Science Religion & Society
CiS-St Edmunds Public Lectures

Power & Responsibility
Science, Humanity and Religion in the 21st century
Jonathan Sacks

Lecture and Discussion

Chief Rabbi Dr Jonathan Sacks delivered this lecture in November 2003 at the Cockcroft Lecture Theatre in the University of Cambridge. He was introduced by Professor Derek Burke and the lecture was followed by questions from the audience. Subsequent to the lecture, a dinner/discussion was held at St Edmunds College, Cambridge. A transcript of this discussion can be found at the CiS-St Edmunds website (along with an audio recording of this lecture and an archive of other lectures in this CiS series):

http://www.st-edmunds.cam.ac.uk/cis

Brief Biography

Dr Jonathan Sacks is Chief Rabbi of the United Hebrew Congregations of the Commonwealth. He is widely acknowledged internationally as one of the leading contemporary exponents of Judaism. Prior to becoming Chief Rabbi, he had been Principal of Jews' College, London, as well as rabbi of the Golders Green and Marble Arch Synagogues in London. He read philosophy at Gonville and Caius College, Cambridge, before pursuing postgraduate studies at New College, Oxford, and King's College, London. He is currently Visiting Professor of Theology at Kings' College London, and he holds honorary doctorates from the universities of Cambridge, Glasgow, Haifa, Middlesex, Yeshiva New York, Liverpool and St. Andrews. In 1995, he received the Jerusalem Prize for his contribution to diaspora Jewish life. The Chief Rabbi is a frequent contributor to radio, television and the national press, including The Times where he writes a monthly Credo column. In 1990 he delivered the BBC Reith Lectures on "The Persistence of Faith". He is the author of thirteen books, including *The Politics of Hope, Morals and Markets* and *The Dignity of Difference.*

Introductory remarks - Professor Derek Burke

My name is Derek Burke, former president of Christians in Science who are one of the sponsors of this lecture series and I am standing in for Sir Brian Heap, Master of St. Edmund's College, who is the other sponsor because he can't be with us tonight.

My rôle is merely to introduce our very distinguished speaker tonight and then to steer the discussion period at the end. We are really very pleased to have you with us, Dr. Sacks. I think the very size of the audience can tell you that. Dr. Sacks, of course, has had a very distinguished career, first here in Cambridge where he was a student in Gonville and Caius and took a First in Philosophy; then to Oxford for post-graduate work and on to London; so he's returning to Cambridge tonight after a tour of the "Golden Triangle", and we welcome you back.

Dr. Sacks looked after Jewish communities in North London and then became the Chief Rabbi in 1991. Since that time he has become extremely well known – for his lectures, for his radio and TV work and for his books. He has been amazingly prolific – all of you will know some of the books. I doubt if any of you know that he has published fifteen books over the period that he's been Chief Rabbi, dealing with a whole series of topics of importance to our society. He has given the BBC Reith lectures and we have the media with us tonight because they are making the culmination or even the climax of a special series – can I give you a plug? – for a Channel 4 series called "Children of Abraham" which you will see next Spring. So the media are with us, you are with us, Dr. Sacks is with us and finally, before I switch the overheads off, may I draw your attention to the two lectures on the left-hand overhead coming up and a little bit above the website; this lecture and the discussion that follows will appear on the web so that you need not take detailed notes unless you particularly want to. And so over to you, Dr. Sacks.

The Lecture - Chief Rabbi Dr Jonathan Sacks

Professor Burke, friends, it is an enormous privilege to be with you this evening to take part in this series under the umbrella of the Templeton Foundation that has done so much to establish creative dialogue between religion and science; and to be here in Cambridge where so many of the great scientific discoveries were made that changed our world, from Sir Isaac Newton to Sir Charles Babbage, in whose hall we are sitting, to Alan Turing. Between them the latter two laid many of the intellectual foundations of computing and Artificial Intelligence. Also, of course, Cambridge is the home of Crick and Watson whose discovery of DNA in 1953 allowed us to decode what we have always called in Judaism (translated from Hebrew) "The Book of Life". We always suspected that life was a book and we thank Crick and Watson for proving it!

On behalf of all of you, I'm sure you will join me in wishing Sir Brian Heap, who issued

the invitation, a speedy and complete recovery and we hope he'll be back in full health with us soon.

Friends, tonight I was asked to speak about science and religion. I will talk a little at the beginning and the end about that relationship in general, and in the middle will look at just one question of some specificity, cloning and stem cell research.

Nonetheless, because I'm a rabbi I have to begin with a story. Therefore let me begin with my favourite story about science and religion. It happened around 1973 when the enormous oil crisis was happening and everyone was worried about how on earth they would drive their cars, and the story is told about the orthodox Jewish scientist who, summoning the full power of the supernatural, invented a car that ran on faith. To get it to start you sat in it, meditated on the Almighty, and said "Thank God" and to get it to stop you said "Amen". Well, the car was an absolutely brilliant success, it absolutely worked, until one day the scientist took it for a test drive up a mountain. It was fine going up the mountain, but coming down the car started going faster and faster and faster down these hairpin bends, and he uttered an "Amen" and nothing happened. By now the car is increasing in speed and veering across the road, and in a louder voice he says "Amen" and nothing happens, and finally the car slips off the road, is just about to crash down a sheer cliff, and the scientist gathers all his powers of belief and shouts an almighty "Amen" and the car comes to a halt, its two front wheels dangling into space; and the scientist leans back into his seat and says "Thank God".

Friends, sometimes it seems as if our world in the twenty-first century is that car on that mountain; or, as a fabled Russian politician in the Communist days once said, "Friends, yesterday we stood on the edge of the abyss but today we have taken a giant step forward!" Well, we are in the midst, as a result, of a profound paradigm shift. There was a time and we can call it definitive of modernity, when science, it was believed, would liberate society from religion and as a result, inaugurate an era of unlimited progress. Science would free humanity from the tyranny of knowledge-claims based on mere belief, revelation or superstition; technology would open up the bounties of nature. Under Adam Smith's vision, the free market and its division of labour would yield potentially unlimited economic growth. And much of that configuration of beliefs was true. But by now, however, we're aware of some of the down sides, some of the darker sides of technology.

Number one, the rapid depletion of the earth's natural resources, the massive ongoing loss of biodiversity and the damage we are doing to our ecosystem and the world's biosphere. Secondly the dehumanization of life threatened by genetic engineering and reproductive cloning (which I will speak about in a little while), psychotropic drugs, in other words the control of mood and behaviour without reference to the human will. And thirdly, of course, the shear threat to human life posed by weapons of mass destruction which are available more and more to small groups, and extra-territorial groups, with quite dangerous beliefs. Even without sophisticated technology we still have the highly primitive technology which created the disaster of 9/11 and the following anthrax attacks, and there is always, as our understanding of chemistry and biology grows, an ongoing worry that chemical and biological weapons will be used at some stage as

part of a campaign of terror.

For the first time in a long time, or at least far more than in the past, these warnings are coming from scientists themselves. I think for instance of E.O. Wilson's book *The Future of Life*, Susan Greenfield's book *Tomorrow's People* and one of the great figures of Cambridge, the Astronomer Royal Sir Martin Rees' very sobering book, *Our Final Century.*

Perhaps it is more sobering still to recall these words – very profound words – uttered in 1924 and hear how they resonate today. "Science has not given men more self-control, more kindliness, or more power of discounting their passions in deciding on a course of action. It has given *communities* more power to indulge their collective passions, but by making society more organic it has diminished the part played by *private* passions. Men's collective passions are mainly evil. Far the strongest of them are hatred and rivalry directed towards other groups. Therefore, at present, all that gives men power to indulge their collective passions is bad; that is why science threatens to cause the destruction of our civilization." Words said in 1924, not by a religious figure, but by Bertrand Russell. Now therefore tonight, since it's impossible to scratch the surface of even one topic, I just want to look in general at how science and religion might engage in creative dialogue as we attempt to think through these issues – what are the narratives, what are the principles and standards, values if you like, that we might bring to bear on them. I will take, as I say, just one example, reproductive cloning and stem cell research, as a kind of 'for instance' about how we might think about these things. Any other issues you can ask me about afterwards or read my book *The Dignity of Difference*, where I deal with a lot of the other ones, but not this. Because I didn't deal with this one in the book, I'm speaking about it tonight.

Let me begin with an obvious question. Why should ancient traditions, Judaism four thousand years old, Christianity two thousand years old, and so on, be of any possible interest to contemporary dilemmas about the application of science? Let me now spell out why it is. You see for several centuries, beginning with the seventeenth century and with increasing speed in the last fifty years, we have been tantalized by the prospect that there might be some equivalent in the moral sphere to what science is in the sphere of nature. Namely, a universal, neutral, decision-making procedure based entirely on reason and observation which would eliminate the need for a religious or spiritual or transcendental basis for ethics. This is clearly a deep subject, but I want to explain very briefly why this prospect of a set of values that was entirely neutral has not been realized and will not be realized. Here it is.

Let us take the first and most famous attempt which is associated with the name of Jeremy Bentham and is usually called Utilitarianism or Consequentialism. "Act so as to maximize the consequences" or produce, in his famous phrase, "The greatest happiness for the greatest number". Now, that was an attempt to put ethics on the same kind of scientific basis as any other neutral and objective discipline. The trouble with it, and the reason that it has so systemically failed, is because of the phenomenon known to sociologists as "the law of unintended consequences".

For instance, take one simple, technological invention, Guttenberg inventing the printing

press around 1450. Who could have foreseen, in1450, that what that one invention would in time lead to was the Reformation, the redrawing of the political map of Europe, the birth of science, the secular nation state, the individual, the free economy, the Industrial Revolution, all from one simple invention. There is very little doubt that technologies whose birth we have witnessed in our own lifetime are equally fateful, if not more so, but it is utterly meaningless to talk about maximizing consequences when we haven't got a clue what those consequences will be. Instead, it seems to me, that we have to draw back from that and concentrate on doing what is right, not what is effective, by using the accumulated wisdom of mankind. The reason is, to put it simply, when you are entering uncharted territory don't ask for a map: there isn't one. What you need is something else – you take a compass, and in our case that compass is called the educated conscience, educated in exposure to the moral and ethical heritage of the west.

Second option: supposing Consequentialism or Utilitarianism fails? There is a second option, much in favour nowadays, which is that when it comes to making choices we should turn instead to the idea of personal choice: the language which dominates current speech, the language of rights. And the language of rights, as you know, is used very much in the case of the argument for reproductive cloning – it is called "reproductive autonomy". Every person must have a right to make his or her own decisions.

Now, yet again, autonomy is an important idea, it is a valuable idea, but it is wholly inadequate to medical ethics. Certainly, each of us has rights but equally certainly, each of us has responsibilities. And there are few responsibilities more profound than those we bear towards *those we bear,* to the lives we bring into being. It might be very nice, he said as a new grandfather (I'm sorry, I'm thoroughly sentimental over her), it might be very nice to design our children to be clones of David Beckham or Britney Spears, but at the end of the day there's somebody else there, and that's called the child themselves. Parenthood is not only a matter of rights, it's also a matter of responsibilities, one of which is the responsibility to give our children the space to be themselves and not what we wish them to be. Or as Harvard philosopher Hilary Puttnam puts it, I think rather nicely "Every child has a *right* to be a complete surprise to its parents". In short the concept of autonomy is inadequate to deal with the issues of genetic intervention insofar as they affect the birth and fate of a human being, precisely because *conflicting* autonomies are at stake, the autonomy of the parent and the autonomy of the child. Of course, that realization that you are not going to get anywhere on the basis of autonomy, choice or rights, leads to the third option, which is probably the favoured one today, which is that we should leave these things to the market and to the march of time.

After all, certain things are going to happen anyway, so we may as well let them happen. If we ban reproductive cloning here someone will go to Dr. Santori in Italy and have it done there, and if not there they will find somewhere else on the Internet; and therefore since it's going to happen anyway, let it happen. Whatever we decide, whatever we legislate, in an era of global capitalism people are going to find ways of getting what they want so long as they are willing to pay for it; and that seems to be the case in so many of these genetic issues.

Let me say clearly and unequivocally that that is not a moral option. It is more precisely

an abdication of morality. And it is simply wrong. If Homo Sapiens is intelligent enough to *create* genetic technology, then Homo Sapiens is intelligent enough to *control* genetic technology. The greatness of a civilization is measured not only by what it *can* do, but also by what it chooses, for ethical reasons, *not* to do. A civilization has to have the ethical courage, from time to time, to say "No". For six days God created the Universe and on the seventh he rested in order to teach that there are limits to creation, even when you're God.

The survival of our civilization depends on knowing those limits and therefore I am driven back to my favourite aphorism of all time, when all else fails – read the instructions. Therefore it's important to remind ourselves where that journey that we call western civilization began, namely with a book called Genesis, whose name comes from the same root as genetics, and with it the single most important phrase in the history of western civilization, that wonderful phrase in Genesis (translated from Hebrew) "Let us" says God "make man in our image after our likeness". Let me now apply that concept and its related ones to two issues currently at stake which are usually lumped together and actually I want to show are quite different: to genetics and to stem cell research.

Let us begin by asking the first question. When we speak about genetic experimentation, manipulation, intervention into the human embryo, is this ethically warranted at all? Very often people with a strong religious background argue no, it is a form of hubris, it is what we call "playing God". The overwhelming answer of the Jewish tradition is that this concept does not exist. To the contrary, it is precisely the import of the phrase that we are in the image and likeness of God that we are both *created* and *creative*. We are the only beings to use language, reflexivity, to have self-consciousness, in other words the only beings thus far known to us in the universe capable of imagining a world different from the one that is. Therefore, we become the only beings capable of not just adapting to our environment, but of adapting our environment to us. What that meant is summed up in the first commandment, "Be fruitful and multiply, fill the earth and subdue it", which means that with certain very real and substantive moral provisos, but with those provisos, God wants us to increase scientific knowledge, God wants us to develop technology. That is part of the mandate of that verse.

Therefore in Judaism there is no concept of something being forbidden because it's playing God; on the contrary, the rabbinic tradition two thousand years ago speaks of God calling on us to be, in their phrase, partners, his partners, in the work of creation; or in the lovely phrase of our liturgy, "To perfect the world under the sovereignty of God".

We have a specific mandate in the Book of Exodus which says that if you hit somebody and cause him damage you have to pay his medical bills. I don't suppose they were quite as high in biblical days as they are now, but from this phrase the rabbis learnt that there is a mandate for the physician to heal, and therefore curing disease and medicine as a way of serving God is fundamental to medieval jury. The greatest rabbi in the Middle Ages, Moses Maimonides, was in fact the royal physician to the sultan at Cairo, author of eight medical textbooks, and a pioneer of preventive medicine. He actually writes in his law code a series of prescriptions for diet, exercise and sleep and then says in a law code "I personally guarantee that anyone who

follows this regime will live a long life and never need a doctor, and will only die in old age". I don't know if anyone sued Maimonides on that point but by the time you're dead it's probably not a good time to sue anyone.

One can go further. All I would say is that that particular problem is not one in Judaism. However, the question now is what, according to the bible, are the limits, the restraints, the constraints. The simplest answer is best expressed, and this applies to environmental ethics, in Genesis chapter 2, not chapter 1. In Genesis 1 man is given the mandate to conquer or subdue nature but in Genesis 2 man is planted on this earth in the Hebrew words (translated) "To serve it, to work it and to preserve or guard it". And that second word, lashomrah, is actually a technical term, a legal term in biblical law. When Cain says "Am I my brother's keeper?" he is using the same verb. Adam was placed in the garden to keep it, to preserve it, to conserve it. To be the guardian of something means that we don't own it, we don't own the universe, we don't own and we may not patent natural phenomena, we don't own human life, we are its guardians. Therefore we are charged with protecting it, conserving it, and if possible improving it, which reminds me of that wonderful line – you know that Jews have been fairly famous for their modesty! – and therefore I love the Yiddish translation of Shakespeare which carries on it the famous words "Translated and improved"!

However, that in my view is the best criterion for determining where and when in genetic engineering intervention into the human embryo, into human cells, is justified and permitted, and where it is forbidden. The best way is to say that we do not own nature, the earth is the Lord's and the fullness thereof, and therefore will an act we perform honour the trust vested in us to hand on the environment, to hand on our genetic heritage, to hand on biodiversity, undamaged, undiminished and if possible enhanced, to future generations. We have a covenantal responsibility to God as the owner of nature and to future generations as those whose future we hold in trust.

Clearly that will raise very large questions about germ line as opposed to somatic cell interventions because germ line interventions have effects that are passed on through the generations, and that will raise questions about any procedure that may have potentially hazardous or lasting consequences. That in itself will be serious enough to say "no" to any widespread use of reproductive cloning. Apart from any other ethical objection, it will have the effect of reducing genetic diversity which is presumably precisely *why* all larger and more complex life forms have developed sexual reproduction, which is a continually renewed source of genetic creativity, of unexpected combinations. So there is no problem in Judaism of playing God as far as genetic engineering is concerned, but yes there is a clear injunction against damaging our genetic heritage insofar as that may affect future generations.

Now we come to a serious question about genetic research in general and that is the kind of work that is going on now on embryonic or stem cells and therapeutic cloning. In a very large measure these turn on the question is the foetus, or the pre-implanted embryo (created perhaps in a test tube), is that a person? Is their destruction a form of murder? In short, what is the moment of inception of life? And here I want to give you a little insight into how a religious

tradition can come up with perhaps an unexpected answer and make us think twice.

As you know, today there is an enormous range of views on that question. It is deeply contested, and it turns on large issues of theology, metaphysics, and biblical interpretation. These views range from the Catholic tradition which predicates sanctity of life on the foetus from the moment of conception, and also attaches sanctity of life on the pre-implanted embryo, all the way to the other extreme, to views held by Francis Crick and the philosopher Peter Singer who, in varying degrees, argue for the moral permissibility of actually killing very young children in the case of severe handicap or genetic disease, a measure of infanticide which is argued for in contemporary literature. Now these are differences so wide and so intense that one is tempted to say they are irresolvable and interminable. There is a huge literature on the subject, part theological, part philosophical, part historical and part hysterical, but here I want to show how, on this big question, Judaism and Christianity part company.

One of the most interesting chapters in the history of thought is how Christianity and Jewish teachings diverge on this question of life before birth. Because so much has been written about it I will only try and say tonight something that I haven't seen written that might help us think more clearly about these issues.

I want to make two distinctions. The first is between ontology and deontology – what is and what ought to be. Imagine you are flying up to Glasgow and the day is clear and you notice the scenery change from the wonderful flat landscape of the Fens and Cambridge to the nice rolling hills of the north where the whisky is so wonderful, and you can sort of see a clear change from a characteristic English landscape to a characteristic Scottish landscape. But if you were to ask precisely on what point of the map the topography ceases to be English and becomes Scottish, could you give an answer? No! It is absurd. Why? Because there are no boundaries in nature. Nature is a series of gradual changes. On the other hand, if you were to ask if there is a clear point at which the fiscal, legal, educational and health authorities are English or Scottish, the answer is clearly yes. You can draw an exact line on the map and if you couldn't, we'd all be in trouble. There are clear boundaries in law – if you try and tell a policeman who books you on the charge that you went through a red light, if you actually said there is no specific point at which light becomes red, it merely merges imperceptibly with orange – listen, if you get away with it, let me know! So we understand that in nature there are no clear boundaries, in law there are; and therefore the real question, not only on these technical questions of stem-cell research, cloning and pre-implanted embryos but even on abortion itself, is not whether abortion is right or wrong, stem cell research right or wrong, the real questions is – "Is ethics like nature or is ethics like law?" That is the question. If ethics are like nature, then there are no clear boundaries, only a gradual, imperceptible development from the first fertilised cells to the living child. In which case you could say human life begins at the very start of that process; or only when the process is complete, when the child is already recognizably human in faculties some months after birth. That is the debate as it exists today, and it cannot be resolved because there are no boundaries in nature. So you get these extreme views that any creation or manipulation of embryos is wrong, all the way to the view that infanticide may be permissible

in the first year of life. And those really cannot be resolved.

However, there is a second possibility, namely that ethics is not like nature, it is like law, in which case there must be a clear boundary. The Jewish view is precisely that: that it's a category mistake to think of ethics on the analogy of nature, instead it belongs to the network of relationships, obligations, duties and prohibitions that we call cultural rather than natural, prescriptive rather than descriptive. Ethics belongs to the same sphere of discourse as law. If so, then there is a clear boundary and it exists in every culture known to mankind and it is called "birth". Until birth the foetus is not a person, from birth the foetus is. That is the clear boundary at which we can strike a line that makes reasonable sense by way of law. Now we understand why there has been such continuing debate on this subject, certainly on abortion, between Judaism and Christianity for the last two thousand years, because western civilization is formed on the basis of two quite different cultures, ancient Greece and ancient Israel. Ancient Greece saw ethics in terms of nature, ancient Israel saw ethics in terms of law, and Christianity was formed in the meeting of those two cultures. That is the first distinction.

The second distinction, I think, is no less important: the distinction between a person and human life. They sound the same, but they're not at all. In Jewish law the foetus is not a person, the pre-implanted embryo is not a person but it is human life. "Personhood", with all its rights and responsibilities, begins at birth; but prior to birth we have duties to embryos, not because they are persons but because they are human life. The difference is, that whereas our duties to a person may not be over-ridden by other moral concerns, our duties to human life may be over-ridden by other duties, not least the duties we owe persons: for instance, saving life, or curing disease. And therefore, the conclusion to which we have come as a community, to which my rabbinical court has come in the light of questions about stem cell research and so on, has been the following: that embryos, on the one hand, may not be created in the laboratory simply for research purposes or to be destroyed. However, embryos created permissibly, namely surplus embryos created in the course of in vitro fertilisation may be used for research, and that includes the embryonic stem cells, or therapeutic cloning – the kind of cloning used to treat genetic disease. That is, in fact, the conclusion reached by the present government of the United States and I'm not quite sure whether we've reached the same in Britain but we are very likely to. I have tried to show how it follows from a particular way of thinking through the complex issues involved.

However, reproductive cloning is another matter altogether. We know, for instance, that before Dolly the sheep was successfully cloned, two hundred and seventy-seven cloned embryos were produced and only twenty-nine of them developed to the point where they could be implanted, only one survived to term. We know that in all animal experiments to date less than three per cent of cloning attempts succeed, and there are foetal deaths, stillborn infants, and a high incidence of subsequent, initially undetected abnormalities from one of which Dolly the sheep itself died. Doctors believe that there is a basic genetic instability that emerges from the process of cloning that puts such embryos at risk of subsequent deformation and premature death. Cloning apparently disturbs the normal process of genomic imprinting by which the

genes on the chromosomes from one of the parents are switched on or off. It follows that it is quite likely that mammalian cloning is an intrinsically flawed process, too unsafe ever to be used for human reproduction. However, cloning is not just bad because it is unlikely ever to be safe – it is bad in principle.

The truth is that not by accident are we formed as the result of sexual rather than asexual reproduction and it is that unpredictable combination of genes from parents, grandparents, that generates the variety that our species needs in order to survive. Much more importantly, cloning is a threat to the integrity of children so born. People often say that cloning is no different from genetically identical twins; however I think that is a quite spurious argument. It is one thing for this to occur, another thing quite deliberately to bring it about. Identical twins don't come into being so that one may serve as a substitute, or a replacement, or the source of compatible tissue for the other. Cloning therefore offends against the Kantian principle itself based on a biblical principle, that persons being treated as ends rather than means, and it will result in the long run in the commodification of human life.

However, what is fundamental is that our very sense of personhood, and everything that goes with it, is based on the idea that the human person is unique and irreplaceable. That is threatened if cloning heralds the possibility that those we have lost can be replaced through cloning or similar asexual reproductive techniques and that is why it threatens at its very root the concept of our humanity. I don't know if any of you saw Stephen Speilberg's film "A.I.". Did you see this? I don't recommend it, actually – I think Jurassic Park was much more fun! But it poses the question "Could parents love a child they have selected from a production line? Can you love that which is reproduceable?" To which the film delivers the answer, which I think is the correct one – no, you can't. Our sense of love is inextricably linked to our sense of the uniqueness and the irreplaceability of the person and therefore the possibility of loss and vulnerability, and the attempt to bypass these things will actually not advance technology so much as to destroy the very basis of our humanity.

The rabbis said a very lovely thing, which I think has application to many other issues as well. Listen to this: they said when a human being makes many coins in the same mint, they all come out the same. God makes all of us in the same mint, his image, and we all come out different. I believe that difference, that unpredictability, that uniqueness and irreplaceability, is at the very heart of our humanity and what will make reproductive cloning such a tragedy to the future of our species.

So I have tried to give you one little example of how we could think through an issue in medical ethics using ancient ethical reflections and perhaps coming to a surprising distinction, because those who are in favour of stem cell research tend to favour cloning, those who are against, the one are against the other; whereas we are very much in favour of stem cell research and very much opposed to reproductive cloning. I just give you that as an example of where religious traditions do help us think through contemporary dilemmas.

Anyway, let me end by being general again. Professor Stephen Hawking wrote a lovely book called *A Brief History of Time*. Did you ever get to the end, did you understand that one?

I am going to give you an even briefer history of time – here it is, three sentences. In the beginning people believed in many gods. Then came monotheism and reduced them to one. Then came science and reduced them to none. That is a brief history of time. In the beginning there was myth, then there was monotheism and then came the moment when Laplace said in those famous words (translated from the French) "I don't need God in order to explain the world". Now that is the conventional view, that Judaism, Christianity, monotheism were a half-way stage in the long journey to science. That is how the story is so often presented. I want to tell the story a different way and perhaps a more interesting way.

Ever since Homo Sapiens stopped beating the tribal drums long enough to express a thought, we have all reflected on our place in the universe. We know that compared to all there is we are infinitesimally small, at best we are a ripple in the ocean, a grain of sand on the shore. The universe preceded us by billions of years, it will survive for billions of years after we're long gone. How then is our life, that fleeting shadow, related to the totality of things?

To this there have always been two answers and they are fundamentally opposed. There've been cultures, ancient ones and modern ones alike, that have seen reality in terms of vast impersonal forces. To the ancients, those forces were the sun, the sea, the storm, the flood. Today those same forces are global economy, international politics, the environment, the Internet, the spread of terror. What they have in common is that they are *indifferent* to us, just as a tidal wave is *indifferent* to those it sweeps away. Global warming, like terrorism, does not choose its victims. Economic recession does not pause to ask who is thrown out of work. Genetic mutation happens without anyone deciding to whom. On that view the forces that govern the world are essentially blind. They are not addressed to us – we can stand in their path or we can step out of the way – but they are unmoved by our existence, they do not relate to us as persons. In such a world human hope is a prelude to tragedy. The best we can do is combine hedonism and stoicism, seize what pleasures come our way and take Prozac to anaesthetize the pain. That is a coherent view, its greatest expression is in Greek tragedy and it is where our culture is heading today.

At some stage in history in ancient Israel a different vision was born, one that saw in the cosmos the face of the personal. Without denying any of the world's appearances it saw beyond them to a deeper reality, to a god who brought the universe into being, *not* as a scientist in a laboratory but as a parent, in and through love. In this vision we are not insignificant, we are not alone, we are here because someone willed us into being who wanted us to be, who knows our thoughts, who values us in our uniqueness, whose breath we breathe and in whose arms we rest. Someone in and through whom we are connected to all that is.

Now this was not a minor discovery nor is it narrowly a religious one. It's as much about mankind as about God – to put it simply, by discovering God our ancestors discovered humanity. For the first time that momentous concept began to take shape, the idea of the human person – every human person regardless of race, status, religion, code or creed – as a being of unique dignity. It began in those words "Let us make man in our own image after our own likeness" and from that grew the great ethical and political concepts that have shaped western civilization

for the past thousand years. Among them human rights, the free society, the sanctity of life and the dignity of difference. Finding God, singular and alone, our ancestors discovered the human person, singular and alone. Finding God reaching out to us they discovered the importance of human beings reaching out to one another. Haltingly, and then with growing confidence, they began to realize that God is not about power but about relationship. He is found, therefore, not just in heaven but in society, in the structures we make to honour his presence by honouring his image in other human beings. Faith is not a primitive form of science, it is about the ultimate reality of the personal and how we translate that into our shared and social world. That is why I believe we need not only science and technology and laboratories, but also our places of reflection and even places of worship where we sustain and give expression to our vision of the personal; and that is the necessary counter voice to all those forces, economic, scientific and political, whose glory and greatness is that they are *im*personal.

[I am not opposed to rational, technological study of the world.] It has given us three of the treasures of the modern world: economic growth, scientific advance, democratic governance. It's just that we also need the textual contexts that remind us of the sacred stories and ethical principles that articulate our humanity and that have been driven in recent decades to the very margins of the public square. The pages of history are littered with the debris of civilizations that were in their time technologically supreme, from ancient Mesopotamia and Egypt to the Third Reich and the Soviet Union. I find it awe-inspiring to realize that the social orders that survived were those that valued not power, but the powerless. Not economic and military, but spiritual strength, not the mass but the individual, in whose features they discerned the image of God. That is what will always constitute the good society and if today that has become a marginal politically incorrect or counter-cultural view so be it. Religions were always at their best when they were counter-cultural, when they challenged the consensus instead of running after it. Today we need to hear that voice again loudly, fearlessly and unequivocally, for the sake of our children and our future in God, in whose reflection alone we see ourselves as we are called on to become.

And since I've been terribly serious, and you've been really nice, let me just add my second favourite scientific story and here it is – I'm sure you know it: When I arrived in Cambridge, of course the first thing I ran for was Heffers' Bookshop; by the time I came out it was pouring and I said "wrong week", (we read the story of Noah two weeks ago, so it's quite the wrong week for the flood). The story concerns a very religious Jew, Gershen Rosenbloom, who lived in a little village in Romania. Not long ago there was a warning that deluge and downpour was going to cause a flood and everyone had to vacate the village but Gershen Rosenbloom, who was very obstinate, said "I'm not moving, I am Gershen Rosenbloom, and I have faith in the Lord". Well, the rains came, the valley got flooded, somebody came up with a rowing boat and shouted "Rosenbloom, get in the boat, the place is about to be flooded". And Gershen Rosenbloom said "I'm sorry, I am Gershen Rosenbloom, and I have faith in the Lord". Well, the rain continued to fall, the waters continued to rise, and they send a second boat. Again Rosenbloom said "I am Gershen Rosenbloom, and I have faith in the Lord". The rain keeps falling, the water keeps

rising, this time Rosenbloom is standing on the roof. They send a helicopter, drop a ladder, shout "Rosenbloom, stop being a lunatic, climb on to the helicopter or you're going to drown. Rosenbloom says "I'm Rosenbloom, I'm not moving, I have faith in the Lord". Well the rain kept falling, the waters kept rising, Rosenbloom had no choice but to swim. He swam – he sank – he drowned. Finally, as he arrived in heaven, he demanded a personal audience with the Almighty and brooked no opposition. When finally he was admitted to the divine presence, he said "God, please, I am Gershen Rosenbloom, and I had faith in you, why didn't you save me?" and God said "Rosenbloom, I sent you two boats and a helicopter, what more do you want?"

Friends, science is not about the supernatural, it is about the natural. God sends us in science and technology his two boats and his helicopter. Let us use it to enhance human life, not to devalue it. Let us exercise the three Rs: reverence, responsibility and restraint, and let us always dignify we who are written through and in the Book of Life. Thank you.

Questions

Derek Burke: Dr. Sacks said he will be pleased to take questions, so let's make the most of this opportunity after his splendid lecture.

Q. Dr. Sacks, you mentioned that finding God was singular and alone so who was he talking to when he said "Let us make man in our own image, our likeness?"

Jonathan Sacks: Well there are, of course, many, many answers in the Jewish tradition but I'll give you the answer given by a rather fine nineteenth century biblical commentator called Rabbi Samson Raphael Hirsch. He said that having created the universe, the planets, the seas, the mountains, the creatures of sea and air and all living things, he gathered them all together and said "Shall we make man in our own image?" In other words, the creation of man was conditional on the consent of those forms of life created before man, and thus from this Hirsch concluded that we have a duty to nature and when we disrespect nature we forfeit our trust placed in us by God. Will you accept that answer?

A. I'll accept your version of it.

Jonathan Sacks: Do read it in the original – it's been translated into English, the original German was ten minutes longer! I think it's rather nice actually.

Q. What is a person?

Jonathan Sacks: The first and most significant thing is when it says in Genesis chapter 2 that God formed man from dust of the earth – and of course we are dust from the earth, we share our genetic endowment with every form of life to the most primitive bacterium, and the chemicals of which we are formed are actually stardust, the dust of imploded stars. So we are dust of the earth and God breathed into man the breath of life, and man became a living being. The Targum, that ancient translation of the bible into Aramaic, translates that man became a speaking being. Language is extremely fundamental to the biblical vision. God said "Let there

be" and there was. The very first thing God did for the first human being, and we're dealing of course with archetypal stories here, is that he brought the animals to man to see what he would call them. The first gift of the person is the gift of language. Through language we create society – God created the natural world through words, we create the social world through words. The first thing is language and in that we link up with certain theories like the later Wittgenstein, the philosophical investigations – there's no such thing as a private language; we link up with sociology, George Herbert Mead, the idea that our identity as persons is an ongoing conversation (this is the man who coined the phrase "significant others") and you will understand that in Judaism what is holy is a book – words, the holiest thing in Judasim is a scroll of the Lord – what is holy is words, language, because in language we do what no other being can do, which is we communicate, we express to another our innermost dreams, hopes, fears and so on. So language is essential to being human.

Secondly because we have language we can, and because we can use the future tense and because we can use abstract nouns, we are able to conceptualise a world different from the one there is. That therefore leads to the second fundamental aspect of humanity, our ability to choose. The choice is very real in Judaism despite the fact that it is been denied by ancient and contemporary theories, from astrology to genetic determinism. Is there a gene for virtue? I suppose they'll discover one pretty soon. I don't know whether having one implanted would be a reward or punishment! So from language comes our ability to redeem our solitude through communion, which comes through communication. Language itself leads to imagination, which leads to the ability to choose, which leads to moral responsibility because we are agents, we are not just victims, we are not just objects, we are subjects. So I think that connection between language, relationship, choice and responsibility are the four concepts that go to make up the person in the biblical view and I believe it remains a compelling view today, though there are many people who would deny that we have choice. Marxists say whatever we do has economic causes, socio-biologists say it has illusory causes, some people may say it has genetic causes and we say no, over and above all those things – which may be real and powerful – we still can choose and because we can choose, we are not prisoners of fate: we can redeem humanity. Those four things. Does that make sense to you?

Q. I hesitate because I know there are a lot of Christians here, there are a lot of Jews here, I hope I'm not the only atheist here, but the burning question that occurs to me is that you said at one point "If all else fails read the instructions", which was a saying of my father's. My father was Jewish by race but his parents lost their faith. Of course Christians and Jews have different versions of those instructions, and of course there are those of us who believe that there was no reason to suppose that either of those involved did that in the instructions.

Jonathan Sacks: Absolutely. I love the story of the devoted followers of the Hassidic master – for those who don't know that is a kind of guru in Jewish mysticism – and they were getting somewhat profound, as you do by the third Sabbath meal after three meals, lots of chicken soup and, being Hassidim, a lot of vodka and they dared to ask the guru, a question.

Does he believe that God created everything for a purpose? He said that of course he believed that God created everything for a purpose. They said in that case, why did God create atheists? And he replied "Because those who have faith sometimes make their peace with the injustices of this world by claiming that they are the will of God. Therefore God created atheists to protest and fight every injustice". Therefore atheists have an honoured place in the Jewish tradition and please let us simply share our humanitarian vision of the human person. I tried to frame my presentation in a way that could be understood by a secular humanist because I do not want this to depend on religious proof texts. I actually believe that we're all in this together and I believe that we have to work together and, as far as possible, to use a language that those who don't share our faith can relate to.

Behind your second implication that religion has all too often been a source of conflict not of peace, of the suppression of knowledge rather than the pursuit of scientific knowledge, I have to agree with you, which is why I wrote my book *The Dignity of Difference* which, amongst other things, is a very principled statement of the case for tolerance and much more than tolerance, respect for diversity and to try and map that on what I call the heart of the monotheistic imagination. So I agree that religion has a very questionable record on its ability to live with others and that is why a responsibility rests with any religious leader to combat the very dark tendencies within religion itself. I hope that speaks to you. It did get reviewed in one paper, actually The Guardian, by the Anglican Bishop of Edinburgh, who said that the odd thing about the Chief Rabbi's book is that it works if you're an atheist and he said perhaps we'd all better become secular Jews. Now said by an Anglican bishop I thought that was quite interesting. So you're in good company there.

Derek Burke: But he is rather a slightly eccentric Anglican bishop! I want to thank you very much at this point, Dr. Sacks, for this amazingly penetrating, apparently very simple but very profound lecture. I am one of those who struggles with the dilemmas and paradoxes that new science is throwing up and we in the scientific community need you people very badly indeed to help us think clearly and to help us unpick some of the assumptions we carry into our discussions, some of the muddle that we who are not philosophically trained, I'm afraid, fail to understand. It is that perception, that clear light that you've cast upon just one of our problems tonight that we value very much. And what I value being outside your own tradition, but admiring it is your amazing gift of humour. I think that to bring first-class, cutting-edge philosophy to the dilemmas of modern technology with such humour and grace is a very special gift and we thank you very much for coming to us tonight and sharing it with us.

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