

Excerpt from;

Al Gore

“Earth in the Balance: Forging a New Common Purpose”

ISBN 978-1-84407-484-6, pp. 354-360, 1992

Earthscan, London

OCRed by Takeshi Utsumi

GLOSAS/USA

July 7, 2009

V. A NEW GLOBAL ENVIRONMENTAL CONSENSUS

The fifth major goal of the Global Marshall Plan should be to seek fundamental changes in how we gather information about what is happening to the environment and to organize a worldwide educa-

tion program to promote a more complete understanding of the crisis. In the process, we should actively search for ways to promote a new way of thinking about the current relationship between human civilization and the earth.

This is perhaps the most difficult and yet the most important challenge we face. If a new way of thinking about the natural world emerges, all of the other necessary actions will become instantly more feasible -- just as the emergence of a new way of thinking about communism in Eastern Europe made feasible all of the steps toward democracy that had been "unthinkable" only a few months earlier. And indeed, the model of change we use in designing and implementing our strategy should be based on the assumptions that there is a threshold we must cross and that not very much change will be apparent and obvious until we reach that threshold, but when it finally is reached, the changes will be sudden and dramatic.

Central to any strategy for changing the way people think about the earth must be a concerted effort to convince them that the global environment is part of their "backyard" -- as it really is. I have always been struck by the way a proposal for an incinerator or a landfill mobilizes a lot of people who do not want the offending entity near them. In the midst of such a controversy, no one seems to care much about the economy or unemployment rate; the only thing that matters is protecting their backyard. The famous "not in my backyard" syndrome, NIMBY, has been much maligned but is often on target and is an undeniably powerful political force. How might its energy be focused against threats to the environment? Is that possible? The key lies with the definition of "backyard," and in truth, our backyards are threatened by problems like global warming and ozone depletion.

An important step in the right direction would be to take a new approach to the collection of information about what precisely is happening to the global environment. As chairman of the Space Subcommittee in the Senate, I have strongly urged the establishment of the new program that NASA calls Mission to Planet Earth. Sally Ride, the first American woman in space, coined the phrase, and it is meant to be taken ironically. As she points out, we have undertaken highly sophisticated planetary studies by sending spacecraft into orbit around Mars and Venus, and we have used that unique perspective to study other, more distant planets. Yet we

have not used the same techniques to improve our understanding of our own planet just when we desperately need to understand much more about the changes that are taking place.

Even more important than gathering new information, though, we must start to take action now -- and the information collection system should enhance that goal. This conclusion carries with it two implications: first, the information should be collected as quickly as possible; and second, it should -- wherever feasible -- be collected in a manner that facilitates public education and fosters a greater understanding of what the new information means within the larger context of rapid global change.

In other words, the Mission to Planet Earth should be a Mission by the people of Planet Earth. Specifically, I propose a program involving as many countries as possible that will use schoolteachers and their students to monitor the entire earth daily, or at least those portions of the land area that can be covered by the participating nations. Even relatively simple measurements -- surface temperature, wind speed and direction, relative humidity, barometric pressures, and rainfall -- could, if routinely available on a more nearly global basis, produce dramatic improvements in our understanding of climate patterns. Slightly more sophisticated measurements of such things as air and water pollutants and concentrations of CO₂ and methane would be even more valuable. But the first step is collecting the kind of rudimentary information necessary to monitor the environment closely, just as hospital emergency rooms monitor the vital signs of patients receiving intensive care.

The mass production of uniform instruments for this program could bring the unit costs down to trivial levels, and the instruments themselves could be designed to facilitate daily electronic "polling" or data collection. By deploying relatively cheap low-orbit satellites capable of rapidly redistributing the information gathered from the many scattered monitoring stations, the data could be fed into regional, national, and global collation and analysis centers, where they could be studied and incorporated into computer models on a regular basis. As the schools gained experience and confidence, the range of activities in the program could be expanded to include, for example, soil sampling (to map soil types, monitor soil erosion rates, and measure residues of

pesticides and salt) and an annual tree census, using sampling techniques that monitor deforestation and desertification.

If the program worked as planned, those involved might eventually be persuaded to go even further and actually plant trees and establish nurseries for trees and crops indigenous to their individual areas. And a different sort of seed might be planted in the process: for example, the world's leading scientist on the problem of ozone depletion, Dr. Sherwood Rowland, first became interested in the atmospheric sciences as a youngster when he was asked to look after a backyard weather station by a neighbor who went on vacation for several weeks. The virtue of involving children from all over the world in a truly global Mission to Planet Earth is, then, threefold. First, the information is greatly needed (and the quality of the data could be assured by regular sampling). Second, the goals of environmental education could hardly be better served than by actually involving students in the process of collecting the data. And, third, the program might build a commitment to rescue the global environment among the young people involved.

There are now efforts to improve the Mission to Planet Earth, which NASA first organized along lines that resemble sprawling Defense Department weapons procurement programs; most of the money was budgeted for large pieces of hardware that will take ten to fifteen years to build and then deploy in space. We need the information faster and cheaper, if it is at all possible -- and I am convinced it is. Toward that end, Senator Barbara Mikulski and I have been working together to force changes in the NASA program, with some success. Even as NASA is proposing new space platforms built by defense contractors to collect more data, the Bush administration is refusing to spend tiny sums of money to safeguard the valuable information already collected -- by the Landsat system, for example, a series of satellites that have made a unique photographic record of the earth's surface for twenty years. The administration has allowed the data collected to go to waste and is now proposing to stop the launch of the next Landsat satellite, thus eliminating the chance to assemble new portraits of our planet and provide a rare and invaluable perspective on the changes we are causing to the earth's surface.

Another difficulty with the current design of the Mission to

Planet Earth is that no one yet knows how to cope with the enormous volume of data that will be routinely beamed down from orbit. Nothing even approaching this amount of data has ever been dreamed about. In order to help organize it -- and interpret it -- I have proposed something called the Digital Earth program, which is designed to build a new global climate model capable of receiving data from several different sources that are not considered compatible by today's definitions; furthermore, Digital Earth would be designed to actually learn from its mistakes, when predictions based on information from the known climate record are run on the models of environmental change so that the results can be compared with what actually happened. Even though the global climate models all have serious limitations, they still give us the best information available about what is likely to happen to climate in the future, and I believe this new approach can substantially improve the quality and usefulness of the models.

Because of the unprecedented volume of data, it may also be necessary to disperse the means of storing and processing it much more widely. Most experts in the United States and Japan now believe in the inherent advantages of a computer architecture or system design known as massive parallelism, and massively parallel computers will undoubtedly play a key role in Mission to Planet Earth. These computers are valuable in another way too, for they provide a metaphor that I think is particularly useful in figuring out how to best cope with the task of collecting and processing the enormous quantity of data and how best, in the process, to change minds and hearts all over the world on the subject of the environment.

The power of massively parallel computers comes from their ability to process information, not in one central processing unit, but in tiny, less powerful units throughout the computer's memory field in locations immediately next to the spot where the information itself is stored. For many applications, the inherent advantage of this design is crucial: the computer wastes less time and energy in retrieving raw data from the memory field, bringing it to the powerful central processor, waiting for processing, then taking the processed data back to the memory field to be stored again. By locating each small portion of the data with enough processing

capacity to handle it, more data can be processed simultaneously, then transported only once, not twice, between the memory field and the center.

When you stop to think about this approach in generic terms, it seems obvious that both democracy, as a political system, and capitalism, as an economic system, work on the same principle and have the same inherent "design advantage" because of the way they process information. Under capitalism, for example, people free to buy and sell products or services according to their individual calculations of the costs and benefits of each choice are actually processing a relatively limited amount of information -- but doing it quickly. And when millions process information simultaneously, the result is incredibly efficient decisions about supply and demand for the economy as a whole. Communism, in contrast, attempted to bring all of the information about supply and demand to a large and powerful central processor. Forced to deal with ever more complex information, the system's inherent inefficiencies led to its collapse and the collapse of the idea on which it was based.

Similarly, representative democracy operates on the still revolutionary assumption that the best way for a nation to make political decisions about its future is to empower all of its citizens to process the political information relevant to their lives and express their conclusions in free speech designed to persuade others and in votes -- which are then combined with the votes of millions of others to produce aggregate guidance for the system as a whole. Other governments with centralized decision-making have failed in large part because they literally do not "know" what they or their citizens are doing.

Unfortunately, we are now on the verge of ignoring this powerful truth in designing the Mission to Planet Earth. The current plan is to bring all the data to a few large centers where they will be processed; somehow the results will then be translated into policy changes that are in turn shared around the world. The hope is that this mission will eventually help change thinking and behavior worldwide to the extent necessary to save the global environment.

The alternative approach -- or architecture -- that I am recommending here is to distribute the information collecting and processing capability in a "massively parallel" way throughout the

world by involving students and teachers in every nation. This was some of the essential work may well be accomplished much faster and much more efficiently -- and we can then work to upgrade and improve the information handling capacity in each location. Furthermore, we ought to be establishing environmental training centers and technology assessment centers throughout those areas of the world (especially the Third World) where major environmental remediation efforts are needed and where major technology transfers from the West are expected.

In discussing information and its value, it is also worth remembering that some self-interested cynics are seeking to cloud the underlying issue of the environment with disinformation. The coal industry, for one, has been raising money in order to mount a nationwide television, radio, and magazine advertising campaign aimed at convincing Americans that global warming is not a problem. Documents leaked from the National Coal Association to my office reveal the depth of the cynicism involved in the campaign. For example, the strategy memorandum notes their "target groups" as follows: "People who respond most favorably to such statements are older, less-educated males from larger households, who are not typically active information-seekers ... another possible target is younger, lower-income women [who are] likely to soften their support for federal legislation after hearing new information on global warming. These women are good targets for magazine advertisements."

In order to counter entrenched interests like this one, we will have to rely on the ability of an educated citizenry to recognize propaganda for what it is. And the economic and political stakes in this battle are so high, there will be a relentless onslaught of propaganda.

The key, again, will be a new public awareness of how serious is the threat to the global environment. Those who have a vested interest in the status quo will probably continue to be able to stifle any meaningful change until enough citizens who are concerned about the ecological system are willing to speak out and urge their leaders to bring the earth back into balance.