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A Personal Note

What can we do about global warming, and what should we do?

Faced with scientists who publish warnings, the public's natural response is to ask them for definitive guidance. When the scientists fail to say for certain what will happen, politicians habitually tell them to go back and do more research. In the case of climate, waiting for absolute certainty would mean waiting forever. When we are faced with a new disease or an armed invasion, we do not put off decisions until more research is done. We act using the best guidelines available.

My training as a physicist and historian of science has given me some feeling for where scientific claims are reliable and where they are shaky. Of course climate science is full of uncertainties, and nobody claims to know exactly what the climate will do. That very uncertainty is part of what, I am confident, is known beyond doubt: our planet's climate can change, tremendously and unpredictably. Beyond that we can conclude (with the IPCC) that it is *very likely* that serious global warming, caused by human actions, is coming in our own lifetimes. This surely brings a likelihood of harm, widespread and grave (see the essay on expected impacts). The few who contest these facts are either ignorant, or so committed to their viewpoint that they will seize on any excuse to deny the danger.

Thanks to the strenuous labors by thousands of people described in these pages, we have had a warning in time—although just barely in time. If there is even a small risk that your house will burn down, you will take care to install smoke alarms and buy insurance. We can scarcely do less for the well-being of our society and the planet's ecosystems. Thus the only useful discussion is over what measures are worth their cost.

Many things can be done right now that are not only cheap and effective, but will actually pay for themselves. For example, coal-fired power plants could be taxed in proportion to their emissions. This could be compensated by an equal decrease in other taxes, leaving government revenue unchanged. (A market-based "cap and trade" system of selling permits to emit pollution can be designed to have an equivalent effect.) The transfer of wealth from high consumers of electricity to the public as a whole would not be unjust, for it would compensate people for the health problems and other harm caused by the coal plants' pollution—some 10,000 premature deaths each year in the United States alone. Society as a whole would benefit as users of coal-derived electricity saved money by improving their efficiency or shifting to more benign sources of power. Other policies could increase efficiency in transportation, protect valuable forests, and so forth, with net benefits entirely aside from acting against global warming.

The most effective way to reduce greenhouse gas emissions and at the same time advance prosperity is to develop better technologies and practices. But a technology does not magically grow by itself. According to economic demand, research may stagnate or dash forward to solve problems with amazing speed. Progress can be stimulated by “price signals” created by systems of taxation or regulation of emissions. Research can also be accelerated by direct government support. Unfortunately, the world’s governments are spending less on energy research today than they did back in 1980, although they could certainly afford to spend a few billion more. After all, governments currently spend about half a trillion dollars a year on subsidies, mostly hidden and economically unsound, for fossil fuels... yes, it’s true: our taxes are *paying* industries to burn coal and oil.

Global warming is not a technical problem; it’s a political problem.

To say that strict limits on emissions are socially or politically impossible is to forget that people have made far greater changes once they set their minds to it (think how our patterns of living, even of eating, have changed over the past 50 years!). Citizens can reconsider their personal practices, and put pressure on businesses and governments at every level. This is not a job for someone else, sometime down the road: we have already run out of time. The first practical steps, the easiest ones, will not have a big impact on future global warming. But every step will bring experience in developing and negotiating effective technologies and policies. We will need this experience when, as is likely, increasingly grave harm from climate change drives us to greater efforts. If we act now, the job will be far cheaper and easier than it was to suppress Fascism or Communism, and more likely to inspire the best in us too.

Like many threats, global warming calls for increased government activity, and that rightly worries people. But in the twenty-first century, in many areas the alternative to government action is not individual liberty; it is corporate power. And the role of large corporations in this story has been mostly negative, a tale of self-interested obfuscation and short-sighted delay. The atmosphere is a classic case of a “commons”: in the old shared English meadow, any given individual was bound to gain by adding more of his own cows, although everyone lost from the overgrazing. In such cases the public interest can only be protected by public rules.

In short: individuals can and should do two things (as I have done). Cut back your greenhouse gas emissions. And at appropriate times let your political representatives know that your vote will be swayed by their actual activity—not meaningless lip service—to push for serious action against global warming. To get advice on both matters, see the links page (<http://www.aip.org/history/climate/links.htm>).

It is now almost certain that global warming is upon us. It is prudent to expect that weather patterns will continue to change and the seas will continue to rise, in an ever worsening pattern, through our lifetimes and on into our grandchildren’s. The question has graduated from the scientific community: climate change is a major social, economic and political issue. Nearly everyone in the world will need to adjust. Citizens will need reliable information, the flexibility

to change their personal lives, and efficient and appropriate help from all levels of government. So it is an important job, in some ways our top priority, to improve the communication of knowledge, and to strengthen democratic control in governance everywhere. The spirit of fact-gathering, rational discussion, toleration of dissent, and negotiation of an evolving consensus, which has characterized the climate science community, can serve well as a model.

For more on current developments, see page of links and brief bibliography,
<http://www.aip.org/history/climate/links.htm>.