

# Is the energy debate really about energy?

by B. Wolfe\*

In 1981 nuclear power provided over 8% of the world's electricity. The dream of the early atomic workers of beating swords into plowshares and providing mankind with an abundant new source of energy has apparently reached practicality when the welfare of the world may depend upon it. But in many places the deployment of nuclear power is being held up as its merits and risks are heatedly debated.

I am not convinced that these public debates illuminate the central issues.

In my country, the United States, the debates frequently revolve around a meaningless question: "Is nuclear power perfect?" They tend to gloss over the more difficult but vital questions about the world we want for the future, and the risks and uncertainties of all the various energy alternatives in meeting the needs of that world. These debates also tend to obscure the underlying philosophical motivations which shape the arguments of the leading participants.

Consider briefly, for example, the subject of the health effects of low-level radiation. The air we breathe, the food we eat, and the ground we walk on, are all naturally radioactive. Each of us is exposed by nature to a yearly background radiation dose of about 100 millirem. Moving from a wooden to a brick house would add some 10 millirem more, and moving a hundred feet further up a hill would add another millirem. The normal operation of a thousand nuclear plants and associated facilities would also add an additional millirem or so. It is known that an exposure a thousand times higher than background (100 000 millirem) produces detrimental health effects, but at natural background levels there is as much evidence of beneficial as there is of detrimental effects<sup>+</sup>. It is doubtful that we will ever know whether background

radiation levels produce any significant health effects because the variable risks of normal living are so much greater.

And yet today, not only the media but regulatory judges ponder this matter as though television interviews and learned legal arguments will reveal what nature refuses to disclose — even under subpoena.

The problem is that low-level radiation involves effects so small that its significance cannot be measured or determined. Thus, public statements about low-level radiation represent judgements which can be coloured, indeed determined, by philosophical considerations about the role of nuclear energy in society: considerations having nothing to do with the specific technical subject under discussion. In many cases public discussions of low-level radiation effects, although presented as technical issues, seem instead to be attempts to influence the public on societal issues which have nothing to do with radiation. How else does one explain the fruitless arguments which have been raised as to whether an added yearly millirem of radiation exposure from long-lived reactor fission products will affect human beings five thousand years in the future; or, alternatively, whether nuclear power will cleanse the earth of long-lived radioactive uranium decay products and save lives one hundred thousand years from now? More serious, how can one explain the purposeful generation of fear about the venting of gases from the Three Mile Island reactor-building when the resulting radiation exposure to nearby residents was the equivalent of that received from a vacation in the mountains; and when the primary risk is from delays in clean-up of the stricken reactor? [1]

The difficulty with much of the energy debate is that it focuses on technical issues, such as radiation effects, framed so that the central underlying philosophical questions are obscured.

## The morality of eating pork

People's concerns about off-shore oil leaks, the hazards of liquid natural gas, the dangers of natural gas pipelines, western coal-mining, nuclear waste disposal, environmental effects of shale oil, high-voltage transmission line effects, and the role of solar power, lead nowhere when, as is frequently the case, they are considered in isolation. The risks associated with each of these activities can be painted on colours of fear and emotion; they can be meaningfully discussed only in terms of the alternative risks from other energy sources, or from lack of energy. The question is not whether off-shore oil drilling can

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<sup>+</sup> Statistical studies indicate that residents of high-radiation background areas of the USA have lower cancer rates than those living in low-radiation areas. Animals subjected to low levels of radiation in experiments frequently live longer than control animals not subjected to the extra radiation. Whether such effects can be attributed directly to radiation is not clear. The general rule of prudence is to avoid unnecessary radiation exposure; but under the circumstances my rule of common sense is not to change one's mode of living to reduce exposures by the equivalent of natural background.

produce oil leaks, but rather, what means are to be used to meet the energy needs of the future, and what kind of society will result.

Someone who believes that the future welfare of society is dependent on new domestic energy supplies will see large advantages to the development of nuclear power, off-shore oil resources, and new sources of coal, even at some risk and inconvenience. Those who believe that society suffers because we already use too much energy will not accept even minimal risk or inconvenience in order to supply more energy. A public discussion of energy development between groups with these opposing views is like a discussion of pork processing among farmers, meat processors, and orthodox Jews and Muslims. One may talk about humane slaughtering techniques, but the underlying issue is whether or not pork should be eaten.

Contrary to most public perception, the basic disagreement over nuclear waste disposal is not over the risk, but rather over the benefits. A key benefit of a publicly acceptable waste-disposal arrangement is to remove an impediment to expanded use of nuclear power. Thus, we find the nuclear advocates pressing for an early demonstration of a waste repository, and the anti-nuclear forces arguing against even a demonstration with a few hundred spent-fuel bundles in a military facility.

Most anti-nuclear groups are opposed to spent-fuel reprocessing, construction of spent-fuel storage facilities, and early waste repository construction. At the same time, these groups argue that nuclear power should not be permitted unless means are available to accommodate the spent fuel. The issue may be couched in technical terms of "spent-fuel disposition", but in fact it is an argument over the morality of eating pork.

While an NRC\* Commissioner, Dr Richard T. Kennedy observed [2]: "Today a number of dedicated and sincere individuals believe that nuclear power should be abandoned. They are not just attempting to make nuclear power safer, not just seeking greater public oversight, not trying to keep nuclear plants at a distance. Instead, much of the opposition to nuclear power arises from what is a basic social view that the country's energy future should not be based on a technology as complex as nuclear power. The issue focuses more and more on the question of 'growth versus non-growth'. I am not suggesting that to espouse and argue vigorously such views on this important matter of public policy is inappropriate. My problem is with the role that a regulatory body should play in response to this kind of contention."

### Is there an acceptable alternative to nuclear?

The anti-nuclear groups ask not for safer nukes, not for more reliable nukes, not for more economic nukes — but only for *no nukes*. But if there are to be no nukes, what will there be?

The major 'No-Nukes' organizations also oppose coal development, shale-oil development, liquid natural gas facilities, additional hydroelectric facilities, and off-shore oil development. In the past they opposed exploitation of the present Alaskan oil fields and today they oppose exploration for new Alaskan oil.

When the California State Hearings on the Sundesert nuclear plant were held, the Natural Resources Defense Council (NRDC) argued, among other things, that a coal plant should be considered instead of a nuclear plant. But, after the Sundesert nuclear plant was cancelled and California Assemblyman Victor Calvo proposed legislation to ease coal-plant siting, the NRDC wrote to Calvo. After describing a litany of concerns about coal, the NRDC concluded: "Coal is not a particularly desirable supply source from an environmental perspective, and we advocate that its use be minimized to the fullest extent possible" [3].

There is no argument about the desirability of developing renewable solar resources. Almost everyone, including myself and my company, advocates their development. But, as the reader can verify by getting an estimate from a local solar contractor, even the simplest solar technology, solar heating, is not yet here. Wind-mills are still losing their blades in high winds, and it is not clear whether large-scale biomass conversion is practical, or even a net energy producer.

### Energy as instrument of social change

The argument on solar goes much deeper: for on close examination, one will find that those who advocate the near-term conversion to a solar-energy economy coupled with the abandonment of presently available energy sources, are in fact proposing to change society — without explicitly indicating their intent.

Edward Nichols, Associate Editor of the San Diego Union newspaper, began his report of a major solar conference (over 1000 delegates) in these words [4]:

"It's possible to use sun power to heat your bath-water without subscribing to the whole granola ethic, the Washington Post concluded recently.

"It is, and many do. However, it also is true that most of those out in front of the organized movement for solar energy believe otherwise. They know that solar energy has a large role to play in America's energy future, but they also believe that they can substantially restructure American society through the medium of sunlight.

"Their goals were starkly outlined recently at the Second Annual Citizens' Solar Energy Conference at the University of Colorado at Boulder. As reflected in speeches and resolutions, the goal of the social reformers organized around the solar lobbies roughly is to: force utility companies to finance their own extinction; use an excess profits tax on big oil companies to finance their energy competitors so they,

\* US Nuclear Regulatory Commission.

too, become dodo birds when the oil age is over; eliminate all nuclear power; reduce the production and distribution of energy to the lowest possible denominator — to local energy communes if possible; have 'renewable resources' the main source of energy in the United States."

Clearly, solving the technical problem of producing economic solar energy is only a minor goal of much of the solar lobby.

### Three themes

It is not possible to characterize en masse the various No-Nukes, but there appear to be three major recurring themes in their energy discussions.

- The first is a general distrust of a society with abundant energy supplies. We find Stanford University Professor Paul Ehrlich, an anti-nuclear environmental spokesman, stating: "In fact, giving society cheap abundant energy at this point would be the equivalent of giving an idiot child a machine gun" [5]. Amory Lovins of Friends of the Earth puts it this way: "If you ask me, it'd be a little short of disastrous for us to discover a source of clean, cheap, abundant energy because of what we would do with it. We ought to be looking for energy sources that are adequate for our needs, but that won't give us the excesses of concentrated energy with which we could do mischief to the earth or to each other" [6].

Consistent with this view is the position that any risk, inconvenience, or compromise is too high a price to pay for energy which, in any event, is apt to do harm. In February 1979, in a speech given in Charleston, South Carolina, the United States Interior Department's solicitor, Leo Krulitz, pleaded with environmental groups: "All we ask is your co-operation as we balance environmental concerns against the need to tap the vast potential of the US Outer Continental Shelf to meet our critical energy problems". The response from attorney Bruce Terris, who frequently represents the No-Nukes organizations, was that balance "involves compromising and sacrificing. That's their role. Our role is not to balance. Our role is to assert that the law be carried out" [7]. What this means, in fact, is continued opposition, and costly delays due to endless litigation. Krulitz indicates that this litigation is the "biggest threat to the administration's outer continental shelf programme" for development of new oil and gas supplies. The opposition still continues.

- A second theme is that society should be forced to alter and re-orient itself to minimize energy use. Higher energy prices through resource severance taxes; onerous financial penalties to those deemed to use too much energy; the requirements that more expensive, but more energy-efficient, appliances be utilized; the elimination of free workplace parking; mandatory indoor summer and winter temperature limits; the control of

household appliances from remote switching stations; a change by part of the population to night-time living activities through imposed time-of-day utility rates; and the expanded use of manual labour; are some of the vehicles proposed to achieve this goal — in addition to constraining supply by opposing the construction of new facilities.

- A third theme is a general dissatisfaction with the present social and economic structure of society and the suggestion that energy should be used as a means for societal change not directly connected with energy.

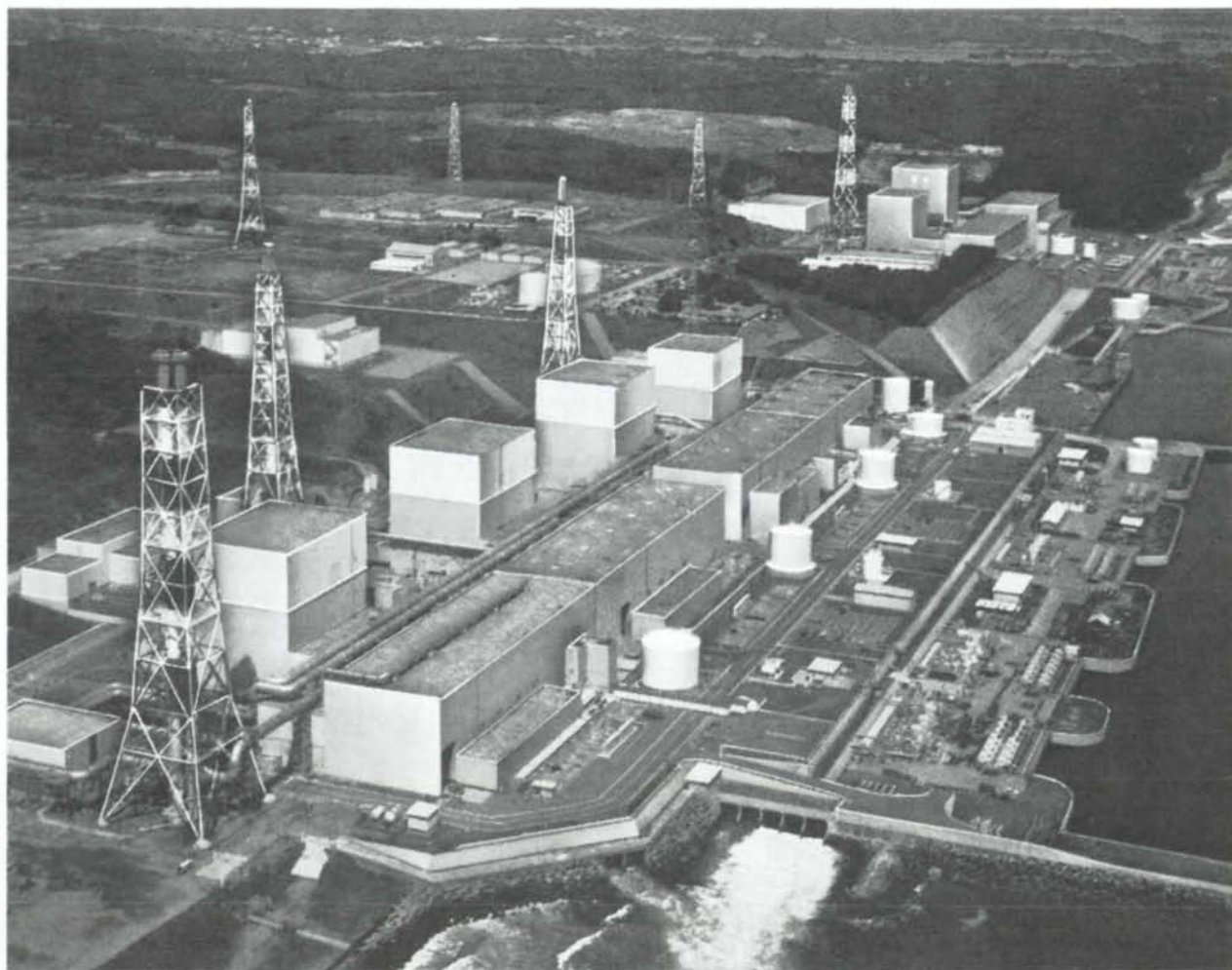
Barry Commoner at a major anti-nuclear rally at the Battery in New York City on 23 September 1979 hardly spoke about nuclear power in his talk: "Well, here we are — all 200 000 of us. Why? Who owns the air? Who owns the water? Who owns the earth? Who owns the sun? You know the right answer — we do, the people of the United States. But who controls our resources? The electric utilities, the oil companies — they decide whether we get radiation with our power. They decide whether we get carcinogens in our food. Who owns America? For whose benefit is this country run? For people or profits? Where can we find the political power? I'll tell you where. Right here — here are the anti-nuclear alliances, the Shads, the Clams, the Catfish, the Abalones that are forcing the nuclear industry to its knees. We stand for stopping nuclear power now! We stand for solar energy now! We stand for rolling back the prices of fuel, the public control of the oil companies, for running this country in the interest of the citizens, not in the interest of profits. Now we can begin the battle to return to the citizens of this country the power that is rightfully theirs — to govern our own resources, our own lives, our own country."

Barry Commoner proposes to move away from capitalism; Ralph Nader advocates a "consumer-controlled" economy; the Friends of the Earth argue for a steady-state economy of a form hardly recognizable from present-day America; and Jane Fonda and Tom Hayden tell us that "the stink in our midst is called Corporate Capitalism", and that the answer is solar power in a new economic system of public planning and public control called "economic democracy" [8]. The goal is to change society, although the changes sought are not always consistent among the various anti-nuclear forces.

### More energy will be needed

As with the No-Nukes, it is not possible to categorize all the nuclear advocates under one banner. But, in general, those in favour of nuclear power are in favour of development of other available energy sources such as coal and off-shore oil, and also in favour of the development of the sources for the future such as solar and fusion energy. The energy problem in the USA is described in terms of diminishing supplies of domestic oil and gas and consequent over-dependence on imported supplies whose long-term dependence is questionable.





The debate about nuclear power may be conducted in technical terms. It ought to be seen more like an argument over the morality of eating pork.

The proposed solution is not to force a change in society, but to minimize forced changes by providing alternative energy supplies.

Philosophically, most nuclear advocates believe that abundant energy is a key element of a productive and stable society. They point to the close correlation between energy and employment, and between energy and Gross National Product. And they point to the almost universal, worldwide correlation between per caput purchasing power and per caput energy use.

Although the increasing affluence of the United States has not been without its problems, the pro-energy advocates point out that accompanying this affluence have been beneficial societal effects. Discriminatory actions against Jews, Orientals, and other minorities have greatly diminished. Blacks and women have started to emerge from economic serfdom. Nuclear advocates believe that to accomplish such goals as further improving the living conditions of the disadvantaged and cleaning up the cities, additional energy supplies will be required. To Amory Lovins' question about US energy use: "Would it be so terrible to live on half our per capita energy

usage as we did in 1960?" the nuclear advocates reply that in 1960 the US had twice as many people living in poverty as it does today.

Fundamentally, pro-energy groups argue that as world petroleum supplies diminish, the expanded use of nuclear energy and other energy sources will help prevent forced changes in society and will provide a means for worldwide improvement in living conditions. They note that, with increasing affluence and accompanying energy consumption, birth rates voluntarily decline. Pro-energy groups argue that there is little hope of improving the lot of humanity without the energy supplies central to improved standards of living. They thus believe that some risk and inconvenience should be accepted to obtain these supplies.

The foregoing discussion is not intended to suggest that the energy dilemma is devoid of significant technical, economic, and environmental issues. It is misleading, for example, to gloss over difficulties in the areas of nuclear wastes, nuclear proliferation, reactor safety analysis, and reactor economics on the basis that nuclear power is needed, whatever its failings. But, public dis-

cussions of such difficulties can also be misleading when they start from the philosophic base described, for instance, by Lovins and Ehrlich: that nuclear power would still be unacceptable even if all of its technical, social and economic problems were solved [9, 10].

One must differentiate between the identification of a technical difficulty and the suggested conclusion which may result more from philosophical desires than from technical considerations. For example, the permanent disposal of high-level nuclear waste in the USA can by law only be done by the Federal Government. Does it follow that because the US Government has not yet built a nuclear waste repository, nuclear waste is unmanageable and that nuclear power should be abandoned? Or, does it follow instead, that the government's programme should be strengthened, and impediments removed, so as to speed up the construction of a waste repository? If nuclear power is abandoned in favour of, say coal, will the wastes from coal present a lesser problem? And, if it is concluded that coal is not satisfactory, or that coal cannot make up the deficit from the abandonment of nuclear power, will it be easier to deal with lack of energy than with nuclear wastes?

### Does nuclear power make war less likely?

Would the threat of a nuclear war be diminished if nuclear power were abolished; or would it be increased?

Peaceful nuclear power, like peaceful chemical research, provides technology and perhaps materials which could be used for military purposes. But Sigvard Eklund, former Director General of the International Atomic Energy Agency, has indicated that it was the close international co-operation in the development of peaceful nuclear power which led over 100 nations to foreswear nuclear weaponry by signing the Non-Proliferation Treaty [11]. Indeed, President Eisenhower's 1954 *Atoms for Peace* Plan, which traded the promise of nuclear weapons forbearance for US co-operation and leadership in the development of peaceful nuclear power, was a response to his concern that nuclear weapons technology would soon spread to other nations, "perhaps all others". Would the world be safer today in an environment like 1954 when there was no nuclear commerce, but the nuclear technology programme of all nations took place independently and secretly? Would the world be safer without nuclear power's spread of technology; or would it be less safe without nuclear's vast energy potential, when the competition for diminishing oil supplies is the prime risk for future use of nuclear weapons by the major powers?

### There is no perfect energy source

These are not questions that are simply answered. As with most serious problems in life, one must deal with alternatives and balance the risks, benefits and uncertainties of each. Unfortunately, such balanced considerations are rare. Instead, public regulatory proceedings and public discussions tend to focus without perspective on the detailed risks and inconveniences of each proposed energy project and energy source. But the alternative to our imperfect energy sources is not a perfect source; there is none available. If we continue to place impediments in the way of development of available energy sources, the alternative we will have chosen is a changed society, and a changed world order, limited by energy supply constraints.

This type of society has been described longingly by Friends of the Earth as a society of "elegant frugality". But if it comes to pass, will we agree with this characterization or will we find it one of too much frugality and not enough elegance? And will we be happy with the way the frugality is shared? More important, if it comes to pass, will it be a path that was chosen with a clear understanding of its risks and inconveniences?

### References

- [1] See e.g. the Atomic Industrial Forum report on a speech by Professor Michio Kaku at a Mobilization for Survival National Conference in Pittsburgh, PA, on 31 January 1981. Professor Kaku, one of the editors of the book from which this article was derived, stated: "We must not allow Metropolitan Edison to dump their poison into the river. We will keep them tied up in the courts; we will battle them in the streets"; "We tie them up, we bankrupt them, it's simple. And when they go down, so goes the industry".
- [2] **Richard T. Kennedy** *The Energy Crisis and Nuclear Regulation* Kansas City Rotary Club, Kansas City, Missouri, 6 April (1978).
- [3] **Laura B. King, Terry R. Lash** Natural Resources Defense Council letter to California Assembly-man Victor Calvo, 2 May (1978).
- [4] **Edward Nichols** *Solar talk tuned to redesigning US society* San Diego Union (9 September 1979) p. C-1.
- [5] **Paul R. Ehrlich** *Machine guns and idiot children* Not Man Apart, Volume 5, No.18, (Mid-September 1975).
- [6] **Amory Lovins** Plowboy Interview, the Mother Earth, (Nov/Dec 1977) p.22.
- [7] Reported in *Energy Daily*, Volume 6, No.61, (29 March 1978).
- [8] **Tom Hayden, Jane Fonda, Ron Dellums, Cesar Chavez** *A Fable* Undated publication of the California campaign for economic democracy, Los Angeles, California (1978).
- [9] **Paul R. Ehrlich** — Ibid.
- [10] **Amory Lovins** *Soft Energy Paths* Ballinger Pub. Co., Cambridge, Mass. (1977) p.56.
- [11] **Sigvard Eklund** Talk at the 20th Annual Meeting of the Institute of Nuclear Materials Management, Albuquerque, New Mexico, USA (16 July 1979).