will have to be considered in any future view of the subject. He says: "If there is one thing I

am sure of, it is that a correct conception of these matters is bound to involve a drastic revision in our customary way of looking at the world."

The Search for Meaning

The New Spirit in Science and Philosophy

Edited by Paavo Pylkkänen

Crucible, 1989.

P/back, 318pp, £8.99

This collection of essays and discussion, explores what a coherent meaning suitable for our own time would be like. Very much based around the ideas of David Bohm, the book opens with a talk and transcribed discussion with him entitled 'Meaning and Information'. Rupert Sheldrake follows with an exposition of his own theory of 'Morphic Resonance' in relation to meaning. Then an eminent group of contributors, including physicists, neurologists, doctors, professors of literature, mathematicians and painters, then take on a range of other topics – the mind-brain problem, the nature of mathematics, the philosophical dimensions of meaning and its psychological necessity. Srinivas Aravamudan asks whether it would be possible for David Bohm to have a dialogue with the post-structuralists, whilst John Briggs and Frank McCluskey suggest that we need to move away from a situation in which we seek absolutes, but rather develop the capacity for 'omnivalent' meanings. A fascinating and valuable book.

Creation of the Universe

by Fang Li Zhi and Li-Shu Xian

Translated by T. Kiang

World Scientific, 1989

H/back, 180pp, £17.00

The Chinese astrophysicist Fang Li Zhi and his wife Li-Shu Xian are best known as China's leading dissidents. Since the crack-down last year they have taken refuge in the US embassy in Beijing, their future uncertain. Fang's stormy relationship with the authorities is referred to in the introduction to this book, which is dated November 1988

and tells us that the publication of the original Chinese edition was nearly cancelled.

The book itself is a wide-ranging survey of modern cosmology, covering much the same ground as recent western books such as that by Gribben and Rees. What is refreshing is the authors' concern to place everything in a wider cultural context. Their erudition is breathtaking and original, especially to Western eyes; in these pages Kant and Aquinas rub shoulders with modern physics, Taoist folktales and Chinese classical philosophy.

The Stuff of the Universe

by John Gribben and Martin Rees

Heinemann, 1989

H/back, 302pp, £16.95

This is a fascinating account of a new viewpoint in cosmology which the authors claim has as much right to be called a paradigm shift as anything in twentieth-century astronomy. This is the realisation that the dynamics of our universe, and of all the galaxies in it, are controlled not by what we see but by what has become known as 'dark matter'. The authors – a leading astronomer and a science writer – tell us that only 10% (at most) of the universe shines. They discuss the nature of the dark matter and its implication for our knowledge of the origin and destiny of the universe. New light is shed on the Anthropic Principle, as they reveal that it was a very improbable series of cosmic events that led to a universe capable of supporting intelligent life.

MYSTICISM

The Luminous Vision

Six Medieval Mystics and Their Teachings

Anne Bancroft

Mandala, 1988

P/back, 194pp, £5.99

"Yet also it is good to know God perfectly; that is to say, he cannot be conceived by the mind but knowing Him is to love Him; loving Him to sing to Him; singing to rest in Him; and by inward rest to come to endless rest."

Thus is quoted the 14th century Englishman, Richard Rolle, in this succinct survey of early European mystics. The book also includes sections on Jan van Ruysbroeck, Julian of Norwich, St Bernard of Clairvaux, Meister Eckhart, and the anonymous author of 'The Cloud of Unknowing'. Anne Bancroft describes the background and historical

context in which each of her subjects lived, and gives a sound summary of their main areas of thought. Writing in a straightforward and readable style, she has real feeling for the contemporary relevance of these great saints.

Les Illuminations de la Mecque (Al Futuhat al-Makkiya)

by Muhyiddin Ibn 'Arabi

Selected Texts, edited by Michel

Chodkiewicz

Sinbad, Paris, 1988

P/Back, 651pp, 230F, £26

Until quite recently, Ibn 'Arabi, the great Andalusian Saint of the 12th century, was largely veiled from the eyes of the Western world, but in the last twenty years there has been a virtual explosion of translations and commentaries upon his work. This represents only a small portion from the treasury of the 500 odd texts he produced, but we are fortunate that some of the more pivotal translations have come to us first.

This book consists of a series of extracts from the massive 'Futuhat', one of the best known works which has never been fully translated into a Western language. Contributions are from four translators: William Chittick, Cyrille Chodkiewicz, Denis Grill and James Morrison, whilst Michel Chodkiewicz provides an introduction to the thought of Ibn 'Arabi. The work is roughly an even mixture of French and English. Here are two short extracts to water the imagination:

*"To God belongs what is hidden
To God belongs what appears
How excellent is that which is God,
that which is none other than He"*

"So there is none more knowledgeable than the intellect, and none more ignorant, for the intellect never ceases to acquire. Hence it is the knowing one whose knowledge is not known, and the ignorant one whose ignorance has no end".

Simone Weil

Utopian Pessimist

by David McLellan

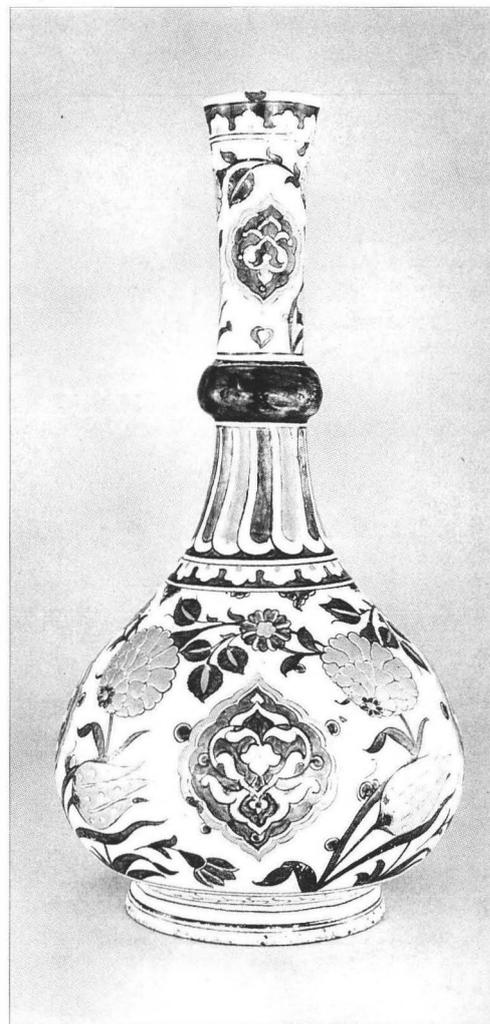
Macmillan, 1990

H/back, 316pp, £25.00

Simone Weil, teacher, philosopher and political activist, lived in France from 1908 to 1942 and died in England in 1943. She left a number of short works remarkable for their intellectual clarity and forceful spiritual insight, which

could be said to constitute a spiritual autobiography. These, all published posthumously, include 'Gravity and Grace' (1947), "Waiting on God" (1951), and 'On Science, Necessity and the Love of God' (1968) as well as a longer treatise on the re-construction of France called 'The Need for Roots'.

David McLellan's new biography is an admirable work; the author has made every effort to convey the sense



Water bottle circa 1575–80. From 'Iznick: The Pottery of Ottoman Turkey' by Nurhan Atasoy and Julian Raby (Alexandria Press/Thames and Hudson, 1989. H/back, 384pp, £120). This beautiful, lavishly illustrated book is the first comprehensive study devoted to the famous ceramic vessels produced in Iznick (Nicaea) from 1480 to 1650. Photograph courtesy of Alexandria Press

he sees in a life which was in many ways chaotic, even, some say, tragic. Notwithstanding the absurd subtitle, with which McLellan pointlessly attempts to categorise a woman who was both in notion and fact rigorously uncategorisable throughout most of her thirty-five years, the "shipwrecked beauty" of her interior life is patently

clear, and her unflagging adherence to the truth as she saw it is aptly conveyed to the reader, who may indeed gain vigorous inspiration from it.

Nine Songs

A Study of Shamanism in Ancient China
by Arthur Waley

Mandala, reissued 1989

P/back, 64pp, £5.99

This is a slim volume of nine short poems translated and commented upon by Arthur Waley, which were originally published in 1955. The songs are from the 4th and 3rd century BC, and are sung by the shaman, whom Waley describes in his introductory essay as "a person upon whom the Bright Spirit has descended". These lovely pieces express all the intimate sentiments of longing, pain, seeking, grief, joy, celebration, etc. so familiar to lovers and to readers of mystical poetry:

*"I have washed in brew of orchid, bathed
in sweet scents,
Many-coloured are my garments; I am
like a flower.*

*Now in long curves the Spirit has come
down*

In a blaze of brightness unending"

(from Song II)

ARTS

The Mahabharata

by Garry O'Connor

Channel 4, 1989

H/back, 155pp, £14.95

Peter Brook's spectacular and highly acclaimed stage production of 'The Mahabharata' was adapted, by Brook himself, into a film which – in a rare piece of inspired scheduling – was shown on British television just before Christmas last year. This beautifully illustrated and entertaining book, by a colleague of Brook's from his RSC days, documents the filming via interviews, research and observation through all its stages – from early discussions between writer/collaborator John-Claude Carriere through its stage performances in French and English by a multi-national cast of actors and musicians to its final appearance.

The book is most interesting when it speaks of the development of Brook's philosophy and technique, and of his search for a theatrical language capable of conveying a universal meaning. It quotes him as saying: "...fundamentally, all men are the same, and if only we were a little more developed, we would

have within us what belongs to every culture. It's our misfortune that we are locked in little things called cultures... In working together, the truth in 'The Mahabharata' permeates until everyone sees we're looking for the same thing, and then each one in telling it begins to call on his own natural vocabulary".



Mallika Sarabhai as Draupadi in 'The Mahabharata'. Courtesy of Channel 4.

ECONOMICS/ECOLOGY

The End of Nature

by Bill McKibben

Viking, 1990

H/back, 212pp, £12.99

This book has already made an impact on both sides of the Atlantic. In America, it was extracted at length in 'The New Yorker', the first ecological book to merit such exposure since Rachel Carson's 'Silent Spring'. In England, it was reviewed in 'The Independent' by the Minister for the Environment, Chris Patten, and has been hailed by several commentators as the most important book for the 1990's.

McKibben's 'end of nature' is a metaphysical one – not of nature as such, but of the idea that nature is independent of man, that there is some place on earth where man can escape from the effects of his actions and witness the glory of creation as it was meant to be. With many quotations from people like John Muir and Henry Thoreau who found spiritual solace in the wildernesses of America, McKibben combines a clear historical summary of the present state of play as regards the planet – the ozone layer, the greenhouse effect, etc – with speculation concerning the implications of all

this for our conception of ourselves, of God and of nature. If it falls at times too far towards a 'man the parasite' point of view, it is nevertheless an interesting, and very well-written, book which recognises that the ecological crisis has many dimensions of meaning.

The Global Environmental Movement

by John McCormick

Belhaven Press, 1989

H/back, 259pp, £27.50

At a time when the majority of adherents to ecological ideals are recent converts, this detailed account of the historical emergence of the ecology movement should provide much welcome information. Beginning with the roots of environmental awareness in Victorian times, it concentrates largely on its growth during the last 30 years – through the 'Prophets of Doom' in the '60's to the setting up of UNEP and other international agencies during the 1970's to the present surge of interest. With a good index and an extensive bibliography and notes, it is obviously designed as much as a reference work as an account for the general reader.

Future Wealth

by James Robertson

Cassell, 1990

P/back, 178pp, £6.95 (H/back £16.95)

Subtitled 'A New Economics for the 21st Century', this book draws together ideas which James Robertson and other members of 'The New Economic Foundation' have been working on for the last ten years or so. Believing that the ideologies of capitalism, socialism and the mixed economy are inadequate in today's world, they propose a 'new economics', the seeds of which they see as already planted.

The broad characteristics of this new system are that it will be:

- enabling rather than exploitative
- systematically conserving of resources and environment
- treat the world's economy not as a number of nations, but as a multi-level one-world system with autonomous but interdependent parts

Refreshing in the range it is able to encompass, one does not have to agree with every proposal to find this a stimulating book, nor share its concern for a more compassionate economic system.

Short reviews by Michael Cohen, Hilary Willams, Derek Elliott, Martha Chamberlin, Kathy Cresswell, Jane Clark.

A New Vision of Reality
Western Science, Eastern Mysticism
and Christian Faith

by Bede Griffiths

Collins, 1989.

H/back, 296pp, £15.95

Elizabeth Roberts

BEDE GRIFFITHS' aim in writing this book is "to trace the new vision of reality that is emerging today ...to look at Christianity in the context of modern physics and psychology on the one hand and Eastern mysticism on the other".

The aim, then, is not just for another academic study of comparative religion, or comparative science/religion. This book is written from a burning desire to know the real universality of Christ; a desire which will not allow the author to overlook uncomfortable areas of apparent difference or difficulty with regard to the insights of other religions, or of history, or of science. Their appraisal and acceptance forces a larger view. The result is a book having what Hugh Montefiore described as a freshness of vision such as he has not seen for 50 years. (*Church Times*, 22nd December 1989).

Rethinking Theology

Where, one may ask, has Bede Griffiths come across this fresh vision? Formerly a Benedictine monk at Prinknash Abbey in Gloucestershire and Prior of Farnborough Abbey, he left England in 1955 for India, to assist in the foundation of a Christian ashram in Kerala. There, he gradually came to realise that if the church in India was ever to respond to the needs of the Indian people, it would have to undergo a radical transformation, rethinking its theology in Indian instead of Greek terms and adapting its organisation to Indian instead of Roman models. The practical consequences of this mode of thought led monks to adopt the dress and customs of the *sanyassi* (the Indian monk), going barefoot, sitting on the floor for meals and prayer, eating with hands. In this way they were able to approach the condition of the poor man in India. They also adopted the Syrian rite, the oriental form of Christianity to reach India through the Eastern church in the 4th century AD – a form testifying to an earlier, pre-Greek expression of the faith.

...in depth

In 1968, Bede Griffiths moved to Saccidananda Ashram in Tamil Nadu (Old Madras) in Southern India. This ashram, founded in 1950 by two French fathers, has constituted a yet more radical attempt to integrate the whole spiritual tradition of India into their lives as Christians. Instead of the focus being the common prayer of Benedictine rule, here the daily round centres on private meditation at the dawn and sunset hours traditional in the East. The meetings for prayer no longer follow the formal liturgy, but include readings from the different religions' scriptures, as well as the psalms and the Bible. Thus, every day, the members of the community confront the relation of the religions in their prayers.

The Sacredness of the Universe

Such is the pioneering background from which 'A New Vision of Reality' has come; a period of 35 years during which the author has gradually learnt to discriminate the essential principles of Christianity from its historical form and to regard our occidental Christian society not by the light of the West but of the East.

In India he encountered an overwhelming sense of the sacredness of the universe, perceived as the immanence of the spirit. He steeped himself in, and in this book describes, an ancient wisdom which offers the most detailed insights into states of inner awareness above the discursive mind – from which perspective our Western preoccupation with the physical, quantifiable, material level alone, though valid, is seen to be astonishingly short-sighted. He summons us back to the integrative wisdom that has come down to us from ancient times but which, over a brief 300 years, we have temporarily lost sight of.

He explains how the materialist philosophy which produced mechanistic science, with its separation of mind from matter and both from spirit, is now transformed in the guise of the new physics and biology, bringing confirmation in a fresh idiom to a new organic model of a living universe. Finally, he uses this model as a basis from which to predict the social and

spiritual values necessary for our future survival and growth. Whereas, since the publication of Frithjof Capra's 'The Tao of Physics' in 1975, we have grown used to looking for parallels between modern physics and oriental mysticism, correlation with the Christian spirituality nearer to home has proved more elusive. This book breaks important new ground in this area.

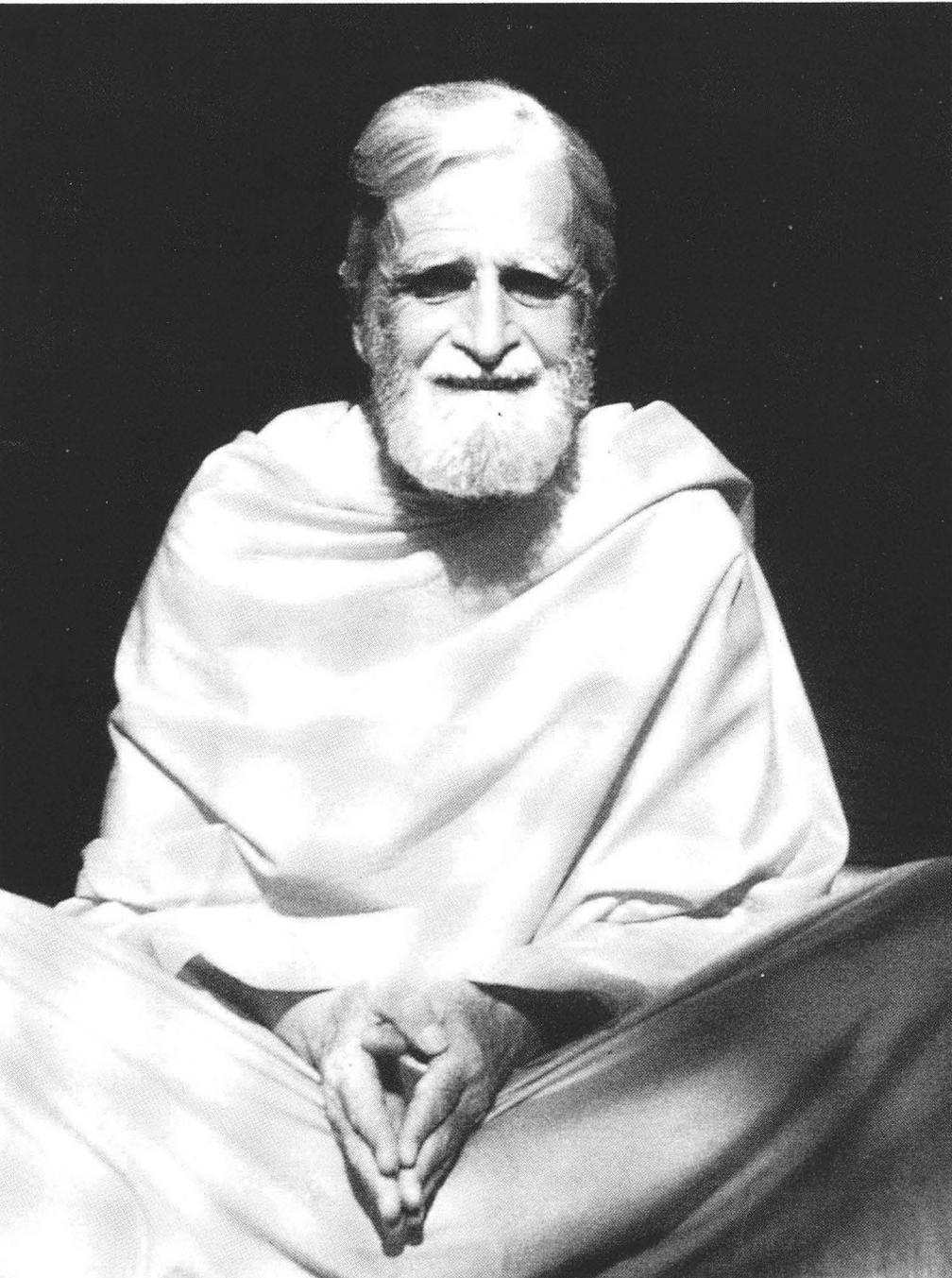
The Cosmic Person

'A New Vision of Reality' is a book with a tremendous scope, covering a vast horizon from the first creation to the 'new' creation; in Biblical terms, from Adam to Christ. Starting from David Bohm's view of the world as 'a complicated web of interdependent relationships' in which the whole is present, 'implicated', in every part, Bede Griffiths follows the unfolding of the implicated universe and the development of human consciousness to a vision of the ultimate evolution of the universe, the 'new' creation, culminating in the Cosmic Person, through whom, he says "... the whole of this universe, physical and psychological, is being reintegrated into its source." He explains what he means by 'source':

"When we come to the Supreme, everything returns to unity. Everything comes out of that original unity, exploding into a universe and evolving through all these forms that we see.... But at the same time there is another opposite movement, the movement of return or *nivritti*. These two movements act together, sending forth the universe and drawing it back to its source... Or, using a different image, just as everything came forth from an implicated whole into explication, now it goes back from explication to the implicate and everything is fulfilled in that One. The whole universe is implicated in this unity and exists eternally in a state of absolute oneness in this being..." (p269).

If we see Jesus as the Christian religion's model of this Cosmic Person, he suggests, then we have an image which relates him more meaningfully to the history of the world, to humanity's understanding of God and to the images of 'archetypal' or 'primordial' man' found in other religions.

"In the Christian understanding ... (the) absolute ground of being from which the whole universe comes is



Bede Griffiths. Courtesy of Collins Publishers

known as the Father, the One, the Source, the Godhead... The understanding is that from this ground, from this source, there springs a Word, a wisdom, an image of the Godhead, and that is the Cosmic Person, who reveals the Father, the Source. In that Cosmic Person, in the Word or Son, all the archetypes of all created beings are contained... (they are) as it were implicated or enfolded there. These exist eternally in him, and of all these archetypes which are in an integrated order, the supreme is the archetypal man... The archetypal man contains within himself the whole universe and all humanity. He is the Cosmic Person,

who is recognised as the Lord of creation, the *tathagatha* of Buddhism, the supreme *dharmakaya* of the Buddha, the *purushataman* or the *paramatman* in Hinduism and the 'universal Man' in Islam." (ibid)

Bede Griffiths goes on to explore this concept of the archetypal man as it is revealed not only in Christianity, but in Hinduism, Buddhism and Islam, drawing on the works of great thinkers like Muhyiddin Ibn 'Arabi, Shankara, and Nagarjuna. In discussing Christ as model for the Cosmic Person in Christianity, he takes us back behind the doctrine of Jesus as the Son of God, a description that became common the-

ology during the first three centuries AD in the West, to an interpretation of the New Testament in which Jesus refers to himself rather as 'the Son of Man'. He draws out a subtle but crucial distinction in St John's Gospel which speaks of the Word not as *ho theos* (The God) but as *theos pros tom theon* (God with or in relation to God), a distinction sometimes overlooked in an incarnational doctrine that makes a too easy identification of the human individual with the Divine. By relating Jesus to the universal concept of the Cosmic Person, he also demonstrates how dialogue between faiths at this deep level can illuminate, not compromise, the meaning of each; that surrendering the claim of exclusive truth does not deny, but rather enhances, the vision of the Christian Gospel as unique.

A Contemporary Quest

Not that the book is without its weaknesses. There is a considerable amount of repetition, no index, and the occasional more serious lack of attention to scholarly detail. The chapter on psychology in particular contains remarkable assertions unsupported by specific authority or reference. How, one wonders, can he possibly know that "It is possible to get back to the experience... of the moment of conception"? (p29) Again, the very largeness of vision that makes the book so exciting invites the inevitable accusations of over-simplification and omission. It is true that the chapters on science rely almost exclusively on the implicate order of David Bohm and the morphogenic fields of Rupert Sheldrake, both of which theories remain controversial, while the psychological history of humanity is a summary of the thought of the transpersonal psychologist, Ken Wilbur.

The originality of the book does not lie in its subject matter *per se*, but in the depth and breadth of its correlations. Bede Griffiths is engaged upon a very contemporary quest to articulate a unifying framework in which all the religious experience of mankind, as well as all knowledge gathered scientifically, can be related. The fact that he selects the more esoteric aspects of religion or science to illustrate his theme stems from an awareness that religions converge only at their centre and that inside experience of truth must now replace uncritical adherence to dogma. To this he adds the important proviso that intuitive experience must be tested by reason: "The method is to open ourselves through intuition to these deeper

insights and to try to understand them, to relate them and appropriately systematise them through reason".

Whether or not his New Age predictions, such as a return to a culture similar to that of a neolithic village, are right in detail is open to doubt. The

future has a tendency to hold surprises beyond a mere mortal power to divine. The considerable achievement of this book is to suggest a proper, universal context, founded on an intellectually genuine spirituality, for the holistic ideas and hypotheses that have been

increasingly emerging over recent decades. In doing so, Bede Griffiths opens the way for us to take a fresh look at the universality of Christ.

Elizabeth Roberts teaches adult literacy in Scotland.

The New Realities

by Peter F. Drucker
Heinemann Professional Publishing, 1989
H/Back, 254pp, £14.95

Ken Webster

THE NEW REALITIES' is the third 'prophetic' book written by American academic Peter Drucker in a long writing career. In it he states that he is setting the agenda for the next century. His scope is wide, moving from politics and government to economics, ecology and the knowledge society. The book's concluding section is equally all-encompassing: 'From analysis to perception: The new world view'.

If a book only 254 pages long is to be anything more substantial than a tour d'horizon, inevitably Drucker has to move quickly across the territory. Reading this book gives one the

impression of watching someone at a shooting gallery in the local funfair. Drucker's targets come up quickly and, while you share the thrill of a direct hit, you cannot help but notice the misses. As an example, on page 158 in the section on 'Economy, Ecology and Economics' he asserts that "economics... is a mechanical model that uses the mathematics of nineteenth century physics... In a mechanical model it is assumed that the statistically significant matters and determines. This has now been shown to be a dubious assumption". He brings in chaos theories and the fundamentally unstable nature of complex dynamic systems. Stirring stuff and you can be sure that his aim is true. But in surveying organised pressure groups he is much more tendentious. "...the new mass movements are parasites. The totalitarians killed; the single cause pressure group paralyses. The new mass movements are

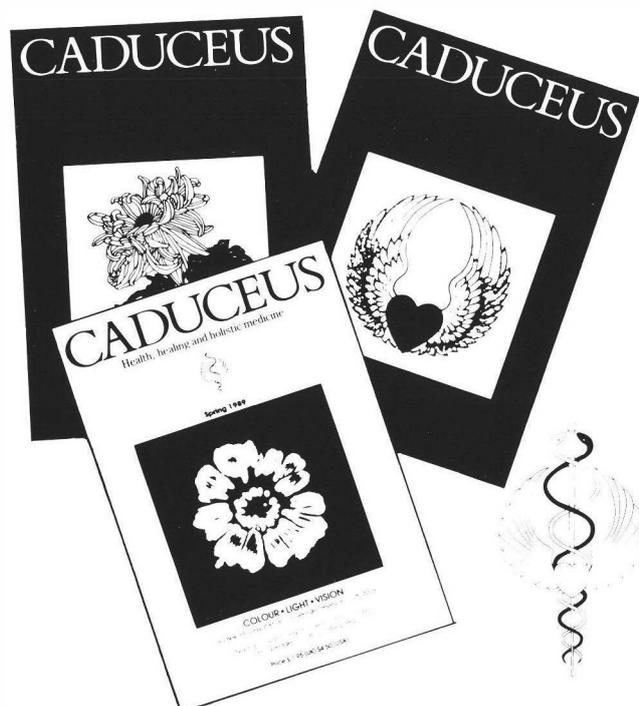
most visible and most powerful in the US. But Europe has become infected. There are the Greens in Germany and Scandinavia." The Greens a single issue pressure group paralysing politics? Many people would beg to differ.

Exposing Assumptions

He is most convincing when he grabs a subject and gives it a good shaking. As an example, the failure of most post-war development economics is exposed with clarity and passion. Whether this is Communistic planning, indicative planning or aid projects, he makes the point that "...poverty is far more a social than an economic condition". Throughout he makes the reader bring to the surface and reconsider assumptions which are probably quite unconscious. This undoing is an essential prerequisite to exploring new concepts. However, Drucker at his worst appears wide of the mark. In his essay on the

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Russian Empire he probably correctly foresees its breakdown, but the events of the latter half of 1989 leave Drucker behind as much as they do other commentators. He suggests (p33) that "if the nationalist unrest in Russia spreads to its satellites in Europe and causes serious trouble in Hungary, Poland, Czechoslovakia or East Germany, a military excursion into Western Europe might well tempt the generals in Russia..." Not so, evidently.

"I See therefore I Am"

But what of his world view? This is one section where I would have preferred a more detailed and lengthier discussion. Drucker joins the growing band of thinkers who recognise the decline of a mechanistic world view and in its place he sees the growth of an informationally based 'biological' model. On page 252 he states that "Biological phenomena are wholes. They are different from the sum of their parts". He sees the organising function of information and a move from analysis to perception as crucial. He replaces Descartes' "I think therefore I am" with "I see therefore I am". (p253) He is undoubtedly correct in saying he is unable to see just how society will respond to being knowledge-based. However he stresses the sharing of meanings – suggested in his notion of "I see..." – whilst at the same time stating that the crucial debate will be about the size, purpose and structure of the individual 'cells' in this information 'body'. He foresees great diversity existing alongside greater 'communion'. How ironic that in his choice of metaphor he will not be joined by many biologists – most of whom are bastions of the reductionist approach.

'The New Realities' is enjoyable and accessible. Every chapter has something to reflect on, but it appears to be written as though he were handing out 'The Truth' rather than offering his analysis, or simply his perception. Perhaps this only reflects a cultural preference – the UK reader may prefer his or her academic to be rather more humble. However, this book does make a significant contribution to our attempts to see again, or 're-view' processes within our world as it moves rapidly towards the millenium. It is not perfect, but in making a serious and passionate attempt at this broad perception, it succeeds.

Ken Webster is an educational consultant and writer in the area of economics and environment.



Danah Zohar

Courtesy of Bloomsbury Publishers

The Quantum Self

by Danah Zohar
Bloomsbury, 1990
H/back, 245pp, £14.95

Michael Cohen

IT IS NOW almost a cliché to assert that, with the advent of quantum physics, the deterministic Newtonian mind-set was shattered, and a way opened for the consideration of consciousness within physics. Many have been struck by the parallels between our mental perceptions and quantum systems, but few writers have taken the correspondence as far as does Danah Zohar in this book.

Within its pages, she explains her belief that the dualism of Descartes, in which mind and matter are considered as two separate substances, has contributed to the alienation felt by modern man from nature and society. Her aim is to show that it is possible through quantum physics to find a physical basis for consciousness which will supplant Cartesian dualism and restore to people a proper sense of relationship to their fellow men and their environment.

A Physical Model

In a quantum system, the billiard-ball particles of Newtonian physics are replaced by entities with wave and particle aspects, whose individualities merge in a unity (the wave-function) that contains all the potentialities of the system. Zohar compares this with the human personality, which comprises not just one self but many sub-selves, one of which is actualised at any one time, the others remaining wave-like in the background – the whole system gaining coherence through quantum interference and thereby being greater than the sum of its parts. This sense of 'the whole' may transcend the individual person, and so Zohar proposes that the personalities of two people may cohere and merge, as in an encounter between friends or lovers. She criticises the psychological school of Freud, according to which each person is an island, no true encounter is possible, and all we experience is a projection of our own desires and fantasies. In contrast, the quantum view, with its non-atomistic view of personality, allows for the possibility of authentic encounter. (The views of Jung are given a passing approving mention.)

For Danah Zohar, this correspondence between quantum systems and human selves is not a mere parallelism. She argues that consciousness results from a specific quantum-physical mechanism in the brain, 'a Bose-Einstein condensate,' which is a physical system that can manifest quantum properties macroscopically and which is known to exist in biological tissue. This mechanism gives the physical basis for consciousness which she wishes to establish. Having produced her basic argument, she goes on, in the latter part of the book, to discuss some of its consequences. Considering such things as creativity, aesthetics and immortality, she emphasises how the quantum viewpoint allows for a holistic treatment, and makes some perceptive and insightful connections.

Conclusions

Nevertheless, the book leads one to ask what it can mean to 'explain' con-

sciousness in terms of physics. Quite apart from the speculative nature of the specific physical model considered by Zohar, deeper questions arise. It may well be that someday the mechanisms by which the brain supports conscious experience will be better elucidated. But what will this really explain? If one believes as I do, (and apparently as Zohar does) that mind and matter are manifestations of a single unity, then the correspondences between the properties of quantum systems and mental phenomena become comprehensible as expression of the qualities inherent in that unity. Investigation of these correspondences is interesting – indeed, fascinating – but should not be construed as explaining the immediate data of mental experience in terms of the problematic and derivative concepts of quantum physics. It might be more just to suggest the reverse. Our immediate intuitions contain their own validation: in this light, for an adequate discussion

of the perennial questions considered in this book, I would suggest that quantum physics is best seen as a possible language for deepening insight rather than replacing it.

This is not to decry the research and speculation of those (among them the author's husband, Dr Ian Marshall) who are investigating connections between quantum mechanics and the mind, but to remind that one should not make too simplistic an interpretation of the results. What is certainly true is that quantum physics has allowed a much more open attitude to mental phenomena on the part of science, and books such as this achieve a great deal if they further this process. We still have some distance to go, though, before we have a science that, in the phrase of C S Lewis "explains without explaining away".

Dr Michael Cohen took his PhD in mathematics at Newcastle University. He now teaches in London.

What is Civilisation and Other Essays

by Ananda K Coomaraswamy

Golgonooza Press, 1989

P/back, 193pp, £9.95 H/back £29.50

Hilary Williams

ANANDA COOMARASWAMY (1877– 1947), a great scholar, was a remarkable figure, for he wrote lucidly on metaphysical matters in an era when metaphysics were deeply unfashionable. Changing times have made them more acceptable (although they may still be unfashionable in the academic world) and these essays, even if they no longer feel new and fresh, nevertheless make a welcome and worthy contribution to their rehabilitation.

The twenty essays gathered here, some of them previously unpublished, deal with the major metaphysical questions: the meaning of true vision, fate and free will, mortality and immortality, eternal and temporal perspectives. Coomaraswamy's great clarity of expression is bound to be of help to those who wish to find answers to such questions, for not only is he very learned, constantly quoting from all the major traditions (the Vedas, Meister Eckhart, Jalalu'ddin Rumi, Plato, etc), but he also writes from that standpoint of the essential unity of religions from which a proper insight flows. He says in his essay on 'The Pertinence of Philosophy'

"...we recognise that the only possi-

ble ground upon which an effective entente of East and West can be accomplished is that of the purely intellectual wisdom that is one and the same at all times and for all men, and is independent of all environmental idiosyncrasy... Religion requires of its adherents to be perfected; metaphysics that they realise their own perfection that has never been infringed..." (pp19/20)

Many gems of explanation are to be found in these pages; for example, the true meaning of the term *Mahtma*, – which Coomaraswamy explains as referring to the universal man in the fullest sense; "the Great Unborn Spirit", he who is "the light of lights and the only free agent in all things – and the meaning of the term 'Platonic love'. This last, debased in common usage to mean non-sexual love, Coomaraswamy explains as:

"... not a contradiction of but ... a transformation of sensual experience ... as Ibn Farid expresses it 'the charm of every fair youth or lovely girl is lent to them from Her beauty' ... that the beloved on earth is to be realised there not as she is in herself but as she is in God..." (p27)

In addition to metaphysics and philosophy, these essays also reflect his concern with mythology and symbolism. Several deal with

imagery and symbol as expressions of spiritual meanings, including one on the symbolism of archery in which the author draws on many sources, including Japanese and Islamic, and another on the symbolism of the fountain of life as found in Persian and Mogul miniatures.

To anyone interested in the perennial and universal philosophy, these essays provide a staunch contribution.

Hilary Williams is a therapist who lives in Cambridge.

Ananda Coomaraswamy. Courtesy of Golgonooza Press



Events

Mevlevi Dervishes at the Royal Albert Hall

March 2nd 1990

Cecilia Twinch

THIS WAS A unique event, which brought together more than 4,000 people to witness the 'turn' of the Mevlevi Dervishes, known in the West as the 'Whirling Dervishes'. Brought to London for just one night by Steepwest Holidays – their first visit in 17 years – they presented an extraordinarily beautiful sight, accompanied by exquisitely nostalgic music. But it was impossible to be a mere spectator; all those present participated to a greater or lesser degree in the enactment of a sacred ritual which symbolises the return of the separate self to union with the Beloved. What a strange thing that such an event could take place in the heart of London in the 20th century – and yet, not so strange when one considers the universality of its meaning.

The Mevlevis are a dervish (or *sufi*) order from Turkey, which follows the way of Mevlana Jelal'uddin Rumi, one of the greatest mystics and teachers of their tradition. Rumi was born in Persia in 1207. When he was 12 years old, his family fled westwards before the invading Mongols and eventually settled near Konya in Rum (Turkey), where his father, himself a great teacher, was invited by the enlightened Sultan, Alaettin Kaykobad.

Rumi is best known in the west for his mystical poetry, especially the monumental 'Mathnawi' (1) – a work which teems with stories, fables and discursive insights, and which has been a constant source

The turning of the spheres is a perpetual returning. Mevlana said: "Life is Returning." The Mevlevi dervishes at the Albert Hall. Courtesy of Steepwest Holidays

of inspiration throughout the Islamic and Christian worlds. His central theme is love, Divine Love. He said: "first I was raw, then I was cooked, then burnt"; elsewhere, that "... it was the fire of Love that fired me, the wine of Love inspired me".

Rumi addresses that point which is common to all peoples everywhere, as love transcends religious and cultural divisions. In 'The Mathnawi', he relates God's words in a revelation to Moses:

"I have bestowed on everyone a particular mode of worship, I have given everyone a particular form of expression

I look not at the tongue and speech, I look at the spirit and the inward feeling...

Light up a fire of love in thy soul, burn all thought and expression away!"

"The religion of love is apart from all religion. The lovers of God have no religion but God alone"

Rumi died on 17th December 1273. Such was the intensity of his passion for God that he referred to his deathday, as his 'nuptial night' because it was then that he attained final union with his beloved. People from many different religions flocked to his funeral, and it is said that there were more Christians

than Moslems there.

THE UNIVERSALITY OF Rumi's teaching, and the extent of his influence beyond his own tradition and time, was emphasised by Talat Sait Halman, Professor of Turkish Studies at Princeton University, who gave an introductory talk to begin the Royal Albert Hall programme. This was followed by a performance of classical Turkish music, both instrumental and vocal, devoted to the remembrance of God and of transporting beauty. Then came the ceremony, or *sema* itself. 'Sema' means 'hearing', especially from a higher authority. It implies that the dervish who has given himself to God must hear His commands in order to be obedient to it. But the order which he is under is not one of coercion, it is one to which he has willingly submitted – the order of love. The *sema* is not, then, a mere dance or a performance – it is a devotional practice done in remembrance of God, a celebration of life where the separate existence of the dervish is nullified in the absolute, as starlight by the light of the sun.

The form of the ceremony is basically unchanging: the dervishes enter and bow, acknowledging the invisible line that divides the central space and which signifies the shortest path to union. They wear tall hats, representing



tombstones and black capes which represent the body. The dance master is the penultimate to appear, followed by the Shaykh, who is in direct line of descent from Mevlana. The ceremony begins with a song of love and dedication which mentions Mevlana, Shams-i-Tabriz, his intimate friend and great inspiration (2), and Sultan Veled, Rumi's son who founded the Mevlevi order. The song is followed by an improvisation on the *ney*, the reed flute, which has a particularly haunting sound, as described in the opening words of the 'Mathnawi':

"Harken to this reed forlorn
Breathing, even since 'twas torn
From its rushy bed, a strain
Of impassioned love and pain"

– the pain being that of separation from one's source and the longing for reunion.

Then a slow and dignified walk three times around the central space begins, each dervish taking his place in the circle and bowing to his neighbour in acknowledgment that the reality is present in the other. Suddenly the tempo of the music changes as determined by the leading drummer, and simultane-

ously, the dervishes discard their black bodily mantle to reveal their white skirts beneath. After gaining permission from the Shaykh, who kisses him in assent, each dervish begins to turn, his arms gracefully unfolding from where they were crossed over his heart. The right hand is turned upwards to receive divine grace, which passes through him and is extended downwards to the earth through the left hand. The voluminous skirts swirl round as he turns, celebrating his return and reunion with the cosmic order, a state which perhaps T S Eliot described as "... the still point of the turning world", where motion and stillness are in perfect balance.

Some people have thought that the dervishes enter a state of trance during their whirling, but one has only to notice the precision of their movements in following the directions of the dance master, given by a look or gesture, to realise that they are extremely aware of where they are and what they are doing; Bulent Rauf called it 'a higher state of consciousness...' (3). When the sign is given and the music slows, they stop instantly and stand, arms crossed, awaiting instruction.

Three times they perform this turning, moving about the central space,

the rhythm of the music varying each time. The fourth time, after finding their place, they turn on their own axis. Now the Shaykh also takes part, moving to the centre. He represents the sun and the dervishes are the planets. When the turning stops, the dervishes put on their cloaks, after which there are prayers and prostration, demonstrating total submission to God.

One might wonder why, since it is not a performance, the dervishes are prepared to expose themselves in this way. One reason is that the *sema* has been outlawed in Turkey since the 1920's and is now only allowed on a few days each year – and then in public – in the week of Mevlana's deathday. But perhaps it is also that now, more than at any other time in the history of the Mevlevi, people in general are more receptive to the universal message which Rumi represents, and, without baulking at the unfamiliarity of the form, can take pleasure in participating in such celebration.

1. 'The Mathnawi'. Transl R A Nicholson. 1926

2. 'Divani Shamsi-Tabriz' Ed R A Nicholson, 1898, 1973.

3. In 'Turning', a film shown on BBC2.

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Events

A round-up of conferences, lectures, exhibitions

and events from April to September 1990

LECTURES/ CONFERENCES

The Rebirth of Nature Rupert Sheldrake

London, April 24th

One of the 'Creation Centred Spirituality' events at St James's Church, Piccadilly. Also, an 'Alternatives' programme which includes 'The Transformation of Suffering' by Zen master Thich Nhat Hanh, and 'Is There a New Physics' by Prof. Christopher Clarke.

Details: St James's Church, 197 Piccadilly, London W1V 9LF. Tel: 01-287 6711.

Co-Creators: The Annual Teilhard Conference

Herts, April 27-29th

A residential weekend exploring humanity's potential for taking part in God's creation. Speakers

include Father Campbell Johnson (the Provincial of the Jesuit Order) and the educationalist Eugene Ryan.

Details: The Teilhard Centre, 23 Kensington Square, London W8 5HN. Tel: 01-937 5372

Principles of Education

Oxford, 28th-29th April

A seminar and conversation with Kathleen Raine, Adam Ford and Peter Young. Part of the Beshara Trust's summer programme which also includes cosmologist John Barrow on 'Why is the World Mathematical' on 12th May and Paul Ekins & David Fleming on 'Real Life Economics' on 16th June.

Details: See page 46.

The May Dialogues Scientific and Medical Network

London, May 12th

These dialogues bring together

four key figures - Richard Dawkins, Brian Goodwin, Robert Foley and Tim Ingold - from the world of evolutionary biology and anthropology to discuss the central questions of the nature of organisms and of human beings. The format will be informal, with short presentations and dialogue both between speakers and with the audience. Part of Scientific and Medical Network's on-going programme.

Details: The Old School House, Hampnett, Northleach, Glos GL54 3NN. Tel: 0451-60869.

This Business of the Gods Joseph Campbell in conversation with Jungian Analyst Fraser Boa.

London, 27th May and 9th Sept.

A film seminar exploring the significance of mythology today. The first public UK showing of a conversation which took place in 1989, near the end of Campbell's life.

Details: see page 47

Hidden Christianity

London, June 15-16th

A weekend of dialogue with Jacob Needleman and Ursula King, which aims to "look beyond the institutional face of Christianity" to find the ancient streams of wisdom which normally pass unnoticed. Also 'Icon - Image of the Perennial Philosophy' by Dick Temple May 26-27th, Matthew Fox on Meister Eckhart July 7-8th, and many other seminars.

Details: The Open Gate, 6 Goldney Rd, Clifton, Bristol BS8 4RB. Tel: 0272 734952.

Learning Without Limits

The Dilemma of Knowledge

London, June 16th

Advertised as 'a day for bold speculation on educational issues', this seminar draws together a number of interesting and eminent speakers.

Details: See page 47.

The Souls of Animals

Colchester, England June 25th &

Ober-Wolfach, West Germany

June 29th - July 1st

A meeting including priests and theologians who are trying to establish that animals have rights and souls. Organised by the Mobilisation for Animals group, who are also planning a walk from Strasburg to Rome in July to present a petition to the Pope.

Details: Schweitzer Centre, PO Box 254, Berkeley, CA 94701, USA. Tel: 415 526 5346

TOES 1990: The Voice of the People for a Change

Houston, Texas, July 6-8th

This three day event, held in the USA only every seven years, will focus on the global changes now taking place throughout the world. It will consider the East/West, North/South divides: economics and ecology; and the democratisation of economics.

Details: Larry Martin, TOES/NA, 1442 Harvard St NW, Washington DC 20009 USA. Tel: 202-667-4659.

Science 90

British Association for the

Advancement of Science

Swansea 20-24th August.

'The Environment' is the theme of this year's science and technology festival. There are lectures on a host of topics - genetic engineering, 1992 and education, time, physics and the arts - and special programmes for children of 8-18.

Details: Dr Connie Martin, Fortress House, 23 Saville Row, London W1X 1AB. Tel: 01 494 3326

A Christian Vision for the New Europe

Oxford, Sept. 17-21st

An exploration of the educational role of Christian belief and values in Europe after 1992.

Details: Farnington Institute, 4 Park Town, Oxford OX2 6SH. Tel: 0865 57456.

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May 4th-6th: **The DELME STRING QUARTET**
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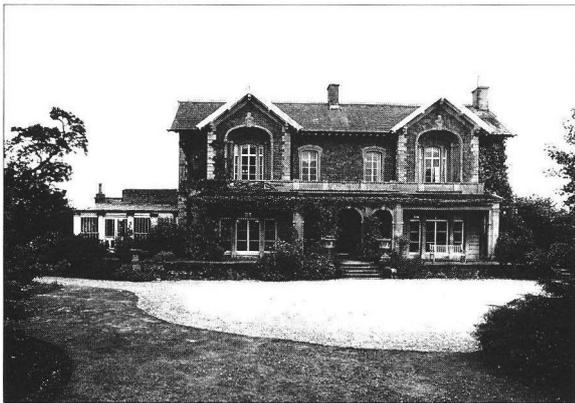
May 11th-13th: **'RESONANCE'** Exploration into the nature of reality through the voice and intellect.
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June 5th: **POL HUELLOU & MYRDHIN**
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Muhyiddin Ibn 'Arabi**

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WEEKEND COURSES 13–15 April 8–10 June 17–19 August
NINE-DAY COURSES 11–20 May 27 July–5 August

SEMINARS

**28th & 29th April Principles of Education,
A seminar addressing key issues concerning the meaning, purpose
& practice of education**

with **Dr Kathleen Raine**, well known poet, Blake scholar & co-editor of *Temenos* **Revd. Adam Ford** Chaplain to St Paul's girls school London & author of the book 'Universe, God, Man & Science' & **Peter Young** Principal of the Beshara School of Intensive Esoteric Education at Chisholme House

12th May Why is the World Mathematical? John Barrow
The fact that mathematics works as a description of the physical universe is a deep mystery. John Barrow explores the ramifications of this mystery & how its importance depends upon the particular view taken of the meaning of mathematics.

16th June Real Life Economics with Paul Ekins & Dr David Fleming
Paul Ekins research fellow at the School of Peace Studies, Bradford University & Secretary of the New Economics Foundation assesses developments in the new economics in the light of recent world changes. David Fleming, Director of the Strategy Workshop and Chairman of the Soil Association, explores the meaning of economic growth.

LECTURE SERIES

Monday for 8 weeks, commencing 23 April, 7.30–9.30 pm
**Commentaries & conversation on the Works of Meister Eckhart with
Dom Sylvester Houedard of Prinknash Abbey**

For details concerning any of the above events please contact the Secretary,
The Beshara Trust,
Frilford Grange, Frilford, nr Abingdon, Oxon OX13 5NX
Telephone (0865) 391344

Eckhart Annual Conference

Oxford, 31st Aug – 2nd Sept.
The third conference on the great 14th century mystic. Speakers include Prof. Bernard McGinn from Chicago, Prof. Alois Haas from Zurich, Dr Dermot Moran from Dublin and Sr Ayya Khema from Sri Lanka and Germany.
Details: The Secretary, The Eckhart Society, Blackfriars, Buckingham Road, Cambridge CB3 0DD.

The Abbey, Sutton Courtenay

A host of residential courses and conferences, evening lectures, etc. on topics such as the environment, interfaith dialogue and healing.
Details: The Abbey, Sutton Courtenay, Abingdon, Oxon OX14 4AF. Tel: 0235 847401

ENVIRONMENT

Early Warnings International Environmental Conference

Minneapolis, May 17–20th
An event for professional journalists, scientists and activists, with an impressive array of speakers, including Lester Brown, Fritjof Capra, Hazel Henderson, Anita Roddick, Peter Bahouth. The conference aims to ask questions such as: "What is being forgotten in our current focus on environmental issues?"
Details: Mary Morse, c/o Utne Reader, 1624 Harmon Place, Minneapolis, MN 55403 USA.

Rainforest Festival

London May 20th–June 5th.
Arranged by 'Arts for the Earth' (the arts fundraising branch of Friends of the Earth) this is a two week extravaganza to focus attention on the richness and beauty of the forests. It includes a **percussion recital by Evelyn Glennie** at the Wigmore Hall, a **Rainforest lecture by Jonathon Porritt** at the Royal Geographical Society and a **concert at the Barbican**. The second week will be concentrated at the Barbican, with foyer events, exhibitions, and special activities for children.
Details: Friends of the Earth. Tel: 01-490 4734.

Spiritual Renaissance or Catastrophe?

Worcs, June 2nd–3rd
A weekend conference organised by the Wrekin Trust which brings together an international panel of

speakers to explore the challenge of the 1990's.
Details: See page 48.

Christian Environmental Conference

Sydney, Australia 13th–15th July
A conference to give Christians and other interested people the opportunity to discuss the relationship between faith and creation, and to plan strategies for responding to the present ecological crisis.
Details: c/-SR & J, PO Box E266, St James, NSW 2000, Australia.

The Green Movement and Spiritual Values

Scotland, July 17–18th
A weekend co-ordinated by Satish Kumar, editor of 'Resurgence', which aims to explore the spiritual roots of the new environmental awareness.
Details of this and other events from: Findhorn Foundation, The Park, Findhorn, Forres IV36 OTZ, Scotland. Tel: 0309-30311.

ARTS EVENTS

Tibetan Sacred Music and Dance

by the **Monks of Ganden Shartse**
31st March – 1st May
A spectacular presentation of Tibetan art and rituals involving sacred music and dance which focus on the individual's concern to maintain a peaceful and healthy balance between mind and body. Rarely seen outside the Tibetan community, the monks will be in London on April 18–21st, then on tour in the South of England.
Details: The Tibet Foundation. Tel: 01 379 0634.

Dartington International Summer School of Music

Devon, July 28th – August 25th.
As well as a range of workshops, masterclasses and concerts, this month-long event will include a concert/lecture programme on the theme 'Science Meets Art', August 18 – 25th. Concerts include Brahms Piano Concerto, Tippett's Triple Concerto and performances of Tippett's 'A Child of Our Time'.
Details: Dartington Hall, Totnes, Devon TQ9 6EJ. Tel: 0803 867068.

Almeida Festival of Contemporary Music and Performance

London, June 13–July 14th.
To celebrate its tenth anniversary, the Almeida Festival has set up a

strong programme which should enhance its already large international reputation. There is a new work, 'Europera', by John Cage, a music/literary exploration called 'Music for Words' with works by Anthony Burgess and Paul Bowles, including a special series devoted to Samuel Beckett, and music from the Soviet Union with a world premiere of a new work by Giya Kanchell performed by the State Chamber Orchestra of Georgia.

Details: Almeida Theatre, Almeida St, Islington, London N1 1TA. Tel: 01 226 4001

Brighton Festival

May 4th - 27th

A Celebration of Central and Eastern Europe. Performances by the Polish State Opera, Czechoslovakia's 'Drak Puppets', Prague Chamber Ballet, Stars of the Bolshoi, Yugoslavian Visual Arts Commission, and more...

Details: Brighton Arts Information Centre, 111 Church St, Brighton BN1 1UD. Tel: 0273 676766

Lufthansa Festival of Baroque Music

London, June 1st - 27th

This year's events include Vivaldi's rarely performed oratorio 'Juditha Triumphans' and

Handel's 'Alexander's Feast'. There are performances by Germany's Musica Antiqua Koln, Belgium's Kuijken Quartet, the Spanish Choir Escolonia de Montserrat and The English Concert directed by Trevor Pinnock. Details: Tel: 071 434 4003

WOMAD

WOMAD - a World of Music Arts and Dance - was founded in 1981 and is the UK's most prolific international music festival. Holding festivals of traditional and modern music and dance from all over the world, its aim is to make a wider audience aware of the potential of a multi-cultural society.

This year the major UK event, with a capacity for 12,000 people, will be in Reading (July 20-22nd), with a weekend in Morecombe Bay (May 18-20th) to start the season. There will also be WOMADs in Mainz (June 1st-4th), Finland (June 2nd-3rd), Sweden (July 14-15), Toronto (August 9-12th) and Seattle (Aug 31st-Sept 3rd). Plus Music of the Frontline States, a special tour of music and dance from six Southern African countries.

Details: WOMAD, Millside, Mill Lane, Box, Wiltshire SN14 9PN. Tel: 0225 744044

Money and the Human Soul

a weekend with
Jacob Needleman

How can money become an instrument for self-knowledge instead of a source of confusion and anxiety? Jacob Needleman explores this and many other questions with us over this weekend. Needleman, professor of philosophy at San Francisco State University, "has the ability to ask the kind of unconventional questions that force one's seeking to a different level, and he is more demanding, sometimes impossibly so, of religious practice than most participants in the various traditions". (Parabola Magazine.)

Sat & Sun, June 2-3, in London

£82 incl. VAT. £25 non-returnable deposit. Bookings: The Open Gate, 6 Goldney Rd, Clifton Bristol. 0272-734952

The Open Gate

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Educational Issues

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It knows what the patterns of life have been through centuries
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Sunday 27th May and Sunday 9th September
Regent's College, London

These films were completed in September 1989. First public
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Tickets payable in advance - cost £45

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For more information ring:

- May Event -

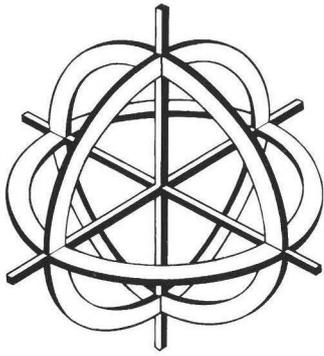
Meredith Wheeler 01 485 1614

Asha Quinn 01 722 8019

- September Event -

Jennifer Grut 01 708 4895

Pat Thomas 01 452 9542



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Dr Pamela Colorado-was born into the tribe of the Wisconsin Oneida, of the Iroquois Six Nations Confederacy and is a faculty member of the University of Calgary

David Lorimer M.A.Cert Ed.- Director of the Scientific & Medical Network

Edward Goldsmith- founder and joint editor of 'The Ecologist'

Elizabet Sahtouris M.S. Ph.D.-an American/Greek biological philosopher

David Furlong- Director of the Wrekin Trust

Sat 2nd - Sun 3rd June, 1990
Zoological Society, Regent's Park,
London NW1

For further details please write to:-
The Wrekin Trust,
Runnings Park, Croft Bank,
West Malvern, Worcs. WR14 4BP
TEL: (0684) 892898

EXHIBITIONS UK

Caves of the Thousand Buddhas

Chinese Art from the Silk Route
British Museum, 7th April - 27th August

This major exhibition of Buddhist art will include over 80 magnificent Buddhist paintings on silk and paper, early woodblock prints and architectural carvings. It takes place in the new galleries of the British Museum which open on April 7th - three Japanese Galleries and re-furnished Prints and Drawings and Oriental Exhibition galleries. The inaugural exhibitions include **Japanese Art**, a selection of the masterpieces in the British Museum's collections which find a proper setting for the first time, and an outstanding display of **Treasures from the Department of Prints and Drawings**, including works by Leonardo, Raphael, Rembrandt, Watteau, Goya, Canaletto and Matisse.

The Artist's Eye: Victor Pasmore

National Gallery, 4th July - 7th October

A continuation of this popular series, in which artists select paintings from the National's collection. Victor Pasmore, a major figure in modern British painting, chooses in accordance with his own preoccupation with colour and form works by Turner, Cézanne and Whistler.

Cities for the 21st Centuries
Glasgow Forum Hotel, June 2nd - 10th.

An international exhibition and conference which will examine the role of new technologies, global transportation and telecommunications in shaping the future of post-industrial cities. Part of a programme which marks Glasgow's nomination as 'Cultural Capital of Europe 1990'. Also - an exhibition of **Camille Pissarro** (May 4th - June 17th) at the Burrell Collection.

EXHIBITIONS USA

Monet in the '90's

Chicago Arts Institute from May

The largest assembly of Monet's series paintings ever assembled, this stunning exhibition has made a great impact in USA and will transfer to the Royal Academy, UK, on 7th September until December.

Matisse in Morocco

Museum of Modern Art, NY
June 21st - Sept 4th

The first major exhibition to examine the paintings which Matisse produced during two visits to Morocco in 1912 and 1913. This exhibition marks the first time that Western and Soviet curators have collaborated in a full professional partnership for a shared project of research, publication and exhibition.

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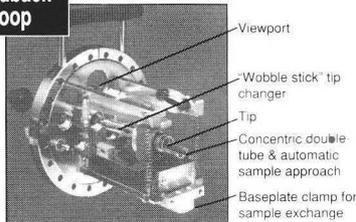
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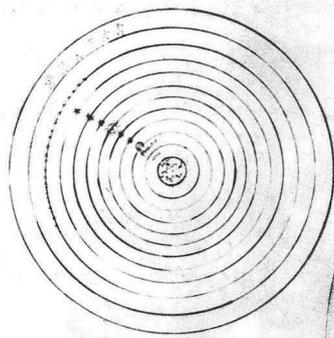
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Glorifieth everyone"*

KIPLING



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*If I was a body (nor need we in this case conceive how one dimension can bear another,
Which must be if two bodies fill one space)
The more should my desire burn like the Sun to see that Essence in which one may see
How human nature and God blend into one.
There we shall witness what we hold in faith, not told by reason but self-evident; as men
Perceive an axiom here on earth.*

From Dante's Paradiso