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"Facing a Distant Threat"

REMARKS AT THE CLOSING OF THE  
PLENIPOTENTIARY MEETING ON OZONE

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Ladies and Gentlemen:

A hundred and fifty years ago Mary Shelley sat down to write a book. She called it "The New Prometheus", recalling the Greek legend in which man receives fire from heaven, but is then destroyed by his discovery. In her book a well-meaning scientist, a certain Dr. Frankenstein, creates a new human being. Frankentsein's monster is science at its worst: life without soul, knowledge without purpose, skill without wisdom.

This is the negative view of human nature. This is the view that assumes that science is the rope with which man will hang himself, that knowledge is the beginning of destruction.

It is an old view. The Bible, the Koran and the Torah begin with the story of man and woman in the garden of innocence. There they are tempted by knowledge, and after that time they are doomed to sin and to death. From Adam to Orwell the idea has had a powerful grip on the imagination: we have the ability to create but not to control. We are the sorcerer's apprentice, too clever for our own good.

There is a positive view. Anthropologist Jacob Bronowski once declared that knowledge is man's destiny. Knowledge, in this view, is an end in its own right, the goal to which man is ascending. And from knowledge comes a new human being, a human being governed by understanding and freed from material want.

The twentieth century has given both schools of thought ample room to express themselves.

The optimists point to incredible progress. More people are alive. More people live longer. More people eat more. More people know more than ever before. Even the mushroom cloud has a silver lining. The damocles sword of nuclear arms has brought a degree of stability in a century of conflict and doubt. A generation has grown up and is growing old without ever having seen the great powers at war. Science has given us more than we would dare to gamble in war.

Pessimists, however, point to the grim side. More people are hungry now than at almost any time in history. More species have been destroyed in the twentieth century than at any time since the end of the dinosaurs. The nuclear peace is a chimera. Deterrence is a fantasy. We are like the man who has jumped off the Empire State building. We have plunged to the height of the 50th floor and we feel great: nice breeze, good view, no reason to worry.

There is merit in both cases. Both cases, I would guess, are somewhat exaggerated, but both points of view stress an argument that is more debated outside of the scientific community than inside it. That is the question of how we use science.

Are we using science responsibly?

Can we do more to bend the resources of science to the needs of society?

These are not new issues, but they take on a new urgency in the context of the late 20th century environment, especially in the Pacific.

People always say that the Pacific basin will become the hub of economic growth in the next century. Economic development is definitely accelerating in many of the countries of the region. Whether that development will benefit the people who need it most, and whether that development can be maintained for future generations, will depend on sustainable development. If sustainable development is the framework for progress, then we have reason for optimism. It is up to scientists to show the sponsors of science that sustainable development can work, does work, must work.

I am aware that this is much easier said than done. I am aware it entails major adjustments in thinking, action, and above all, styles of life.

For sure, this also means an important change in the way scientists see their work. Truth has traditionally been the ethical focus for scientific enquiry. To that we must now add a concern for social, economic and even spiritual development.

Scientists of the old guard will argue that we are taking science out of the world of pure reason and into the world of politics and economics. But, ladies and gentlemen, that has already happened. We are already being shaped by science as never before. The question now is simply whether we control science or whether science will control us. As the guardians of technical knowledge, scientists can be doing more to direct their tools and to shape the future.

Scientists have, in the large majority of cases, seen themselves as being at the mercy of grant-givers. That is partially true. It is easier to get grants for military research or industrial research than for desert research or tropical forest programmes. That is largely beyond the control of scientists. Scientists can - and often do - claim that it is not their fault if science is misused by politicians and economists. This is the easy line. Don't blame me, I just work here.

The fact of the matter, however, is that there is a large margin of error in this assumption. It is based on the consideration that science is above the world of human affairs.

Here I am not theoretising, I am speaking from experience, three decades of experience in the natural sciences.

Scientists are an important and potentially influential group of people. But too often they stay above the fray. And by staying above the fray they become a party to the abuse of science.

Scientists run the risk of becoming cynical. At the end of his life someone asked Albert Einstein what he thought would be the ultimate weapon of World War Three. He said he didn't know, but that he thought the ultimate weapon of World War Four would be the club.

I say that it is scientists job to make sure that is not the case.

When, from time to time, scientists do climb down from the ivory tower, they can surprise even themselves.

One recent example is very close to my heart as the head of the U.N. Environment Programme. That is the example of ozone.

Almost 15 years ago two American scientists postulated that stratospheric ozone was modified by the emission of chlorofluorocarbons, or CFCs, the chemicals used in aerosols, solvents, propellants and refrigerators.

It was an interesting exercise. For the next decade and more scientists debated the effects of a CFC build-up. By the early 1980s scientists were in basic agreement that CFCs did modify stratospheric ozone, and that even a relatively minor depletion could have a major effect on environment and human health, particularly on the incidence of skin cancer. The scientists had said their piece, and had been largely ignored.

The mid-1980s widened the argument. Scientists agreed that chemicals known as halons also had the capacity to disrupt the ozone layer. And CFCs turned out to be intimately linked to another issue of environmental significance: the greenhouse effect. Still not much happened.

Some time ago UNEP decided that the case against CFCs was strong enough - and that the risk was great enough - that the international community would be wise to restrict CFC emissions.

The government of the United States had already banned the use of CFCs as aerosols, but other, primarily industrial, uses were increasing sharply. Other governments, however, were slow to act. They had CFC industries to protect. Why jeopardize jobs and economy at a time of high unemployment and slow economic growth? Why deprive those long deprived of decent refrigeration - especially in the developing countries?

UNEP has great sympathy with these arguments. We are in favour of an agreement that would promote the development of non-ozone-depleting substitutes. We are in favour of phased regulations that would allow substitute plants to come on-stream before the closure of old plants. We are in favour of allowing low-consumption countries, basically developing countries, a grace period to adjust. But we are not willing to turn a blind eye to the fact that millions of lives are being put at risk.

Those who perceived themselves as being threatened by CFC regulation looked at the debate within the scientific community (the normal academic debate that we see all the time), and said that the scientists disagreed. If scientists had not yet agreed, why jump to conclusions?

So the debate dragged on, and eventually the scientific fraternity decided to put its foot down. Earlier this year a group of the world's major ozone modelers came together at Wurzburg in the Federal Republic of Germany. They compared their models using various different scenarios of CFC modification. Once and for all they showed that there was no meaningful difference of opinion within their community. All of them believed that it would be irrational to let ozone - depleting emissions go unchecked

The press took their views to the public. UNEP convened a meeting of technical and legal experts on the ozone layer. There the scientific community repeated its stance, and presented - in terms meaningful to politicians - the case against CFCs.

What has been the result? The result has been that we are now on the brink of an international agreement to freeze and reduce the emission of ozone-depleting chemicals. Thanks largely to the intervention of the scientific community, we can look forward to an ozone protocol by the middle of next month.

If it can be done once, it can be done a hundred times. If it can be done in one field, it can be done in other fields.

Indeed, there are signs, here and there, that scientists are bending their efforts towards sustainable development. A few of these should be singled out as models for the rest of us. UNEP, for instance, congratulates the ICSU Scientific Committee for Problems of the Environment for its research into the nature of nuclear winter.

UNEP congratulates Prime Computers which has helped to set up the Global Resources Information Database that collects, digitises and distributes geographical information for planners. We congratulate the young men and women from universities and research institutes who have dedicated themselves to setting up that system.

We congratulate the scientists, governments and industries that are supporting a new global code on the safe use of chemicals.

We are impressed that scientists at this congress have taken a new interest in yesterday's regional marine pollution symposium. Marine pollution conventions have been an important plank in the platform of sustainable development. We are relieved to see scientists putting their weight behind those efforts.

We congratulate these people for reminding us that the burden of science is not simply an intellectual one, it is also a moral one. With knowledge must come responsibility.

At a time when the Pacific basin is being shaped by economic growth and scientific advance, scientists have a responsibility to ask themselves about the effect of their work. If their work is a frivolous or malign use of their talents, then it is their job to say so.

I will finish by recalling the story of Galileo. About 400 years ago Galileo let it be known that he thought the world was round and that earth revolved around the sun. It was a dangerous belief in 16th century Italy. The Pope's inquisitors told him that he could die for a heresy like that. He would either have to recant or face trial. For Galileo the choice was easy. He would recant, after all, whatever he said the world would be no rounder, the earth's orbit no different. Galileo could honestly say that his work made almost no difference to the world of human affairs. We have inherited some measure of Galileo's ethereal view of science, but we have not inherited a world in which science doesn't matter. We have inherited a world that cannot even feed itself without the help of advanced science.

Science is closer to our lives now than it was in Galileo's day. The work of scientists shapes not only the way we think, but the way we live, and indeed, whether we live at all. Science must play a role in controlling what it creates. Scientists must have a say in the fate of their brain children. You can help correct the path. Look at your gathering today. You are coming from every corner of the globe. A message that goes to the world from this and similar gatherings will be listened to. As a group, the scientific community has weight and influence. Use that to ensure a better life for everybody, to ensure that science is used to build and not to destroy, to ensure that the interdependence between nations is a fact not a slogan, and finally to prove that we scientists understand and respect and are determined to fulfill our responsibility towards the generations to come.

Thank you.