

# From the bedroom to the bomb: an interview with Ehrlich

(Editors note: Biology Prof. Paul Ehrlich, a major environmental lobbyist, helped form the zero population growth movement.)

By LEE ALTENBERG

Do you conceive that even all of the terrestrial vertebrates could die?

Nobody knows for sure. One of the possibilities is that there would be a couple of months of total darkness and below freezing temperatures over the entire globe. If the timing were unlucky then most of the terrestrial vertebrates could go extinct — but some, like rats, would almost certainly survive.

This is what Dr. Paul Ehrlich, professor of biology, replied when I asked him about the possible effects of an all-out thermonuclear war. Ehrlich is involved now in setting up a series of meetings of scientists across the country to discuss the environmental effects of nuclear war. His involvement with environmental issues is nothing new. In 1968 he published *The Population Bomb*, which gained nationwide attention and helped form the zero population growth movement, and he has continued to be a major figure in the environmental movement. In his travels from Stockholm to Berkeley he has been called everything from an instrument of imperialism to an ivory tower social engineer. Here, Ehrlich does research on butterfly and plant coevolution.

One of your colleagues said that you had done something that no one in history has ever been able to do, namely, to bring awareness of the dangers of overpopulation into the bedrooms of couples throughout the country and change their reproductive behavior. When you were a college freshman, did you have any idea that you might be influencing the population growth of the developed world?

Well, I'm not sure that I have. I may have had some small part in it. But yes, when I was a freshman in college I started reading books and participating in bull-sessions on population issues. And my interest in it persisted. But I didn't have any idea of whether I'd ever do anything about it, that was pure serendipity. I didn't stand up one day and say, "My God, I'm going to get everybody to stop procreating."

Why has the environment been such a major concern of yours? Should I be just as worried?

Of course the reason I'm worried about the environment is that, like other ecologists, I understand that the environment is what supports our lives; if it goes down the tubes, we go down the tubes with it. If you understand how the world works, you know that to ignore the environment is to destroy the economic system. If you don't, then you're in a class with Secretary of the Interior James Watt or President Reagan and a danger to society.

But a number of students here, particularly from ethnic minorities, have said to me they felt that environmental problems were a luxury issue when seen against problems of social justice.

Environmental issues are really much more critical for people in minority groups, because they're the ones who are forced, for instance, to live down wind of the power plants while the rich wind up getting most of the power. The poor are the ones who will suffer first when food shortages occur. They are, and will be, the major sufferers from environmental problems.

It is a standard mistake to think of environmental activism as being equivalent to just concern for trout streams. It is clear that some "environmentalists" only think about the environment in terms of cozy surroundings for them and their hobbies. That's part of it, but that's only a minor part. The basic message of the environmental movement must be: understand that the ecosystems of this planet support our lives, and understand that we are busily destroying them and when we've completed the job we'll be gone too.

Is it that people don't believe the environment is in danger? Or that they don't care, or are unable to change what they're doing?

I think the major part of the problem is just plain lack of education. It's clear that no sensible person, once they understood the problems, would ignore them. But there are very few places in our society where you can learn anything about the basics of environmental problems. It's an issue that's relatively new in our society. Ecology was a little known technical field until about 15 years ago. That's not much time if you want to educate people from grade school through

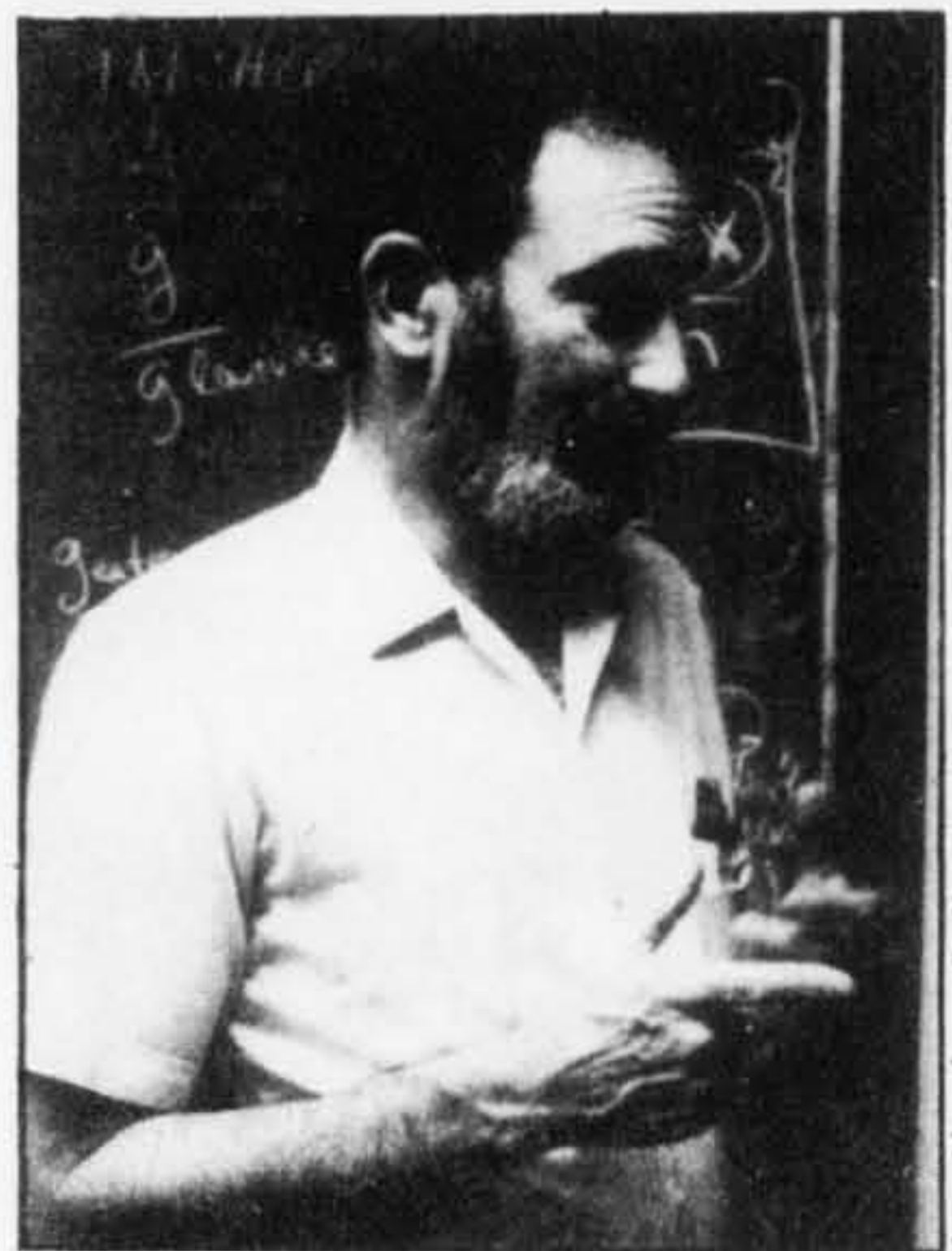
college. We are in a society that is falling behind in its mathematics and science education anyway. And there are powerful forces that don't want environmental education, people who feel extremely threatened by the ecological message.

How can they be eased out of this feeling of threat?

I think that there is no way, in all probability, to convert a Ronald Reagan or a James Watt to a sensible position. Watt thinks the world is going to end in a few years and doesn't care what happens between now and then, and considering the foreign policy of his boss, he may be right. What you have to do is start educating younger people and remove dangerous people like that from positions of influence.

What do we need, then, in the way of education?

What we need is people who have the tools to analyze problems as they arise, and expose some of the idiocy in the world. Instead of courses on "how to save society," I'd rather have students learn to be confident with math and to read and write well, to have some basic acquaintance with physics, chemistry and biology, as well as history and literature. An entire generation of economists has been produced who don't even understand the second law of thermodynamics and the implications of that for their discipline, and that's like having blind pilots flying your airplane.



Lee Altenberg/Daily

How would you illustrate the second law, say, in an economic context?

The second law says, basically, that in any real world process, some energy is degraded to a less useful form. It also states that, in the absence of inputs of high grade energy, there will be an inexorable tendency for concentrations of substances to disperse. Economic systems need inputs of energy to replace what was degraded, and concentrated materials to replace what was dispersed. Anybody who has had an economics course with a standard textbook can see, by simply looking at the circular diagram of the generation of gross national product or gross national income, that there are no physical inputs into the system. It is a diagram of a perpetual motion machine, which the second law says cannot work. So the world view of many economists is fundamentally flawed.

So what is needed, in a sense, is a change in the belief of an educated person as to what is important knowledge. The second law of thermodynamics is not seen today as something everybody should know.

That's right. And ignorance of basic physics led an economist, Julian Simon, to write in *Science* magazine that the only limit to the amount of copper that can be made available to humanity is the weight of the universe.

I heard a veteran of some atomic tests being interviewed on KGO radio, who was saying how our country could survive an all out nuclear war. People were calling up and saying he was crazy, and his reply was, "Well, you're entitled to your opinions and I'm entitled to mine." How much do you think people believe that...

...everybody's opinion is just as good as everybody else's? Much too much. One of the funniest things that ever happened to me at Stanford was one day, a colleague and I were sitting in the coffee room, and a guy came in and he said, "I hear you people are concerned with the world food problem and shortages of water." We said "yeh," and he said, "I got a plan to solve the water problem of the United States." I said "What is it?" and he said, "We're gonna dig a canal to bring the water from the Greenland ice cap to the southwest." I said, "It's going to be an interesting exercise, because you're going to

have to dig that canal through the north Atlantic Ocean," and he said, "That's your opinion, not mine." And that's typical. He thinks that whether Greenland's an island or not is just a matter of opinion. This economist Simon has the opinion you can make copper in economic quantities out of other metals. Well that's his opinion. The point is, unfortunately, everybody's opinion isn't as good as everybody else's.

What would you say are the "biggies" in environmental problems?

Population is the most fundamental one. We're only managing to support 4.6 billion people by doing things that no sensible family would ever do in their personal finances: we're living on our capital, we're using up a one time bonanza of fossil fuels, other highly concentrated minerals, fertile soils, and biological riches — as many as 30 million species by the most recent measure, and billions of natural populations. It's a one-time bonanza, and when it's gone, humanity will have to fall back on renewable resources. But the systems that supply us with renewable resources depend largely on those 30 million plant and animal species. With the destruction of natural habitats, the chain-sawing of the world's tropical rain forests, half or more of these may disappear in the next 50 years. We are losing our ability to live on income by reducing capital in our attempts to maintain a high level of overpopulation.

Acid rains are absolutely critical, and involved in the loss of diversity. It's causing international incidents with Canada already. We now have lost the fishes and much of the rest of the aquatic biota of many lakes in the northeastern parts of North America, in Sweden, in Norway. Some biologists believe acid rains in Europe are changing the soils so that the forests of Europe are already doomed — that there is no way to fix the soil back up so that the forests can survive.

Development in general is, of course, an enormous problem. We need to preserve natural ecological systems that supply society with vital services. We've disturbed more than enough of the planet. Ideally, not one more square inch of the United States should be developed, and not one more acre of tropical rain forest should be cut down. The rain forests help control our climate. If they are largely destroyed, North America may no longer be able to grow surplus grain, and that alone could risk the lives of hundreds of millions of people.

Is it economic systems that are leading to this behavior?

All industrial economic systems promote the wrong kind of behavior, be they communist, socialist or capitalist, because they're all basically steel eating, radical systems rather than conservative systems. None of today's systems emphasize quality of capital; they emphasize speed of throughput. Both capitalist and communist systems turn natural resources into rubbish as fast as they can.

Where I grew up there were orange groves and bean fields which are now covered by tract houses. What do you do when there are economic incentives to build them?

The economic system is shoving us continually towards doom. Most economists and businessmen think it's perfectly all right to cover farmland with houses. Simon explicitly states that you can always tear the houses back off, and the soil will still be there. Apparently, he doesn't know what soil is.

Then what can we do when there is a pressure for more housing?

What we should do is tear down a slum area, put up more decent high rise apartments, and find social devices that will permit the people who previously lived in the slum to afford the new housing. You could tear down the plastic motels that are now decaying along the highways of the Southeastern United States and put housing there. We need redesign and redevelopment — not the creation of more sprawl and more "slums of tomorrow."

Then what do you say to the farmer and the developer who want to make a deal?

You tell them they can't. You simply forbid development. That's what governments are for, to do the things corporately that people will not do individually. One of the things that we all want to do is eat, and if we allow developers to get rich by developing farm land, sooner or later no one, including the developers, will be able to eat. And that's a fact of nature. We don't put a tax on murder. We don't say, if you murder somebody, you're taxed a hundred thousand dollars, we simply say "you can't do it." In a sense, converting farm land to ticky-tacky subdivisions is killing people in the future. And so you simply say, "you can't do it."

There is something of a new school in historical thought that is attributing the decline of a number of ancient civilizations in large

measure to their destruction of their natural environment.

That's right. No question that it was a factor in a lot of them, including the ancient Mayan, the Khmer, and the original Tigris and Euphrates civilizations. If you've been to the Mediterranean Basin, it's a goatscape, and the destruction of their forests and the looting of their natural resources make it very unlikely that a major power will ever appear there again.

When did this occur?

Over a long period going all the way back to the Egyptians. There is a controversial book by Donald Hughes that outlines many of the arguments.

What could Stanford students do tomorrow that would make you most happy and hopeful?

Get organized full scale to beat Ronald Reagan in the next election. Don't wait until a couple months before the election of 1984. There are all sorts of issues, but when you've got a government that is absolutely dedicated to the destruction of environment, and to fooling around with nuclear war, then all the rest of it must take a back seat. This is the leverage point right now, much better than eating less beef or driving a less gas consumptive car.

The thing that's such a shame is that so much progress was made with the establishment of the EPA, and with the National Environmental Protection Act, and the Clean Air Acts; environmental concerns were institutionalized. The USA was moving in the right direction on population growth and giving people control of their reproduction. Now we have an administration that's trying to turn back the clock. And so rather than worry about the relatively parochial concerns, we've got to elect a government that is at least not outright dedicated to the destruction of the country for fast profits. And I would hope that Earth Day and Earth Week this year would be thought of as the launching of a political campaign to rid us of the worst problem this nation has ever faced.

The people in the Reagan administration see themselves as doing the exact opposite, don't they?

Oh I'm sure they do. Nobody sees themselves as a bunch of greedy, ignorant fools. I am certain that inside their heads, they have nothing but the best of motives. Who ever tries to destroy the world saying "I'm evil and I'm going to destroy the world?" They all think they're doing good. Ronald Reagan is probably a very nice fellow. That doesn't make any difference; what he is doing is evil.



I'm thinking of World War II. It was an example of what America can do when the task is clear. You make it sound as if this is a much more dangerous time in our history, and yet it is as if we couldn't agree on whether Japan had bombed us or not, or whether Germany really existed.

That's a good analogy. The trouble with the population, resource, and environmental crisis, is that has developed relatively slowly. And human beings did not evolve the cultural capacity to deal with crises that appear gradually, because over the millions of years of our history, most environmental changes were slow enough that we could adapt genetically. Human nervous systems are good at responding to sudden crises, like a cave bear appearing back at the door of the cave, but they are not good at responding to things like climatic change or the problems caused by gradual changes in technology. When gradual crises do occur, they tend to cause considerable dislocations, as the agricultural revolution did.

In the past, humanity did not have the power to destroy the entire world in the course of a cultural or historical convulsion. In the past when these convulsions have occurred, individual societies have broken down, there have been colossal wars, and so on. But these have been localized. For the first time now, the entire species has basically a single global culture and economy, and it's being screwed up. So when this one

collapses, the results are going to be enormously more catastrophic than those of past collapses.

You've got to remember, I lived through the Second World War, and it was a horrifying thing, but it's absolute peanuts compared to what a nuclear war would be. The only debate I know among scientists studying the effects of an all-out nuclear war is "would there be any significant survivorship in the Southern Hemisphere?" At the moment no knowledgeable person questions that civilization in the Northern Hemisphere would be destroyed.

**Environmental issues are really much more critical for people in minority groups, because they're the ones who are forced, for instance, to live down wind of the power plants while the rich wind up getting most of the power.**

You and others have warned us about what population growth, environmental destruction and nuclear weapons portend. I'm thinking of World War II again. There were Jews in Northern Europe who eventually died in concentration camps who had been warned about what was going to happen to them, but they risked that the warnings were untrue rather than disrupt their lives in trying to escape. How much have you disrupted your life to deal with what you see?

To the extent of putting about half of my time into this sort of policy issue when my real interest is doing biological research. For example, this year I've put a great deal of time into studying the effects of thermonuclear war on ecosystems. That's about as interesting to a biologist as studying the effects of putting a double barreled shotgun in your mouth and pulling the trigger would be to a physician. It is an issue of almost zero interest for basic ecology, and yet it turns out to be something from an educational point of view that we've got to do.

I have disrupted my life by having one child when I might have preferred more. But I have not moved to New Zealand or Australia because I don't think it would do any good. But I would if I did. Everybody ought to tithe to society — put 10 percent of their time into trying to improve it. This year their tithe should go into trying to prevent nuclear war, because any other social issue that you're concerned with becomes moot if we blow up the Northern Hemisphere.

An ecologist, Aldo Leopold, said that to "receive an ecological education is to live alone in a world of wounds." How much does the picture of the world that you see get to you?

Well, first of all, I don't have to live alone in a world of wounds because I've got 20 or so colleagues here in the population biology group who, to a very large degree, share my perception of it. But it still — it doesn't bother me continuously, I can shut it out — but it is disturbing to realize that I have seen an enormous deterioration of the planet in my lifetime, and that my daughter and people of your generation are inheriting a very badly messed up and increasingly dangerous planet, and that's very very sad. But, I don't run around in a constant depression. As long as there is wine and women and an occasional song, you can live with it.

Besides these, along what avenues can we gather up hope for the future of human experience?

Well I think there is enormous potential for turning things around. Most demographers thought 15 years ago that it was impossible to get the reproductive rate in the U.S. to replacement level until after the year 2000; it happened in the early 1970s. There's no reason at all why the economic system couldn't be turned around extremely rapidly, or why we couldn't change the ways we treat each other — getting rid of racism, and other forms of chauvinism — and get together and solve these problems. The challenge that faces humanity today is a very interesting one; we are either going to change our behavior or we're going to go down the tubes. And the people who are raving on about how many more people we can have, and how we can make copper out of other metals, and so on, are simply saying, "don't change your ways, go down the tubes," and if nothing else, it's interesting. But it is at least conceivable that we could finally make the changes that need to be made in the way we deal with our environment, and in the way we deal with one another. It's not very likely. In summary, I am extremely optimistic about what we could do, I am extremely pessimistic about what we will do.

Dr. Ehrlich will be speaking in Kresge Auditorium, 7:30 p.m., April 7, on "Thoughts for the design of a sane world."