

Annual Conference of the  
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**CLIMATE CHANGE AND ITS CHALLENGES FOR THE  
INTERNATIONAL LEGAL SYSTEM**

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The bridge between science and politics is never strong. The further bridge into law is still weaker. Crises on such other issues as international finance have shown a certain frenzy as politicians - and eventually lawyers - try to come to terms with unfamiliar ideas and practices, and put together packages of policy for use in the real world. This morning I shall talk more about climate change than the law. That will come later from you.

Coping with climate change, or, as I prefer to call it climate destabilization, still falls into that category, even if for the moment it has been eclipsed by the financial crisis. Perhaps a good analogy is the crisis which arose in the 1930s and since in the United States over dust storms in the Middle West:

- humans can destroy a living environment through greed and folly without any understanding of the consequences
- the eventual result is devastation of the environment, depopulation of the affected areas, social and economic disruption, and a slow process of recovery over many generations

We have known about climate problems for a long time. We have even known about some of the legal complications. But only recently have such problems moved into the shifting limelight of public debate and concern.

- my own experience since the 1970s: Thatcher, Bush Sr etc
- the UNFCCC of 1992 and the Kyoto Protocol of 1997
- the Stern report on the economic and social implications in October 2006
- meetings of the G8+5, especially Gleneagles and since
- the work of the Global Leaders for Climate Action
- the negotiations at Bali in December 2007 which led to agreement on an agenda for talks, with a 2009 deadline, on measures to cut greenhouse gas emissions, cope with forestry problems, and set up projects to help those countries most liable to be adversely affected by climate change. Even if a lot was not agreed upon, and the United States representation had to be publicly booed before accepting the final document, Bali represents a move forward which few would have thought possible only 9 months ago.
- current negotiations for the Copenhagen Climate Conference in December 2009 to produce a second Kyoto Protocol.

These very public activities tell only part of the story. There have been persuasive reports from such bodies as National Academies of Science and the European Commission. In nearly all industrial countries, business and industry began to recognise the need in their own interest to react to, mitigate, and adapt to change. In this country this was well illustrated at the

Prince of Wales's two business summits on the subject. In the United States and elsewhere Al Gore's book and film **An Inconvenient Truth** had an enormous effect on public opinion, augmented when he and the Intergovernmental Panel on Climate Change won a Nobel Prize for their work.

Let us look briefly at the science before trying to assess the legal implications, and the key question of responsibility for what has happened.

The evidence for climate change is overwhelming, and no longer in serious dispute. It shows steady acceleration since the 1970s. I begin by distinguishing natural from human-driven change.

- natural change is constant: the last 10,000 years have been a fairly warm period with ups and downs. Fundamentally our climate is a product of the ever changing relationship between the Earth and the Sun. But here are some symptoms of change, or things to watch:
  - the state of the Amazonian rainforest
  - the direction of North Atlantic currents
  - volcanic emissions and impacts from space
  - release of methane clathrates from beneath the tundra, peat bogs and the ocean bed
  - the varying patterns of the Indian monsoon
  - the frequency and intensity of El Nino and La Nina in the Pacific
  - the state of the Arctic and Antarctic ice sheets

- human driven change is something new: the reports from the Intergovernmental Panel record that:
  - carbon dioxide emissions are now at their highest level in 650,000 years. We could indeed be heading back to conditions of 125,000 years ago when the configuration of land and sea was very different (and sea levels were between 4 and 6 meters higher)
  - the volume of such emissions in the atmosphere rose from roughly 190 ppm (parts per million) in glacial times, to 285 ppm in warm interludes, to 381 ppm today, and at present rising by around 2 ppm a year
  - the global atmospheric concentration of methane, a 20 times more potent greenhouse gas than carbon dioxide, has risen from a pre-industrial level of 715 ppb (parts per billion) to 1774 ppb in 2005
  - nitrous oxide has likewise increased from a pre-industrial value of around 270 ppb to 319 ppb in 2005
  - warming of the oceans has also increased since 1961. Such warming now reaches down to depths of at least 3000 metres. Its effects on the atmosphere have a roughly 30 year time lag. Sea levels are rising by about 3.5 cm per decade, and are now accelerating. Increasing acidification of the surface affects all marine life, including corals
  - deforestation has continued to affect climate. Clearing of forests could have begun to change conditions as long as 8,000 years ago

According to the Intergovernmental Panel, the cumulative results of change could well lead to a substantial rise in global

average temperature between 2030 and 2060 with wide regional variations.

What have been - and will be - the effects so far as humans are concerned? They can be seen in:

- changes in weather everywhere, and becoming more so, with more extreme events, manifest in storms and droughts
- accelerated melting of the Arctic and Antarctic icecaps, and of Himalayan and Andean glaciers with their effects on the local river systems, in particular in China
- a rise in sea levels affecting coastal cities worldwide
- problems of distribution of fresh water for human and other purposes. This is closely linked to the current rise in food prices
- increasing competition for natural resources, including fertile soils, woodlands and minerals
- changes in ecosystems, including insects and micro organisms of all kind, with their multiple effects on human health and welfare (well brought out in the recent Millennium Ecosystem Assessment). To this should be added the effects of indiscriminate introduction of alien species (for example rabbits into Australia).
- potential undermining of current social, and in particular urban, infrastructure: sewage, reservoirs, buildings, public services, industry etc
- movement of people within and between countries, in particular environmental refugees.

We have to recognize that of all the problems now facing the Earth, climate change is only one. The others driving the current transformation arise from human multiplication; degradation of land; consumption of resources and accumulation of wastes; water pollution and supply; energy production and use; and destruction of biodiversity (or the other living organisms, large and small, on which humans wholly depend). These factors have to be seen and understood together, and cannot be seen separately. If humans cannot learn how to cope, particularly in multiplying their numbers, the Great Reaper could well do so for them.

We also have to reckon with the consequences of mistakes in technology. The current President of the Royal Society Lord Rees has reckoned the chances of our present civilization surviving this century at only 50%. The reasons range from human inventiveness, folly and wickedness to sheer inadvertence.

He had particularly in mind the ramifications of information technology, nano-technology and nuclear experimentation. Perhaps we should add the development of biological weapons. There was a near miss in the 1960s over the development of technologies which would have done still more damage to the atmospheric ozone which protects all forms of life from dangerous wavelengths of ultraviolet radiation. Innovation in technology is very important. But don't think that technology can provide all the answers.

Looking back into history, we can see how societies have, in the words of Jared Diamond in his book **Collapse**, chosen to succeed or fail. The triggers for collapse have been various, but climate change has had a role in most of them.

All complex societies are vulnerable, especially those led by cities where about half the human species now lives. They can

be likened to organisms, drawing in water, food and other materials, and emitting wastes. Once supplies are cut off, they and their apparatus of institutions can easily become destabilized. For more rural societies, dependent on one or two crops, there are even more serious hazards.

Depletion of resources, including consumption of fossil water from aquifers, over-cultivation and deforestation can again be linked to changes in weather patterns – storms, droughts, even monsoons – and be a lively source of conflict. Even finding new resources is not always benign. At present the opening up of the Arctic, where fossil fuel deposits have been covered by ice since the end of the last ice age, has seen the United States, Russia, Canada and Denmark beginning what could be a dangerous argument.

So far there has been much more talk than action. Indeed changes of the kind likely to be required imply some fundamental and inevitably painful rethinking of the way we run our economies, generate energy, and work in global fashion to cope with global problems, with due apportionment of responsibility in its many legal aspects. As The Times said on 13 October, "Governments used to be brave in the face of difficult economics".

We have seen several reactions, with more to come:

- defensive reactions can lead to the building of virtual fortresses round relatively rich countries to keep out intruders and protect resources. But walls of this kind are never effective for long. The Israelis will be no more capable of keeping out Palestinians than the Americans of keeping out Mexicans.
- offensive reactions, particularly in countries worse hit by change, include invasion of others, movement of refugees, ethnic

rivalries and terrorist/guerrilla action against rich countries. Globalization cuts both ways;

- In the past when human numbers were small, people could and did move as circumstances changed, but we are no longer hunter gatherers. A chilling conclusion of a recent Pentagon paper is that the results of climate change “could be a significant drop in the carrying capacity of the Earth’s environment”;
- inequities between different countries may become even less tolerable than today, and a potent source of conflict. In well-favoured countries climate change may be largely a problem of adaptation, but for poor ones it is a matter of survival;
  - for example millions of people could be uprooted in Bangladesh and the Sahel;
  - half the world’s population depends directly on local renewable sources for their day-to-day wellbeing;
- the current redistribution of power and wealth means a redistribution of soft as well as hard power. The primacy enjoyed by the early industrial countries and now the United States, Europe and Japan is unlikely to last much longer

These parts of the world's population most affected by the changes I have described can reasonably ask - and are already doing so - who is responsible for what has happened. The answer is painfully clear. It is the action of the industrial countries - however unwittingly - over the last 250 years. Resentment against them has been mitigated by the desire of the

rest of the world to follow in the same tracks and ultimately enjoy the same living conditions. Unfortunately most current notions of "development" and the categorization of "developed", "developing", "under developed" and perhaps "over developed", countries are highly misleading, and rely on a blueprint of economic change, which is dangerously unrealistic and in most cases inapplicable in different circumstances.

But broad responsibility for human-induced climate change rests unequivocally with those who have in multiple ways changed conditions on the surface of the Earth. During this conference you will be exploring the legal implications.

Here I want to refer to recent work in which I was involved on another global problem: how to cope with future hits of asteroids and comets from space. The recommendations we made to the United Nations included measures not only to identify and if possible deflect incoming Near Earth Objects but also to manage the effects of impacts if they could not be avoided. For these purposes we needed a proper international framework of a kind that does not yet exist, apportionment of international and national responsibilities, and measures to cope with legal obligations and liabilities of an elaborate kind.

The same goes for coping with the effects of climate change. A lot now depends on what happens in the current negotiations to produce a successor to the Kyoto Protocol. I am much involved as a member of the Copenhagen Climate Council. There are many options, ranging from national quotas for carbon emissions to annual auctions on an international scale with money going to a common fund to help those worst affected. I was encouraged on a visit to Mexico last month to know about the Mexican President's proposal for an international green fund, and the enthusiasm this had aroused.

I should underline the difficulties. Even if national sovereignty is not what it was, nation states are jealous of their existing rights. The United Nations is fundamentally an association of nation states, and even today in the circumstances

of the climate change debate, the global interest is usually interpreted in terms of a rich variety of national interests. I once raised a general environmental issue in the Security Council, which could have led to threats to peace and security, and thereby caused acute discomfort among some of its members.

Supposing that a new international framework could be agreed, for example a tough Kyoto 2 to be effective from 2012, then how would we cope with those who, deliberately or not, failed to honour their obligations? We can set targets for reducing emissions, as this country has done, but what happens when we fail to meet them? If public pressure, even sanctions, failed to achieve results, could use of force be contemplated in some circumstances? If so, how and through whom? There might for example be a development of links between the Security Council and the International Criminal Court. Already when national authorities are unable or unwilling to cope with offenders, the international community, through the Security Council, has the obligation to refer the situation to the Court.

None of this will be easy. In fundamental terms we need a World Environment Organization to be a partner of the other UN agencies, and make better sense of the present 200 or so limited and often overlapping environmental agreements. Looking ahead we seem to be in for a bumpy ride. Violence within and between communities and between nation states could well increase. Global arrangements are always fraught. There has already been disheartening experience over implementation of Law of the Sea. People usually need a fright – but above all a credible fright – before changing their minds in the fundamental ways that are required to meet the alarming challenges of climate destabilization.

Major change is usually the product of three main factors:

- leadership from above in the form of governments and institutions

- pressure from below in the form of non-governmental and community organizations of all kinds
- benign catastrophes where cause and effect can be clearly identified, and the appropriate lessons learnt: the Chinese Premier Zhu Ronghi was ready to accept a measure of Chinese responsibility for the effects of the Yangtze floods in 1998.

Most important is to go for the true and underlying causes of threats to security, understand what is at stake for all concerned, and try to diminish, mitigate and adapt to the consequences. Old Adam and Old Eve are still with us – competitive, docile, peaceful, violent, creative, wasteful, various, and restless – now as in the future.