

POLITICS OF ALTERNATIVE ENERGY 1

Is Alternative Technology Enough?

AMORY LOVINS - The Line Not Taken

When Amory Lovins' paper, *Energy Strategy: The Road not Taken?* was published last December in FOE International's periodical *Not Man Apart*, the editorial heralded it as "one of the most important things we have published, in *Not Man Apart* or anywhere else". In this paper Lovins sketches a soft energy path for the USA, involving no nuclear power, and total reliance on renewable sources of energy by the year 2025. In the following review, Brian Martin of FOE Canberra argues that while Lovins has admirably articulated the technological

options facing us, he has ignored the politics of alternative energy strategies. Lovins is concerned with a soft energy future without major political and economic change. Martin urges that the technological goal of a society powered by renewable energy sources should be integrated right from the start with wider social and political aims.

In the concluding section of this article, Amory Lovins forcefully replies to Brian Martin's criticisms.



Illustration by Michael Vele

Amory Lovins' article, "*Energy Strategy: The Road Not Taken?*" is a well-documented and eloquent argument in favour of soft energy paths. Lovins considers first 'hard' energy paths, based on expanding energy consumption from coal, oil and nuclear sources, all based on high technology and centralised distribution. This path is 'hard' also in the sense of difficult, argues Lovins, mainly due to enormous capital requirements. Lovins then considers 'soft' energy paths, based on renewable energy sources, and diverse and accessible technologies suited for particular needs at the local level.

Lovins' study is an extremely valuable one to environmentalists, both in bringing together so much evidence and in coherently highlighting the alternatives before us. But for those who are interested in more than just the physical environment — who are concerned about equality, social justice, and a greater ability by individuals to decide and control their own lives — Lovins' perspective must not be accepted uncritically. What I suggest here is that Lovins, while admirably presenting the technological and economic side of the argument, leaves out many of the political dimensions of energy strategy. These political aspects must be tackled by politically conscious environmentalists.

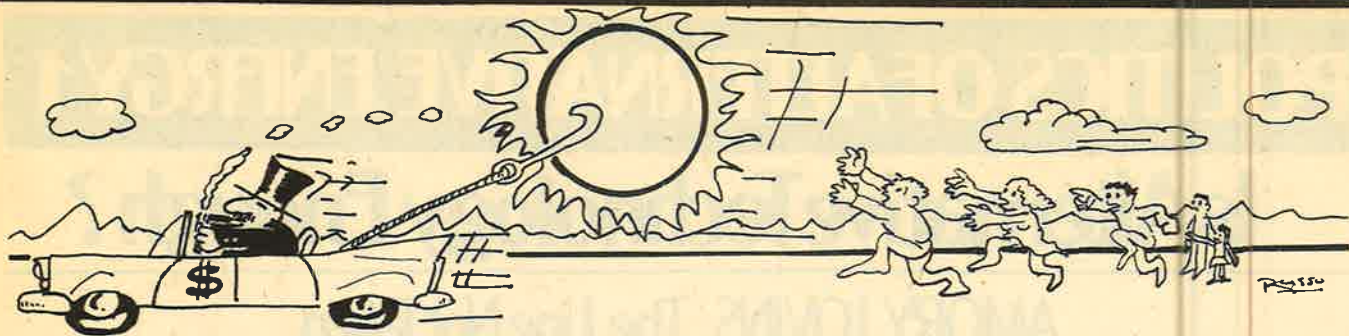
What I propose to do here is consider the political origins of the choice of technologies, and then analyse the social and political implications of various components of a soft energy strategy. With this political background, it will be easier then to evaluate the political dimensions of Lovins' perspective.

The political roots of technological choice

It is becoming increasingly accepted that the reasons for the development, choice, and promotion of a particular form of technology are as much political and social as they are technological and economic.² Particular technologies tend to lead to particular types of social and political change, such as fostering equality or inequality. Therefore, technologies are selected in large part because they serve the social, political, and economic goals of those who promote them. And because it is powerful groups in society who have the greatest control over technological innovation, the goals shaping the choice of technologies are such things as fragmentation and powerlessness of the labour force, maximisation of profits and bureaucratic growth, and ideological justification for inequalities in wealth and in decision-making power.

For example, nuclear power is an appropriate way to produce energy if it is also important to maintain centralised control over investment and production, keep decisions in the hands of experts and their employers, and maintain a habit of passive consumerism in the populace. On the other hand, research and implementation of technologies for local collection and use of solar energy has been neglected for years in large part because these technologies cannot easily be placed under monopoly control, and hence are unattractive to energy utilities.

Lovins has spelt out many of the technological and economic problems associated with high technologies. There is also an increasingly militant citizen opposition to these technologies, based in part on high costs, environmental effects, the risks of major breakdowns, and



ultimately on lack of control over developments. But a soft energy path which included widespread adoption of locally controlled technologies would pose real dangers to existing political and economic structures. People might be encouraged to take control over their lives in many ways: working conditions, education, health, and perhaps eventually choice of goods produced and control of production itself.

From the point of view of existing political and economic structures, there seems then to be a difficult choice: either a hard energy path beset by technological and economic difficulties and rising public discontent and opposition, or a soft energy path creating the conditions for a major challenge to the current political and economic structures. But this choice is falsely posed, because particular technologies do not *necessarily* lead to particular types of social and political change. That is, while particular technologies *lend* themselves to particular social and political structures, the connection is not automatic. For example, local production of solar heaters is easier than local production of nuclear reactors; but adoption of solar heaters does not necessarily lead to local production: centralised production would still be possible. Similarly, economic equality will be *easier* to achieve in a society with universal public transport, but equality is not *necessarily* promoted by adoption of universal public transport.

These considerations suggest a possible alternative to Lovins' hard and soft energy paths: a gradual transition to a combined system of hard and soft technologies, the transition to soft technologies occurring as soon as they can be introduced in a form that maintains the essentials of present social, political and economic structures.³ Already we can see plans for expansion of nuclear power generation and serious research into massive orbiting solar collectors, *and* a rapid increase in energy conservation measures (recycling, insulation) and the beginning of a boom in applications of solar energy.

What then are some of the significant features of present society which vested interests will attempt to maintain in the transition to a different energy path? Some of the most important are: (a) private control over production; (b) economic inequality; (c) political inequality, in particular the control over the design of society by a few.

With these features in mind, let's consider some of the possible components of an energy strategy.

Component 1: Energy conservation. This component of an energy strategy challenges none of the essential features of present society. It is likely to be opposed only by the few groups directly affected adversely, such as

electric utilities and uranium mining companies.

Component 2: Solar energy for heating. This highly touted alternative to coal, oil and electricity does not really threaten present institutions as long as the physical hardware is centrally produced, the units purchased on the market and used by individual households. Of course there is and will be tremendous opposition to the widespread introduction of solar energy by energy utilities, oil companies, and other proponents of centralised high technology. But as the ecological and economic, and hence political, disadvantages of hard energy paths become more apparent, reformers will fight for the necessary regulations to promote solar energy — in terms that don't threaten basic economic and political patterns.

The challenge presented by solar technology is that it is relatively easy to develop the technology so that it can be understood and eventually produced by individuals or small groups. Furthermore, it is more sensible to use solar technology in conjunction with small groups of households (with, for example, a common reservoir of hot water), a development which might foster collective action. Finally, the basic resource, energy from the sun, cannot be monopolised or easily used for profit.

If solar energy is to be introduced without disturbing current societal structures, it is likely that its widespread adoption will be delayed, and that:

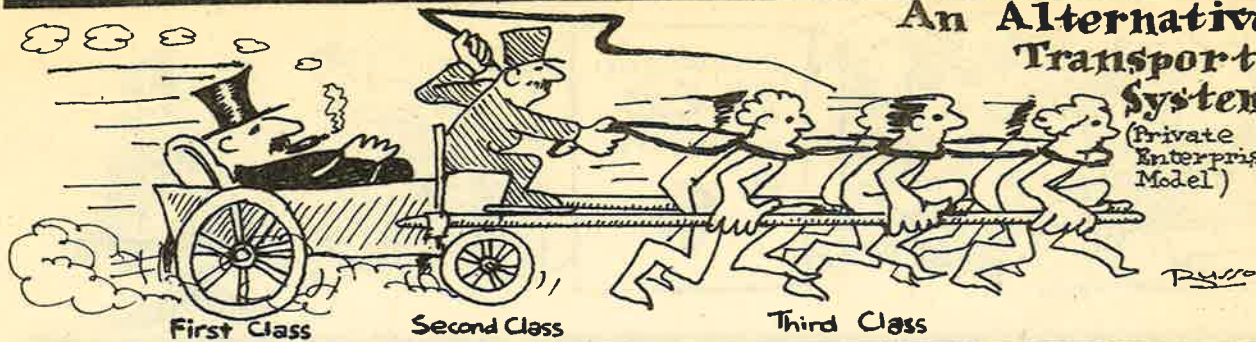
- emphasis will be on research into more sophisticated applications (such as electricity from solar energy);
- solar technology will be designed and regulations drawn up (for example, building codes) so that the technology must be bought on the market at a relatively high price;
- developments in other areas (such as tax concessions) will ensure that the benefits of solar energy go first to the wealthier portions of the population. Even with present social arrangements, it is apparent that the better-off suburbanites (with more land and sufficient money to install solar systems) stand to benefit from solar technology much more than inner city dwellers.

With appropriate regulations concerning safety and visual amenity, a relatively sophisticated technology, and centralised organisation of installation, distribution and use (e.g. solar systems as part of conventional house construction), the encouragement for self-management will be minimised.

Component 3: Less energy for transport. The present transport system depends heavily on private control over centralised production (cars, oil, roads) and also

An Alternative Transport System

(Private Enterprise Model)



promotes economic and political inequality.⁴ These characteristics can be maintained temporarily by smaller cars, production of liquid fuel from coal, and eventually perhaps use of alcohol as fuel. Another likely possibility is reduced access to inexpensive transport following increases in fuel costs — a development hurting mainly the poor.

A change seemingly more threatening to current structures would be widespread use of public transport. However, conventional public transport systems are capital-intensive and require centralised planning and control, as well as still being relatively energy-intensive. It can be argued that a centralised public transport system which provided a mobility similar to the present system would be a more major form of social engineering, reducing the effective choice and control by the 'consumers' of transport. This matter deserves further thought and consideration. But certainly it is possible to have public transport systems which through their rate structures, routing and differing qualities of service, maintain inequality as well as reserving decision-making about the system to the planning experts.

An approach to transport problems which would require drastic changes in present societal structures would be likely to involve a strong reliance on (a) bicycles, (b) vehicles which are simple, slow, resource-efficient, multi-purpose, and capable of being locally produced. (c) redesign of cities to reduce transport needs, and (d) redefinition of work roles (so that much production, education, recreation, etc. could be done in local areas).

Component 4: Collective goods and services, as much as possible produced and managed in local communities. Examples are local production of food in community lots, low-cost local laundries, community movie/TV, and heavy power tools, trucks and boats for use by any community members. In as much as design of the technology were such as to permit easy use, redesign and multiple applications, then the problems of planned obsolescence would be overcome, in addition to those of multiple copies and versions of goods for numerous individuals. It is apparent that such a component of an energy strategy, if widespread enough to involve more than the affluent or disaffected few, would be severely detrimental to the maintenance of current economic and political structures.

Component 5: Less military production and less production of luxuries for the rich. Since the military establishment is an integral part of the current organisation of society, and since economic inequality is an integral

feature of it, this possible component of an energy strategy is likely to be left completely unmentioned by any except those challenging the political and economic organisation of society.

This same sort of analysis could be applied to other components of an energy strategy, from recycling to wind power. What is important is to look at the political and economic implications of energy strategy, not just whether it is hard or soft.

My basic conclusion is that it is possible to have a slow transition to a combination of hard and soft technologies, in which the soft components are introduced in such a way as to maintain private control over production, maintain economic inequality, and maintain lack of local control over the design of society.

The changes necessary to attain any soft energy path, even if they come about, are not going to come about easily. The forces backing and benefiting from hard energy paths are enormous, and they are only likely to give in as it becomes apparent to economic and political leaders that the safer soft energy future is possible without major structural changes in society. It is likely to be the case that, in the eyes of decision-makers, the strongest argument in favour of soft technologies will be their very preservation of the system against collapse resulting from the difficulties of a hard energy future. At the same time, the attention and effort of many social reformers will be directed towards preventing a hard energy future. One consequence of this is likely to be a lack of attention towards the political and economic circumstances in which the soft components are adopted (or rather, an implicit assumption that political and economic structures are to be maintained as much as possible).

It is apparent from Lovins' article that he is concerned with a soft energy future within present societal institutions. He devotes a large amount of space to the values of energy conservation and other technical fixes. When he talks of soft technologies, it is usually in terms of systems for individual households. He looks forward to the economies of mass production of solar-energy components, and to the production of methanol and alcohol as alternative liquid fuels. Fluidised-bed technology is seen as the solution for (conventional) industrial production, and even as useful for individual households.

It is only in passing that Lovins mentions social changes as a way to do more with less energy. Even then he mentions such things as car-pooling, dressing to suit the weather, and recycling, and not such fundamental changes as self-managed local production, collective use



of goods, or reduction of the military establishment.

Not only does Lovins see changes in energy strategies within existing political and economic institutions; he also looks to these institutions to provide the motive force behind a change to a soft energy path. For example, he says that, "properly using the markets we have may be the greatest single step we could take toward a sustainable, humane energy future." His vision for change in society basically involves change in policy from the top. Presumably this is the reason his article first appeared in *Foreign Affairs*, an impeccably establishment journal.

Fitting in with these orientations is Lovins' belief in the sufficiency of rational argument for attaining change in society. (This belief is also manifest in his books.) If change is to come about within existing institutional structures and at the bidding of political and economic elites, then reasoned argument — appealing to the aims and values of those elites — should be all that is necessary. Lovins makes no reference to the massive and worldwide public opposition to some of the aspects of a hard energy future, especially to the epitome of such a future, nuclear power. Such citizen opposition — whether inspired by rising costs, technological breakdowns, environmental impacts, or a sense of powerlessness — can be considered to be a major reason for policy-makers' re-evaluation of energy strategy.

A consequence of Lovins' reliance on rational argument and lack of attention to the political forces behind energy strategies is his claim that the choice between the two types of energy paths is a stark one: "we stand at a crossroads: without decisive action our options will slip away". Certainly this is true to some extent: the institutionalisation of high technologies makes them even harder to challenge. But Lovins' sharp choice is politically unrealistic, as I have argued. With the strong vested interests backing high technologies, it is futile to expect a sudden change in policy, however rational and desirable it may be. Lovins' conclusion that "we shall not have another choice to get there [a soft energy future]" is an example of the doomsday prophecies of middle-class environmentalists.² It encourages a resigned attitude and a blind hope for drastic action from the top, rather than encouraging patient organising at the grass-roots level.

To be fair, Lovins is quite aware of the different sociopolitical impacts of hard and soft energy paths. For example, he comments that no coercion is necessary in a soft path, and that a soft path would be advantageous to the poor and weak. But these advantages of soft energy paths are not central to his argument; Lovins gives most

of his attention to technological and economic factors. One suspects that the social implications are only mentioned because they happen to support his argument. The priority of the technological and economic orientation in Lovins' perspective results in an approach which looks first for changes in technology (for survival reasons) which *then* lead to social benefits. The trouble with this approach, I have argued, is that soft technologies may be introduced in a way which nullifies many of their social and political benefits. An alternative to Lovins' approach is to consciously adopt certain social and political goals, and then to work for the introduction of particular technologies in desirable social and political circumstances, to help achieve these goals. (As to how this might be done, see Part 3 of this series).

For those concerned with environmental issues because of a belief in the inadequacy of present institutions, it will be apparent that important changes in political and economic structures will not come about *solely* through the adoption of soft technologies, and certainly not through their adoption resulting from policies initiated by current decision-makers. The value of environmental issues in promoting change in society lies in their links with political and social values, and in their appeal to a broad segment of the population. But unless the political and social aspects of technological change are presented as an integral part of environmental demands, it is likely that our future may be hard and soft: *soft technologies and hard institutions*.

This does not mean that we should reject Lovins. We should be thankful that there is no-one half so dynamic and persuasive arguing for a hard energy future. We should study Lovins' comments about possible energy paths with care, but in linking them with our strategies and tactics be sure to trust to our political and social ideals.

None of this should be grounds for pessimism. To whatever degree a hard energy path is adopted, this will lead to the increasing disillusionment of the populace, for the advantages of soft energy paths (whatever their social and political components) to the bulk of the population are becoming increasingly obvious. This is one reason for the strength of the anti-nuclear movement. On the other hand, the adoption of soft technologies, however distorted to serve inequitable political and economic structures, will still help create the preconditions for an easier transition to a qualitatively different society.

Mark Diesendorf, Bob James, Barry Naughten and Hugh Saddler provided valuable comments on this article.

Footnotes

1. Amory Lovins, "Energy strategy: the road not taken?", *Foreign Affairs*, (October 1976); reprinted in *Not Man Apart* 6 (mid-November 1976); also reprinted by Friends of the Earth Australia (1977).
2. David Dickson, *Alternative Technology and the Politics of Technical Change* (London: Fontana, 1974); Stephen A. Marglin, "What do bosses do? The origins and functions of hierarchy in capitalist production", *Review of Radical Political Economics*, 6 (Summer 1974), 60-112.

3. Universal education, the democratic franchise and industrial unionism were similarly introduced only when they had become politically safe. See: Christopher Lasch, *The Agony of the American Left* (London: Andre Deutsch, 1970), ch. 1; Alan Wolfe, *The Seamy Side of Democracy: Repression in America* (New York: David McKay, 1973), ch. 8; Samuel Bowles and Herbert Gintis, *Schooling in Capitalist America* (New York: Basic Books, 1976), part III.
4. Ivan Illich, *Energy and Equity* (London: Calder and Boyars, 1974).
5. Hans-Magnus Enzensberger, "A Critique of Political Ecology", *New Left Review*, no. 84 (March-April 1974), 3-31.

Lovins Replies

Comments by Amory Lovins on a first draft of Amory Lovins: The Line not Taken?, extracted from a letter to its author, Brian Martin.

✿ I didn't say that hard and soft technologies are technically incompatible and can't coexist (rather, that they are logistically competitive and institutionally and culturally incompatible). They will in fact coexist throughout the transitional period, since our present stock is virtually all of hard technologies. Over the next 50 years or so, the hard/soft ratio would decline until we had matched, as nearly as possible, the scale spectrum of end-use, so virtually eliminating the costs and losses of energy distribution. Happily, in the countries I've studied so far (and, so far as I can judge, in Australia) it would be unnecessary to have more hard technologies — for example, big coal-synthetics plants, reactors, or solar satellites — than already exist. Of course one can expect commitments to both hard and soft things while we're changing course, but once we've looked harder at the soft path, I expect we'll see that we can't, and needn't, do everything at once: the elements of a soft path by themselves suffice and are internally consistent.

It's a category mistake to suppose we can have a hard and soft energy *path* both at once (a path isn't the same as a technology). This is because the paths are distinguished only secondarily by choices of hardware, and primarily by their politics. A hard path is one whose polity is dominated by such structural problems as centrism, autarchy, technocracy, and vulnerability. One could in principle have these problems with soft technologies, by deploying them in a centrally managed way — which would be silly and unnecessary but might be done. Thus the use of soft technologies is a necessary but not a sufficient condition for being on a soft path. The political conditions defining a hard and a soft path cannot, by definition, coexist in the same society at the same time.

✿ My analytic assumptions (for example, pure technical fixes on the demand side) do not in general reflect my personal preferences (which you can read between the lines of section X). I used other people's value systems to avoid argument. Readers who consider today's values and institutions to be imperfect are welcome to assume a mixture of technical and social changes, rather than purely technical ones, and will then compute greater energy savings than I did. Since I don't want to impose my values on other people, I'm concerned to develop a type of energy system consistent with pluralism and cultural diversity — one in which committed slurbians could also be happy. Of course, other values

are also legitimate; but it seemed unwise in this article to leave open the possibility that some people might think I'm disguising a manifesto for social and political change behind a screen of energy policy.

✿ I agree that soft energy technologies permit, even promote, but do not necessarily entail, avoidance of the high political costs of a hard path. That depends on how the soft technologies are deployed and used. I do not see a soft path as "a major challenge to the current political and economic structures", since it does not entail increased local control, democratization, decentralization, etc. It permits them, but as I assume and present it, it also permits maintenance of the sociopolitical status quo (for example, I assume no significant changes in lifestyles, settlement patterns, or political structures). Institutions which might first think of the soft path as threatening — such as utilities — can readily be co-opted into the transitional process, since its economic benefits are large enough to be distributed to all the potential actors and give them an ample incentive.

✿ It is not my intention to present a blueprint for solving all our social and political problems. My aim is more modest: to suggest an approach to the energy problem that allows us to avoid some nasty political (and other) problems that would otherwise clobber us. Whether such an approach were part of a broader reform movement is of personal interest to me, and obviously to you, but not part of my *Foreign Affairs* analysis. One step at a time: I want to give a conservative policy audience a message they could not ignore. In effect, by arguing within their own criteria with their own numbers while rejecting their value system, I show their paradigm to be inconsistent. That's enough to start with: I don't have to reform their value system instantly, and if I tried, harder than I did in fact do in section X, they wouldn't read it yet, and *Foreign Affairs* wouldn't have published it. Thus, while I'm generally sympathetic to your reforms 1 to 5, (see pp.18-19) I trust you appreciate why I did not rest my case on them. It messes up people's minds much more to show that their proposed energy policies, on their own data, don't meet their own criteria as well as my policies do, without simultaneously asking them to adopt different criteria.

I agree that a slow transition is possible. I don't, however, think it's necessary. Because the sort of technical-fix soft path I describe can be made so compatible with present values and institutions, it can be adopted without much disruption. If you find the political support for your broader reforms later, you will then have an evolving energy system that is compatible with your ideas; if not, we'll still be politically much the way we are now, not in the awful fix inevitable with a hard path.