

Rachel's Environment & Health News

#548 - Origins of Environmental Ideas

May 27, 1997

Where did the grass-roots environmental movement come from? Most people would say it began with action by citizens in the late 1970s and early 1980s --and of course they would be partly right. But the world was prepared for grass-roots environmentalism because of certain IDEAS, and to a surprising degree those ideas originated with one person --a scientist in St. Louis, Missouri, named Barry Commoner.

Commoner was born May 28, 1917, in Brooklyn, N.Y., the son of a Russian immigrant tailor. In 1933 he entered Columbia University, then Harvard, earning a Ph.D. in cellular biology in 1941. During World War II he served in the Naval Air Force. In 1947 he took a faculty position with Washington University in St. Louis where he soon distinguished himself as an exceptionally creative and insightful researcher, studying viruses and elusive "free radicals" in living tissues.

Commoner continued to publish work on proteins and free radicals for 20 years, but in the early 1950s, something happened that caught his attention and turned his interest to larger questions. On the morning of April 25th, 1953, a nuclear bomb was exploded at the Nevada Test Site. Thirty-six hours later, an intense rain storm occurred in the city of Troy, New York, 2300 miles distant from the Nevada Test Site, and radiation counters at Rensselaer Polytechnic Institute (RPI) began recording atomic fallout three times as high as natural background radiation.[1] Radioactive debris falling out onto Troy became an important news event and suddenly the public began to understand that you didn't have to live near the Nevada Test Site to get yourself irradiated by atomic bomb tests.

That event started Barry Commoner thinking in a new direction --a direction that would eventually lead to the present grass-roots environmental movement.

When Commoner tried to learn more about atomic fallout in 1953, he found that much of the information was secret --classified so by the U.S. government. This made it impossible for academic scientists to examine the data --a violation of the principles of science.

As Commoner expressed it, science can only work when scientists can communicate freely their data and their interpretations of the data. "We need to recall," he wrote in SCIENCE magazine in 1958, "that the development of a scientific truth is a direct outcome of the degree of communication which normally exists in science. As individuals, scientists are no less fallible than any other reasonably cautious people. What we call a scientific truth emerges from investigators' insistence on free publication of their own observations. This permits the rest of the scientific community to check the data and evaluate the interpretations, so that eventually a commonly held body of facts and ideas comes into being. Any failure to communicate information to the entire scientific community hampers the attainment of a common understanding." [2] The heart of science is open communication, so secrecy --whether imposed by government or by private corporations --is antithetical to science.

Commoner restated many times his view that the scientific method rests squarely on open communication: "Scientists are, individually, no more truthful than anyone else. Nevertheless, science IS a way of getting at the truth, and scientists --most of them --practice their craft in truthful ways. Why? The reason is that science gets at the truth through open discourse. Scientists learn how to practice science truthfully by making their mistakes in public. This permits their colleagues to correct mistaken information and modify faulty conclusions. This is the meaning of open publication of scientific results; it is the essential way in which science approaches the truth." [3]

The issue of atomic fallout occupied Commoner for a dozen years. While studying it, he derived many of the principles of environmental protection that now form the unspoken basis for

grass-roots environmentalism.

For example, he clearly established the principle that, in a democracy, scientists have no more right to make decisions than anyone else. Today grass-roots activists might express this as "It's your world. Don't leave it to the experts." Commoner said the same thing 40 years ago: decisions with major social consequences must not be left to experts. On the contrary, Commoner said, experts have an obligation to inform the public about the scientific facts and then let the public decide:

"Anyone who attempts to determine whether or not the biological hazards of world-wide fallout can be justified by necessity must somehow weigh a number of human lives against deliberate action to achieve a desired military or political advantage. Such decisions have been made before-- for example, by military commanders--but never in the history of humanity has such a judgment involved literally every individual now living and expected for some generations to live on the earth." [2]

He went on to ask, who should make such judgments, which require a determination of the value of human life: scientific experts or elected political representatives? [2]

Commoner pointed out that scientists have no special competence in matters of moral judgment. Further, he said "scientists must take pains to disclaim any special moral wisdom" on the issue of continued above-ground nuclear testing. Scientists should speak on the issue, if they have relevant information to convey, but their expertise does not confer upon them any special capacity to draw moral conclusions from their data. When it comes to balancing citizens' lives against military goals, a scientist is just one more citizen making a moral judgment -- his or her scientific expertise does not enter into the moral equation.

He said, "[W]e must not allow this issue [nuclear testing], by default, to rest in the hands of the scientists alone. A question of this gravity cannot be handed over for decision to any group less inclusive than our entire citizenry." [2]

Indeed, it is "self-evident," Commoner argued in 1958, that "the public must be given enough information about the need for testing and the hazards of fallout to permit every citizen to decide for himself whether nuclear tests should go on or be stopped." [2]

Commoner put his ideas into practice: he helped organize scientists and citizens into the St. Louis Committee for Nuclear Information (CNI). They started a newsletter called NUCLEAR INFORMATION, which evolved into a magazine with the important (and telling) title, SCIENTIST AND CITIZEN.

Commoner, and his fellow scientists at CNI in St. Louis, formed a working alliance with many local citizens. Commoner's work studying atomic fallout had convinced him that fallout represented a biological hazard to humans. However, the U.S. government insisted that fallout was benign. For example, President Eisenhower in 1956 said, "The continuance of the present rate of H-bomb testing[,] by the most sober and responsible scientific judgment... does not imperil the health of humanity." [4]

The Committee for Nuclear Information began collecting baby teeth and sending them to a lab for analysis of radioactivity. The goal was to show that strontium-90, one of the main components of fallout from A-bomb testing, was building up in humans. They succeeded. Eight years later, the official U.S. position on atomic fallout had changed completely. In a televised address, in 1964, President Johnson said, "The deadly products of atomic explosions were poisoning our soil and our food and the milk our children drank and the air we all breathe.... Radioactive poisons were beginning to threaten the safety of people throughout the world. They were a growing menace to the health of every unborn child." [4] In fact in 1963, President Kennedy had signed an

international treaty phasing out above-ground testing of nuclear weapons. It was a triumph of citizen action, with scientists helping bring critical facts to light.

Commoner often acknowledged the important role of an active citizenry: "Nor is the collaboration between scientist and citizen a one-way street. Citizens have contributed significantly to what scientists now know about fallout. Through the St. Louis Baby Tooth Survey, the children of that city have contributed, as of now, some 150,000 teeth to the cause of scientific knowledge about fallout.... By such means, and through hard work and financial support many citizens have become partners in the scientific effort to elucidate the fallout problem." [5]

From this story, we can learn that Commoner pioneered another aspect of modern thinking about the environment. He did not call for less atomic testing. He called for an END to atomic testing. His training as a biologist convinced him that human intrusions into the global biosphere would have unsuspected consequences:

"Moreover, whenever the biological system exposed to a possibly toxic agent is very large and complex, the probability that any increase in contamination will lead to a new point of attack somewhere in this intricate system cannot be ignored. Finally, the toxic effects of many organic pollutants, like those of radiation, may appear only after a delay of many years. For these reasons, it is prudent to regard any addition of a potentially toxic substance to the biosphere as capable of producing a total biological effect which is roughly proportional to its concentration in the biosphere," he wrote. [5]

Thus the only way to prevent environmental damage from toxics would be to exclude them from the environment completely. Today we call it POLLUTION PREVENTION. Barry Commoner argued for it, and provided the rationale for it, nearly 40 years ago.

Discussing the role of scientists in controversies involving nuclear fallout, nuclear war, or "environmental contamination in general," a committee chaired by Barry Commoner wrote in 1965, "In a number of instances, individual scientists, independent scientific committees, and scientific advisory groups to the government have stated that a particular hazard is 'negligible,' or 'acceptable' or 'unacceptable'-- without making it clear that the conclusion is NOT A SCIENTIFIC CONCLUSION, BUT A SOCIAL JUDGMENT. [Substitute the word 'risk' for 'hazard' in that last sentence and notice the modern ring that it takes on.--P.M.] Nevertheless, it is natural that the public should assume that such pronouncements are scientific conclusions. Since such conclusions, put forward by individual scientists, or by groups of scientists, are often contradictory, a question which commonly arises among the public is, 'How do we know which scientists are telling the truth?' [6]

Thus in 1965 Commoner and his colleagues warned us that risk assessments are political in nature, not merely scientific, and that many scientists overstep the bounds of scientific legitimacy and try to impose their (or their employer's) political decisions and views upon the public, using science as a screen.

These ideas seem entirely modern and universal because they are deeply held today (based on experience) by grass-roots environmentalists everywhere. But really these ideas only sound modern and universal. They are at least 35 years old, and they came to us through the hard work of one man of extraordinary vision --Barry Commoner.

--Peter Montague (National Writers Union, UAW Local 1981/AFL-CIO)

=====

[1] Herbert M. Clark, "The Occurrence of Unusually High-Level Radioactive Rainout in the Area of Troy, N.Y.," SCIENCE Vol. 119 (May 7, 1954), pgs. 619-622.

[2] Barry Commoner, "The Fallout Problem," SCIENCE Vol. 127, No. 3305 (May 2, 1958), pgs. 1023-1026.

[3] Barry Commoner, "Toward a Humane Science" Reed College SALLYPORT (August, 1970), pg. 7.

[4] Quoted in Barry Commoner, "The Myth of Omnipotence," ENVIRONMENT Vol. 11, No. 2 (March 1969), pgs. 8-13, 26-28.

[5] Barry Commoner, "Fallout and Water Pollution--Parallel Cases," SCIENTIST AND CITIZEN Vol. 7, No. 2 (December 1964), pgs. 2-7.

[6] AAAS Committee on Science in the Promotion of Human Welfare, "The Integrity of Science" AMERICAN SCIENTIST Vol. 53 (1965), pgs. 174-198.

Descriptor terms: barry commoner; risk assessment; nuclear war; fallout; radiation; strontium 90; troy, ny; science; pollution prevention; risk assessment; history of environmentalism;