

Chapter 2: The Sustainable Society

The Limits to Growth thesis suggests that there are natural as well as social factors constraining and shaping the way that society develops, to which sociologists need to be sensitive. It also suggests that present rates of growth in the developed world will have to be rolled back whether by choice or by necessity caused by exhaustion of the earth's carrying, supplying and absorbent capacities. Restrained rates of growth are a social as well as a technical and scientific issue because they involve not only natural capacities and technological development of interest to natural scientists and technologists. They also involve the social relations and patterns of social life appropriate to the running down of growth and the institutionalization of sustainability.

Sustainability requires technical decisions about choice of technology, energy use and forms of production. Yet it also requires restrictions on growth, resource extraction and pollution and implies radically changed social lifestyles and values, whether taken on by choice or necessity or by some combination of the two. The social lifestyles and values suitable for sustainability are something on which sociologists are eminently well-qualified to comment, since they touch on issues to do with consumption, community and economy in which sociologists have a longstanding interest.

In this chapter I wish to look at the forms of social lifestyle and values appropriate to sustainability. In looking at green proposals in these areas I will be distinguishing between the social and the environmental arguments in favour of them. This chapter discusses three areas: consumption, community and economy. I wish to argue for global and interventionist approaches to solving environmental problems rather than decentralized or capitalist solutions favoured by many greens and economic liberals.

I shall be taking issues which sociologists are used to describing and explaining and looking at them along a normative dimension. The last chapter which dealt with the sociology of industrialism looked at explanations of what society is like. This chapter is geared to questions about what it should be like. It discusses issues relevant to a normative sociology of the sustainable society.

Consumption and frugality

Perhaps most notably, sustainability is said by greens to require reduced levels of consumption and changes in associated values do with material fulfilment and acquisition.'

Resource depletion, production and pollution result from consumption and the materialist values underlying it. Resources are extracted industrial production carried out to provide goods for consumption. Pollution results from extraction, production and consumption, both from the polluting technologies used in these processes and from the waste they produce. Levels of consumption are now so high and growing that they are leading to the depletion of some resources and the earth is unable to absorb current levels of some forms of pollution without serious and dangerous detrimental effects on the environment and human beings. Consumption is, thus, at the basis of depleting and polluting processes. Reductions in levels of consumption can lead to lower levels of extraction and production and reductions in depletion and pollution. All these links show sustainability relies not just on more environmentally friendly technologies in extraction, production and consumption (although technologies which are non-polluting or can exploit renewable sources are very important) but on changes in social lifestyle - levels of consumption) and their underlying social value systems (acquisitive materialism).

Greens find the proposal for decreased consumption difficult to the public because of the frugal lifestyle it implies. It also raises another question which is difficult to sell because of its association with children and liberal issues to do with rights – the question of reducing population levels and having fewer children. Greens argue that current population levels, let alone the rates at which they are growing, are unsustainable because of the amount of waste, consumption and resource depletion they impose. Levels of consumption are bumped up not only by the amount individuals consume but also by the numbers of people consuming. They can be reduced by lower rates of individual consumption but also need to be lowered by reductions in population. The figures vary but many greens argue that the British population, for example, needs to be halved, while the world population needs to be brought down by a similar proportion - from about 5,000 million to around 3,500 million (Dobson 1990:94).

Few greens suggest the coercive measures that many people associate with reductions in population levels - legal limits on family size, forced sterilization etc. But even some of the most liberal financial sticks and carrots proposals put forward by greens are troubling. Irvine and Ponton (1988:23), for instance, suggest financial incentives (e.g. for non-pregnancy, small families or sterilization) and the withdrawal of child-related benefits. These, however, would not affect the ability of the rich to continue to make choices about having children but would restrict the choices of the

poor. Proposals for the cessation of fertility research and surrogate motherhood would lead to infertile couples being prevented from having children while the fertile could continue to do so. On both liberal and egalitarian grounds these sorts of proposals are pretty hard to stomach.

The necessity for lower levels of consumption and more frugal lifestyles is a thorny issue because exhortations to roll back levels of material consumption and live more frugally lack popular appeal. Greens reply that the pay-off is that a reduced concern with material acquisition will lead to a proportionate increase in people finding fulfillment through post-materialist intellectual and spiritual concerns and the intrinsic rewards of work. A decrease in quantity can lead to an increase in the quality of life. The green case for reduced levels of consumption for environmental reasons is powerful. But the social argument about post-materialist sources of fulfilment is more problematic. The environmental arguments for reduced consumption are stronger than the social arguments for it. Let me say something about the problems of the latter.

First, greens perhaps sometimes undervalue the extent to which material acquisition and consumption can be a source of personal fulfillment. Clothes and buying things for the home, for example, are vital aesthetic sources of personal identity and the definition of self for many people. People define and express themselves through the way they present themselves to the world and their efforts to give a specific appearance and meaning to the place where they live. This is not the case for all of us. But for many, acquisition is not always the shabby, personally impoverishing form of behaviour greens suppose it to be. Nor is it clear who is in a position to define whether spiritual or intellectual activities are more lofty or fulfilling than acquisitive consumption.

Second, advances in material standards of living are as likely as frugality to further intellectual and spiritual fulfilment in they can free people from the mundane compulsion of the reproduction of everyday existence. Equally, a reduction in material standards of living and the labour-intensive and simple lifestyle many greens advocate may reduce opportunities for intellectual and spiritual fulfilment as much as increase them.

I distinguished in the last chapter between technocratic and structural environmentalism. Let me make another important distinction here between environmental and social dimensions of ecology. The environmental case for reduced levels of consumption is strong. In so far as environmental degradation is rooted in high levels of consumption there is a strong environmental case for reducing it. However the social case, based on not strictly environmental arguments but jelling quite nicely with them, about the social preferability of frugality over acquisitiveness is more problematic.

Greens are often criticized for questioning a modernist project which has vastly improved the economic, social and political quality of human life in the developed world and for advocating a return to the dark days of our pre-industrial past. On strictly environmental grounds greens have a case for questioning aspects of modernism which appear to undermine life-support systems. But the compatible social ecological case that green frugality is not environmentally sound but in principle preferable to modernist materialism is more problematic. Tactically it may not help to question whether a more environmentally friendly society will really improve our quality of life as well as safeguarding the world. But for the sake of truth and accuracy it is worth thinking about more carefully.

I do not wish to reject outright the social case but to put it into question as a complex and contradictory problem. Nor do I wish to suggest that, should the social case collapse, the environmental not strong enough on its own to carry through arguments for frugality and reduced consumption in specific spheres.

In this instance it may not be as important to separate environmental and social arguments for frugality if the green case can be carried on environmental grounds alone. However in the case I wish to discuss - next green arguments for decentralisation and self-sufficiency - it is an important distinction to make. My argument is that on environmental grounds decentralization and self-sufficiency have as many disadvantages as advantages. Consequently the green case for proposals along these lines rest heavily on social arguments about the intrinsic desirability of such arrangements, arguments which coincide with green concerns but are not themselves specifically green.

Decentralization and community

Ecological considerations imply not only reduced levels of consumption and greater labour intensity but also, greens have argued, a number of stipulations about appropriate levels of organization of social relations - self-reliant, appropriate in scale, decentralized and bio-regional. Green arguments for self-sufficient, human-scale decentralized and bio-regionally organized communities appeal to their environmental advantages. But greens also appeal to nicely compatible social arguments about the independent social desirability of such types of communities. I will take environmental and social arguments in turn.

Environmental arguments for decentralized community

Greens argue that local production and self-sufficiency are environmentally sensitive because they cut down on the environmental damage wreaked by the transport infrastructure that trade requires. For example, road building, fuel consumption and traffic pollution would decline. All these at present deface the countryside, deplete resources and pollute the air. Other infrastructure required by communities, they argue, such as chemically poisonous sewage treatment, declines with reducing concentrations of numbers. Less concentrated sewage output can be dealt with more easily without so much use of damaging human-made chemicals.

Kirkpatrick Sale (1974, 1980, 1984, 1985) advocates a 'bio-regional' concept based on ecological criteria for determining levels of community most appropriate to fostering sensitivity to the environment. Many sociologists will find Sale's analysis difficult to accept. This is, first, because, as I shall explain, Sale belongs to the 'lessons from nature' school of environmentalism which goes beyond natural limits ecological contextualizations of societal development to a stronger normative naturalism based on the accommodation of humans to the rhythms and boundaries of nature (see also Lovelock 1979). Second, some greens will find Sale's relativist political tolerance unacceptable in that, as I shall outline, it implies there is no green social or political theory or system. Some sociologists will also have problems with it; this is because of the implied prescription that we should put up with systems we regard as morally objectionable in deference to more important principles to do with the toleration of diversity greater humility before the 'laws' of nature.

Sale argues that we should become 'dwellers in the land' and greater knowledge of nature by living in and accommodating particularly through our immediate physical surroundings.

'We must somehow live as close to it as possible, be in touch with its particular soils, its waters, its winds; we must learn its ways, its capacities, its limits: we must make its rhythms our patterns, its laws our guide, its fruits our bounty. (1974:224)

This would be less environmentally damaging. Learning its rhythms and accommodating to the natural world implies minimizing resource use and pollution and opting for adaptive rather than interventionist systems which damage the environment, for instance harnessing energy sources rather than extracting fossil fuels. Going with the environment rather than against it, in other words, is better to preventing environmental problems.

Another reason Sale gives for 'dwelling in the land' derives from an awed and humble respect he has for nature. Sale is highly impressed by the remarkable self-stabilizing patterns and complex harmony of the natural world. He also has a beatific vision of what the natural world is like and of the spiritual fulfillments to be gained from living close to nature and being at one with its wonder as American Indians are said to have been.

Another reason is that Sale is a strong liberal and values tolerance highly, both of diverse political systems and of the natural world as we find it. What makes Sale different from traditional liberals is that he extends the ethic of toleration to nature as well as human beings and argues we should take nature as it is rather than messing with it.

The specific way Sale sees us living in nature - and this is where decentralized community comes in -- is by accepting its physically demarcated territories - bio-regions - and understanding and accommodating to the natural boundaries in our immediate physical surroundings. Sale argues that the earth's surface is composed of regions with natural rather than human-imposed boundaries. These can be vast areas defined by native vegetations and soil contours on a smaller scale defined by watersheds, river basins, deserts, plateaus or mountain ranges. Becoming more part of nature rather than against it, in the organic and holistic terms I mentioned earlier, involves constructing human communities on the basis of such naturally defined boundaries.

Sale argues that living in bio-regions fulfils in one principle that greens admire - getting close to nature - another that they frequently advocate - self-sufficiency. He believes that bio-regions contain within their own boundaries all the resources that their inhabitants could require: energy, food, shelter, etc. As I have already mentioned greens like self-sufficiency because it cuts down on the environmental effects of transport and trade and the impact of growing infrastructure with increasing scale. Green analyses of the third world see dependency as being at the root of economic, social, political and environmental problems and so they also value self-sufficiency as a solution (Schumacher 1973). They argue that autonomy cuts communities off from the dictates of external political forces and economic circumstances. Autonomy and local-scale can foster the conditions for community and democratic participation and control. It can provide for simplicity and accessibility of tasks that go against bureaucratic expert monopolies. Most importantly, on specifically environmental reasons for preferring decentralized community, it allows for a sensitivity to local environmental circumstances and the importance of sustaining the environmental base of development.

Social arguments for decentralised community

This brings us on from mainly environmental reasons for preferring self-reliance, appropriate scale, decentralization and bio-regionalism to social reasons which coincide with the environmental ones but are separate from them.

Goldsmith et al. (1971) argue that small-scale communities where everyone knows one another foster communal responsibility while in mass communities people are more anonymous and feel less cohesion and responsibility to one another. Small-scale can lead to an increased sense of citizenship, membership and belonging to a community, and of integration and obligations to it. This is good for individuals as well as the community. Individuals feel less atomized, anonymous and required to defend and assert their individuality through competitive individualism. In small communities relationships are deeper and less superficial. All these factors are seen to add to our spiritual life and compensate for the loss of material luxuries and consumerist satisfactions which the sustainable society demands.

Politically, decentralized communities are small and homogeneous enough for people to participate in decision-making and negotiate common agreements relatively harmoniously and unhindered by irresolvable differences. This conduciveness to participation adds to the attractiveness decentralization gets from its putative community. Beyond their social and democratic merits, greater community and participation are seen as conducive to people making publicly-minded decisions and feeling involved in carrying them through both of which are important ingredients in the agency and transition of radical green change.

Problems with decentralized community: appropriate scale and interrelations

There are many problems with green advocacies of decentralised community. Debates could be had over the desirability of participatory democracy or strong community, or the forms these take or the adequacy of decentralized community for facilitating them. Other issues are connected with the realism or social implications of decentralization. It is difficult to see how nations and communities heading for at least semi-autarky could extricate selves from the complex webs of interdependency they are entangled in. And if this were possible, could the accumulation of excessive inequalities between different communities be avoided? Decentralisation would result in communities with the best resources and skills benefiting more than those without. This could not be ameliorated without centralized or co-ordinating forums able to redistribute. These are important issues. However I will assume that decentralism is possible and sidestep the issue of desirability to focus on the adequacy of decentralism for the resolution of environmental problems.

Many greens put two qualifications on their advocacy of decentralisation. First, some say that what they argue for is appropriate scale rather than decentralization but that the latter is what is implied by the former (Schumacher 1973, Sale 1980). Second, they argue they are not in favour of decentralization in isolation but of decentralised communities operating in a context of mutual interrelations and co-ordination (Goldsmith et al. 1971, Sale 1980).

However, these qualifications expose a limitation in the green advocacy of decentralized communities. Decentralization is inadequate to solving environmental problems. Such problems require centralized global action. The advocacy of appropriate scale undermines the case for decentralism because on criteria of appropriateness centralization often seems as well suited, if not better, to the resolution of environmental problems. The advocacy of interrelations undermines decentralist proposals because it fails to specify the mechanisms through which interrelations can be developed and begs the question of the need for centralized agencies to accomplish such a task.

Among red and green thinkers the reaction to the failure of state socialism has been to look for non-statist forms of a green or socialist society. I wish to argue that the reaction to statism, however, should be the democratization of the state rather than its dismantling, whether by the laissez-faire of the right or the radical decentralization of the left. Environmental necessities show how important it is to retain the strong state and centralized co-ordination. Decentralization is inadequate because of the need for centralized solutions to environmental problems. The advocacy of appropriate scale and interrelationships highlight this problem. Let me expand on these points, first in relation to the advocacy of appropriate scale and second with regard to interrelations between decentralized communities.

Appropriate scale first. Greens are not dogmatic, blinkered advocates of decentralization. Many of them recognize that in diverse contexts and for varying purposes different scales are appropriate. In other words, they argue for the best suited scale, rather than smallness, and sometimes for balance and mix rather than decentralization all over. Schumacher (1973) is, perhaps, the most notable advocate of this perspective. What greens are arguing for is not decentralization per se or the replacement of giantism by smallness but appropriate scale. This, in the context of present levels of economic, social and political organization and environmental problems, implies greater decentralization.

However, this appropriateness qualification does not so much give the argument for decentralism as undermine its relevance to solving environmental problems. There are two reasons why. First, taken by itself the advocacy of appropriate scale only half supports proposals for decentralism and more supports a mix of mechanisms.

Decentralized communities might offer the most appropriate scale for certain activities, objectives and people but not for others. The ideal society would be one based on a mix of scales capable of meeting the needs of all people and different objectives rather than a reversion to a single uniform scale throughout society. This would also, of course, be more in tune with the ecological principle of diversity (Eckersley 1992: 175).

Second, taken not just in the abstract but in relation specifically to environmental problems, appropriate scale could be seen to require not just a mix of mechanisms but a positive bias to centralization. Many environmental problems are caused by the combined behaviour of plural actors. Acid rain, for example, is often caused by pollution in one country but falls in another. There is nothing that the state in the affected country can do by itself to solve the problem. Ozone depletion and global warming are caused by CFC and CO₂ emissions in different countries rather than in just one or a few. Reductions in any single state would not solve the problem. Resolutions to problems require combined action by many states, co-ordinated and agreed between them. Decentralizing powers would undermine combined action to deal with environmental problems because it would take power away from combinations of nations or international agencies and give it to local bodies. Decentralization of powers away from combined or centralized agencies undermines the resolution of problems which have to be dealt with at such higher level.

This leads to the second problem to do with interrelations between decentralized communities. Greens might say that decentralisation does not undermine combined co-ordinated action between communities because those communities could voluntarily co-ordinate and negotiate solutions. They advocate decentralization but not to the point of isolation and introversion. They see small-scale communities being the prime location of production, social relations and political authority in the sustainable society but within a context of interdependence, global consciousness and co-ordination between communities. Greens shun the deferring of decisions up to external centralized authorities. But they do envisage decentralized communities collaborating in voluntary combinations, networks or federations and attempting, through these, to solve common problems.

'Although we believe that the small community should be the basic unit of society and that each community should be as self-sufficient and , regulating as possible, we would like to stress that we are not proposing that they be inward-looking, self-obsessed or in any way closed to the of the world. Basic precepts of ecology such as the interrelatedness of things and the far-reaching effect of ecological processes and their disruption, should influence community decision-making and therefore there must be an efficient and sensitive communications network between communities ... We emphasize that our goal should be to create community feeling and global awareness, rather than that dangerous and sterile compromise which is nationalism. (Goldsmith et al. 1972: 15-16)

However, just as the 'appropriate scale' qualification on decentralization undermines the latter and implies centralized solutions, so this is also the case with the 'co-ordination' qualification just outlined. The difficulty here is that while the problems of an isolationist decentralisation and the need for co-ordination are recognized by greens the mechanisms through which decentralization can be combined into co-ordinating networks are not outlined. The extract from Goldsmith *et al.* quoted above, for example, is an expression of an aspiration about the combination of localism or globalism rather than an explanation of how to achieve it.

Greens are vague about the mechanisms for integrating decentralized self-sufficiency with global interdependence and it is not clear that the influence of people living in small-scale autarkic communities would not undermine a wider consciousness or more integrated structures of co-ordination. Small-scale autarkic organization may well foster internal at the expense of other-concerned co-operation. Greens are never very clear about how communes are to be linked into wider external relationships which will prevent internal communal feeling turning into an externally defensive sectarianism or a stifling, parochial inward-lookingness. 'Acting local', in other words, may actually inhibit 'thinking global'.

Why do greens leave out the mechanism for linking decentralization with co-ordination? This could be for one of two reasons. The first might be that decentralist greens adhere to a strong ecological model of the natural or spontaneous development of co-operative relationships between separate units. Maybe they see co-ordination as following naturally from the co-presence of decentralized communities.

On this, it is certainly impossible for communities to be completely autonomous and divorced from interrelations with other communities. Relations between communities will be mutually constitutive of the different communities' identities and actions. However, this is a different thing from saying these interrelations will, or are likely to, be co-operative or co-ordinated. While relations are inevitable, the form they may take is open and they could be antagonistic, competitive and unco-ordinated as much as co-operative and co-ordinated.

The second possible explanation for the lack of a specified mechanism for linking decentralized communities into co-ordination is mere optimism or omission. This seems more likely to me as an explanation for the gap in the theory.

Whatever the explanation, my argument is that the lack of a specified mechanism begs the question of the need for centralized agencies charged with engineering such co-ordination and undermines the arguments of greens for a decentralized society.

I have suggested that there are a mixture of social and environmental arguments put forward in the green proposal for decentralized communities. Other proposals for global co-ordination or centralized authoritarianism are at least as likely to further environmental objectives, and it is problematic for greens to give decentralized communities exclusive right to the label 'Green' (see Dobson 1990: 81-5, 122-9). Often their preference for decentralist alternatives over others is social rather than strictly green. Their social preference for decentralism may well colour their interpretation of its environmental advantages over other possibilities. And decentralization may, I would guess, turn out in practice to be a lot less 'green' in the strict sense of the word than centralized co-ordination.'

Global co-ordination and environmental sustainability

Let me look now at the global co-ordinating strategies I have argued are more suited than decentralization to resolving environmental problems. Table 2.1 gives four models of social and political organisation. There are varying degrees of centralization and decentralization in structure. And there are different degrees of voluntariness or formal institutionalization of co-ordination between communities, the latter requiring, rather than leaving to them, co-ordinated relations between communities.

I have already argued that greens like Goldsmith et al (1972) see strong autarkic models such as (1) as in table 2.1 as too far out from the sort of co-ordination required to solve environmental problems. With respect to model (2) I have argued that, while its aspirations are right, it fails to replace its rejection of the sort of centralized authority envisaged in models (3) and (4) with another mechanism for fixing global co-ordination. In this section I will look further at the way in which the limits of (1) and (2) demand structures of the sort envisaged in (3) or (4). I will discuss the way these are intended to overcome the limits of decentralism and install structures of global co-ordination for overcoming environmental problems.

Table 2.1 Centralism and co-ordination in resolving environmental problems

Type of community-	Decentralised or centralist system	Voluntary or institutionalised co-ordination,
(1) Autarkic decentralised	Decentralized	No co-ordination
(2) Decentralized with voluntary co-ordination	Decentralized with centralism	Voluntary
(3) Decentralized with institutionalized co-ordination	Decentralized with centralism	Institutionalised
(4) Centralized independent body	Centralized	Institutionalised

(1) The first approach shuns co-ordination. Greens could defend it on the grounds that co-ordination will not be necessary if autarkic communities are green and globally minded. Co-ordination is unnecessary if communities already behave in the environmentally friendly way with which it is intended that they should be brought into line. And it is globally minded and green communities that greens are thinking of when they propose decentralized communities in a sustainable society.

There are two problems with this - the first relates to the role of coordinating authorities as legislators and the second to their role as coordinators and managers. The first problem is that the position just set out starts from way-out assumptions of ecological optimism. Decentralization does not mean eco-centrism. Decentralizing powers to local communities does not mean they will then operate in green ways. Starting off from the assumption of decentralized communities which are green starts off much too late, and ways need to be worked out in which such communities are persuaded to be green in the first place. Centralized co-ordination in pursuit of green objectives would be one such way, one purpose of centralized co-ordination being to bring decentralized communities into line on environmental objectives. In the case of model 1, then, centralized authority is needed to secure environmental objectives from autarkic communities which do not adhere to them.

A green reply to this could be that decentralization would be on such a small scale that even supposing communities were not all environmentally friendly, any environmental harm they caused, whether by accident or lack of environmental concern, would be minor compared to the size of a similar environmental blunder committed on, say, a national level (e.g. see Sale 1985:95). The problem with this is that it separates out too atomistically the individual decentralized community. Great environmental damage would result if many decentralized communities pursued environmentally damaging practices, and looking at individual communities as if they would be isolated examples of this is too narrow.

The second problem with the argument about the irrelevance of coordination in a context of green globally minded communities is that co-ordination bodies are about more than securing environmental behaviour from lower down bodies. They are also about decentralized behaviour, identifying where it goes wrong and seeing what combined paths of action across communities are best suited to resolving environmental problems. Having external co-ordinating authorities is about more than exerting authority. It is also about co-ordination, management and planning, as well as sanctions and regulation, and it is informational as well as motivational in function. Even if all decentralized communities thought green, centralized bodies would still be needed to co-ordinate them. Overseeing the actions of many different communities an overall co-ordinating body could see how much action would be required by communities, ensure consistency and cohesion and avoid contradictory policies or unnecessary duplication and repetition of errors (see Goodin 1992:164-8).

(2) The second model assumes that voluntary co-ordination will be forthcoming among decentralized communities. But, as I have argued without a theory of natural co-ordination or the specific, mechanism to bring forth co-ordination in the absence of its spontaneous development this model is unrealistic or at least too optimistic to be gambled on.

There are, however, some hopes for model 2, and while I wish to suggest the *institutionalisation* of co-ordination should be would also argue that the pursuit of informal voluntary co-ordination should not be passed by. One obstacle to voluntary co-ordination is that communities are unlikely to pursue environmental objectives unless other communities will do so as well. This is because in terms of dealing with the causes of environmental problems action would be ineffective because causes are combined rather than locally specific; and, (2) in terms of the effects of environmental problems, lone actors would have to carry the burden of environmental friendliness yet still be subjected to environmental problems caused by other communities not doing the same.

Two solutions to this would be the formal institutionalization of agreements or the imposition by a central authority of environmentally friendly behaviour from above. However, these fit into categories 3 and 4 respectively and so do not constitute a solution within the voluntary non-institutional category 2 where communities got for co-ordination out of their own volition rather than because of institutional requirements to do so. Within category 2, though, change could rest with moral leadership from a single community or group of communities. This would be self-sacrificial in the first instance based on the hope that it would spur and mobilize combined voluntary co-ordination incorporating other communities in the future.

(3) and (4) Moral leadership is however something to hope for; it is too uncertain to base a strategy on or to rely upon. While any attempt to build global co-ordination should include work within category 2, by itself it is unreliable. The main thrust of a strategy for global coordination would have to rest with categories 3 and 4; co-ordination institutionally agreed by incorporated communities or imposed from above by a recognized democratic central authority. Both of these imply a world governmental agency, in 3 of an inclusive corporatist sort, in 4 of an independent external sort, both imposing mutually beneficial enforceable international strategies, with teeth, for environmental protection.

The advantage of models 3 and 4 over 2 is that while they rely initially on voluntary effort to get them off the ground they do not rely in the environmental agreements they set up on voluntary goodwill and participation. They rest on formal, institutionalized enforceable agreements. Where they differ from each other is on the fact that 3 envisages an inclusive forum which incorporates communities in decision-making; 4 however is independent and external, not inclusive of all communities but a separate central institution sending down orders from above.

The obvious objection to 3 and especially 4 is, of course, on the grounds of liberal fears of potential tyranny and totalitarianism. However, there is no reason why these should be the result of such arrangements. To start with, the proposed bodies are for environmental regulation and their remit extends no further than that, although they would have to be part of wider bodies like the United Nations because environmental issues are too heavily interrelated with others for them to be separated off. Furthermore, bodies under 3 and 4 would not have powers of military coercion and would enforce environmental protection through legal channels and with the support of the economic and moral authority of member communities rather than coercive force or might. They should also be restrained by liberal and pluralist checks and democratic accountability. They should have their scope of authority formally and legally delimited and prescribed. They should operate within the context of a world made up of plural and diverse independent power centres, governmental and nongovernmental, which would have the cultural and financial weight, political authority

and social legitimacy to stand up against them if they overstretched their remit. Finally they should be democratically accountable. In the case of 3 this is written into the model by the inclusion of communities in the forum's structures, making it like an environmental council within a beefed-up UN. In the case of 4 the body is external and independent but could be elected and democratically accountable. In other words, 3 and 4 involve mutual coercion by mutual consent (Hardin 1977), the latter institutionalized in democratic accountability and limits and restraints on their power. In fact given the experience of bodies like the UN, the worry would such bodies would be too feeble than too strong.

Both 3 and 4 rest on initial voluntary efforts to set them up. But they assume, unlike 1 and 2, that mutual voluntary co-ordination may not be forthcoming without a superior centralized authority to build co-operation and enforce it from above.

I argued above that communities are unlikely to pursue environmental objectives unless other communities do so as well. They will perceive that lone action will be ineffective because the causes of problems are combined rather than locally specific. Furthermore they will have to bear the cost of environmental friendliness, being subjected to environmental problems caused by other communities not doing the same. However, co-ordinated action engineered by centralized bodies can ensure that responses will be collective. Actors can be assured they will not be lone actors, ineffective in tackling alone problems caused by the combined actions of many communities and subject to the effects of environmental problems caused by others who do not work for solutions to them. They can be motivated into taking environmental action knowing that the combined action appropriate to supra-local causes will be enforced and that there will not be free riders avoiding the costs of protection and continuing to inflict harm.

The economy and technology in the sustainable society

I have looked so far in this chapter at low consumption and decentralised and global community as components of a sustainable society. I will turn my attention now to the economic structure and technological aspects of sustainability. The main issue I will around economic structure is whether environmental problems can be solved within capitalism. On technology I will discuss whether changes to more environmentally friendly forms of technology can be sufficient to foster sustainability. I have argued that global as well as decentralized strategies favoured by many greens are needed to solve environmental problems. I wish to argue now that interventionist rather than laissez-faire or capitalist approaches, of the sort favoured by economic liberals, are also required.

Can capitalism solve environmental problems? Capitalists, consumers and markets

There are three main issues on whether environmental problems can be resolved within capitalist structures. (1) Can capitalists be expected to pursue environmentally sustainable courses of action? Is it in their interests to do so? (2) Can environmental sustainability be built on consumers voluntarily adjusting their behaviour within market structures? (3) Can environmentally friendly behaviour be fostered within markets by modifying them?

I will suggest that, while some advances can be made within these constraints, it is unrealistic to expect that sustainability can be achieved within capitalist and market structures and through voluntary consumer action. Environmental sustainability will have to be tackled through the building of a much bigger non-capitalist sector in the economy geared to public-interest goals, through action at the level of production as well as consumption and through non-market interventions as well as financial incentives for voluntary adjustments of behaviour within markets. Collectivist intervention rather than economic liberalism is necessary for securing sustainability.

1. Capitalist interests. Let me look first at the issue of whether capitalists can be expected to pursue sustainable courses of action voluntarily. Is a liberal approach of leaving capitalists be and trusting to their voluntary action adequate, or do more coercive interventionist measures need to be taken to make them respect environmental measures in the public interest?

In recent years there has been a burst of published guides not only on green consumer behaviour but also on good green behaviour for business and producers (see Elkington and Burke 1987). These guides rest on the premiss that businesses can adjust their behaviour in accordance with more environmentally sustainable patterns of behaviour. More significantly, they assume that it is realistic to expect that they actually might do this and that there is a market for books which explain how to go about it. There are also environmental audit agencies who aspire now to do more than tell businesses how to come into line with legislation on health and safety - for instance on asbestos replacement in workplaces or conformity to pollution regulations. They also aim to give guidance to those who want to take voluntary steps in pursuit of wider and bigger environmental aims.

The pro-capitalist argument starts off from the basis that the pursuit of capitalist self-interests does not conflict with wider goods in the public interest, environmental sensitivity for example. Pro-capitalists argue that the pursuit of capitalist self-interest will not lead to production at the expense of the consequences for, say, depletion and pollution.

Capitalists can be persuaded to show concern for the environment on the basis that it is in their interests to do so. Depleting resources, for example, will undermine their capacity to produce for profit in the future when resources run out. What are environmentally unsound activities that go against the public are also economically unsound activities for capitalists.

It is also not in the interests of capitalists to pollute because they will suffer the consequences as well as the public. In addition to this, there can be adjustments to markets such as pollution taxes and green consumerism. These provide further incentives within capitalist structures for capitalists to take measures voluntarily and in their own interests. Critics say that there is a contradiction between capitalist self-interest and the general interest of the population in environmental protection. Pro-capitalist greens, however, say that the two are connected, that the pursuit by capitalists of their self-interests is compatible with the general interest of the population as a whole.

2 Green consumerism. Critics of capitalism say that the system is based on capitalists profiting through the production of more and more goods, rising consumption to increase profits and the creation of new needs in people to buy new products when the market for the old ones has been saturated. This produces levels of production and consumption which use up immense amounts of resources and create pollution in production and consumption. However green capitalists say that this sort of thing can be compatible with solving environmental problems if consumers use the power they have over producers - 'consumer sovereignty' - by refusing to buy products which are not environmentally friendly. This gives capitalists an incentive to concentrate on the production of environmentally friendly products in order to make a profit.

Moreover, pro-capitalist greens can say, this not only works in theory but is also what has been happening in practice over recent years in developed countries. People who are environmentally concerned, of whom there are said to be rising numbers, have started buying environmentally friendly goods: Ecover washing powder, lead-free petrol, bio-degradable goods, aerosols without CFCs and organically grown products in which pesticides have not been used, for example. Capitalists produce more of these and fewer of the old environmentally damaging products. And there is now a plethora of green consumer guides. These themselves can be seen as a capitalist response to green consumer concern, selling information on the environmental credentials of different companies and products to a market which exists for it. They are both symptomatic and facilitative of the rise of green consumerism (see Elkington and Halles 1988; Button 1989).

The British Body Shop Company exemplifies both the phenomena so far discussed: green capitalism and green consumerism. The Body Shop is a chain of cosmetics outlets which has spread across Britain and beyond from small beginnings in Brighton. It sells products which have been produced in less depleting and polluting ways than competitor products. They are not tested on animals and are marketed as having been produced in a way sensitive to the needs of the 'indigenous' population of the countries from which they are derived. The Body Shop has been a capitalist success, making a profit and expanding from selling environmentally friendly products. People who buy at the shop want to be green consumers, continuing to consume luxury products but in an environmentally friendly way. Pro-capitalists could say that the Body Shop shows how sustainability can be pursued through the entrepreneurial pursuit of capitalist interests, within the imperative to gain competitive market success, led by consumer concerns and without cutting back on consumption levels, even of 'luxury' products.

Green consumerism implies you can have capitalist consumerism and be environmentally friendly. You can have your cake and eat it. Acquisitive lifestyles can be compatible with an altruistic concern for the environment if consumption is adjusted in environmentally friendly directions. Green consumerism is a real boon for greens who have often argued that we need to sacrifice our materialist lifestyles to protect resources and prevent pollution. This is a demand which, in acquisitive industrial societies, where elections are won and lost on ability to deliver economic prosperity is not a very popular message, publically or electorally. To be able to say you can be green and consumerist is much more appealing.

3 Market values. Finally, green capitalists argue that markets, rather than being necessarily blind to environmental problems, can be compatible with their resolution. Competitive markets, far from being oriented to the pursuit of economic success against all else, can also be sensitive to other objectives such as social welfare and environmental sustainability.

Socialist and green opponents of markets argue that the only thing capitalists take into account when making and selling things is the monetary value of their products - how much it costs to produce them and how much of a profit they can be sold for. Factors which do not have a market value are not taken into account in their calculations. It does not make sense to include things other than exchange value in markets which are geared around this factor. Anything which does not appear on the balance sheet is excluded from production decisions. Free natural resources and the industrial processes on the environment have no monetary value so are not included in market calculations. In fact economists call things like social or environmental factors which do not appear on the balance sheet 'externalities' (see Mishan 1969).

Not only do these sorts of things not appear on the balance sheet they are also free and so there are no financial disincentives to using or affecting them. You do not pay for a view of the Downs, services provided by the ozone layer, for rainwater, for rainforest diversity or for coal. You pay for the labour and capital that goes into the processes which make some of these things for human consumption - the water or coal industry. But you do not pay for the natural resources themselves. And if they are free, there is strong motivation to use them up without restraint.

However, green pro-capitalists like David Pearce (Pearce 1991; Pearce et al. 1989) argue that markets can be sensitive to environmental problems and that having a market system is not incompatible with caring for the environment. If the market is modified and parts of the environment are given values equivalent to how precious they are, then capitalists and consumers will have to take the environment into account in economic calculations about production and consumption.

The value of environmental services should be incorporated into costs of production or selling price of goods and services which are produced using them. This would provide market incentives for capitalists and consumers to pay attention to the environment. If part of the environment is given a price value then it will cost. It will show up on the balance sheet and will have to be included in production calculations rather than being regarded as an 'externality'. Furthermore, because it involves a cost, there will be a financial disincentive to using or affecting it.

Monetary values can be introduced into markets through depletion charges or pollution taxes. These would involve interventions in markets to modify their workings rather than non-market regulation or direction. Their two big advantages are that (1) they are compatible with the existence of markets rather than requiring their replacement and (2) they rely on voluntary action rather than coercion. They involve economic disincentives rather than political compulsion. They are compatible with markets rather than replacing market forces with state force. This is a big advantage for liberals. They leave action on environmental sustainability to the voluntary action of capitalists and consumers rather than pressing them into line by coercive state legislation from above.

Why capitalism cannot solve environmental problems

I want to discuss now why I believe the proposals outlined above are not adequate for environmental sustainability. I do not think that capitalist measures are totally ineffective. Within capitalism some of these can and should be pursued. It is conceivable that on occasions capitalist self-interests will be best served through the pursuit of environmentally friendly practices. Green consumerism can engender more environmentally sustainable production decisions. Market values on environmental goods can provide an incentive for capitalists and consumers to behave with more of an environmental consciousness. However, these strategies alone cannot ensure sustainability for reasons I will outline.

1 Capitalist interests. The argument that it is in the interests of capitalists to pursue environmentally sustainable practices is vulnerable on at least three grounds to do with adaptation, short-termism and future generations.

The first problem revolves around the perception that capitalists are an innovative and adaptive breed. Historically they are seen to have been able to switch production to new areas when old areas of production are exhausted. The green criticism of capitalism here says that there is nothing to say that they will not be able to do this if resources run out or if they over-exploit and despoil environmental services. In other words, environmental damage is not necessarily against the self-interest of capitalists if they can adapt, as they have shown in the past they can. This does not pose a problem for anthropocentric environmentalists because, while parts of the environment are depleted or destroyed, capitalist adaptation to new bases for production ensures that environmental damage does not hinder human well-being, at least in narrowly economic terms. For eco-centrists, though, or those concerned with humans who see their well-being as being entwined with environmental preservation rather than just economic prosperity it is worrying because it means environmental damage can continue to be inflicted.

A second problem is that capitalists are often said to have short-term rather than a long-term perspective. They tend to exploit something until it does not deliver a profit any more and then move on. Often they do not plan far enough in advance to calculate whether resources will run out or what they will do when they do. They are happy to exploit them while they are still around. This is bad for both anthropocentric and eco-centric greens because it implies capitalists will continue to exploit the environment as long as there is a fast buck in it, without an eye for what the implications of environmental damage will be for humans later.

There is a third and less standard problem with the view that self-interest will stop capitalists from damaging the environment. The problem here is that, in the cases of most of the large-scale and worrying environmental problems we are aware of, it is likely to be the interests of future rather than present generations of capitalists who will be most affected. If it is their own self-interests and not those of future capitalists that present-day capitalists are concerned

about then they will not be too bothered about environmental problems whose most serious effects are going to hit capitalists who are born later.

2 Green consumerism. There are strengths and weaknesses in the case for green consumerism. I do not wish to throw the whole idea out of the window, so let me say something about some of its positive aspects first. There are four points to do with: the case for modern industrialism, third world interests, political effects and individual activity.

First, green consumerist arguments show that green rhetoric about the need to stop growth and consumption and about the evils of industrialism often fail to take into account increases in standards and quality of living that industrialism and consumerism have produced. Furthermore they suggest that some growth and consumption patterns may not be environmentally problematic and can be continued. They suggest that there have been positive benefits to the modernist project and that no-growth proposals need to be more disaggregated and discriminating, taking into account the benefits of consumption and areas of consumption which are not environmentally problematic.

The second positive point follows from this. Massive cutbacks in growth would not only lower standards of living in industrial societies but, as I suggested in chapter 1, would also hit third world countries who rely on first world consumers to provide markets for their goods. The argument for continuing consumption and growth where it is environmentally sustainable, rather than seeking across the board cut-backs in these, is important for increasing third world standards of living as well as protecting those in the developed world.

Third, green consumerism can have a beneficial political effect. It makes it clear in patterns of purchasing behaviour that there is an environmentally concerned constituency and brings this to the attention of governments as well as producers. Governments then have an electoral incentive, like the producers' economic incentive, to react to consumer demand.

Fourth, green consumerism gives individuals who are alienated from political and other power structures something to do. For many people an involvement in green consumerism maintains their motivation for environmental protection and is a first step to a broader and deeper understanding of environmental issues.

However, there are limits as well as positive aspects to green consumerism (see Irvine 1989). I will mention five problems to do with: non-material fulfilments, work, information, expense and levels of consumption. The first two involve social criticisms of green consumerism and the next three environmental problems with it.

First, anti-consumerist greens might argue that green consumerism reinforces a focus on material acquisition. This leads to the one-sided development of human personalities in which acquisition and material comforts become overdeveloped and non-material intellectual, spiritual and psychological development is ignored. Second, another criticism can be that while consumerism is supposed to improve our leisure it often leads to a work culture in which people have to work long hours to earn money to obtain consumer benefits that they never have the time or energy left to enjoy.

Third, there is a problem in green consumerism with acquiring accurate information on the environmental friendliness of products. In practice, green consumerism is often based on poorly informed choices, and companies peddle products as green which are not all that environmentally friendly. Information on environmental friendliness is not always understandable, accessible or reliable. Fourth, green consumerism is expensive. Organic food, catalytic converters, green washing powders and home insulation cost a lot, and green consumerism will not be effective as long as it is too expensive for many people to pay for it.

Fifth and most serious, anti-consumerist greens argue that there is a problem in green consumerist arguments in that levels rather than types of consumption are the real problem. The implication is that there are not enough sorts of consumption which can be made more environmentally friendly for green consumerism to replace consumption as a strategy for sustainability. Natural limits demand reduced rather than just different forms of consumption. Numbers of consumers and levels of consumption taken together suggest for cutting rather than redirecting consumption patterns.

3 Market values. To recall, this proposal is that if market values are put on environmental services (1) they can be included in market calculations and (2) there is a financial disincentive to despoil the environment. There are two problems here: the first concerns consumers and the second producers. I will discuss these and then link them in with general problems to do with liberal ideas about freedom and coercion.

The first problem is that added values may be passed on by producers to consumers in the form of higher prices. There are two reasons why this is undesirable. The first, on grounds of social justice, is that it means that one group of people will have to pay for the actions of another group, to which they were not party and for which they should not be responsible. That is, they will pay for the decisions of producers to pollute and pay rather than to pursue more

environmentally responsible paths of behaviour. The second, on environmental grounds, is that it means producers can continue to degrade the environment by finding a way of paying to do it.

The second problem on market values is that they still leave businesses free to continue environmentally damaging practices. Even if consumers do not pay, producers may choose to. It is the deliberate intention of market values proposals that companies are not coerced. But this means that the proposals are weak environmentally if businesses are willing and able to continue to pursue environmentally problematic courses of action. They can do this by paying the added values to deplete and pollute. As well as being flawed on environmental grounds, this raises problems to do with equality and justice because companies that are rich can pursue environmentally damaging practices, profiting in the marketplace as a result while less well-off firms cannot.

An economic liberal might give two responses to this. The first might be that liberal concerns outweigh environmental concerns. In other words it is more important for producers to be free to choose than for environmental objectives to be achieved. This does not work, however, if the environmental problems resulting from this curb human freedoms. This could happen through, say, the lack of resources available for the pursuit of certain paths of development or the adverse effects on human health of pollution. This may limit peoples' freedom to live a healthy life and be free to do things for which health is a necessary prerequisite. Liberals focus their fire on political coercion but an avoidance of political coercion may lead to greater coercions in the future resulting from environmental factors.

A second liberal response might be that if the added market values are not sufficient to deter companies from pursuing environmentally damaging practices then those values can be increased until they are. Market values on environmental services can be pushed up so high that no firms would be able to afford them.

However, the argument for market values against state regulation is that the former avoid the coercion on firms entailed in the latter. Proposals on market values combine environmental concern with liberal freedom. If market values become so punitive and prohibitive that no one could afford to pay them, then they effectively involve forcing environmental responsibility on firms just as much as state coercion. We may just as well then go for non-market restrictions on environmental harm such as state regulation.

Let me summarize on market values here, linking in the points I have made with general issues to do with liberal theories of coercion and freedom. First, if liberal concerns leave it up to firms whether to halt environmental damage or pay to continue it, then they run the risk of being ineffective on environmental grounds in the name of liberal freedoms. Second, if liberal approaches are ineffective on environmental grounds they may prove ultimately to increase rather than diminish coercion and so end up inadequate on liberal grounds also. The state could have to intervene later in a more authoritarian way than it would have done earlier in order to halt big reductions in human opportunities imposed by resource depletion or pollution. Failing that, depletion and pollution themselves may become so acute as to create environmental necessities which impose on human well-being and freedoms. Third, if market values are so severe that they cause firms to pull back from environmental degradation, then they could be seen to be coercive because they force firms to alter their behaviour unwillingly. In this context the argument for market values against state regulation on the basis of the former's greater liberalism no longer holds up.

All these points highlight problems in liberal theories of freedom and coercion. These theories are obsessed with the threat of state coercion. In being so they open up the way for other forms of compulsion - those of natural necessity or market forces - which are perversely excluded from the range of sources which diminish freedom. State coercion to safeguard freedom from environmental necessity or economic circumstances is ruled out when it may be a force for protecting both the environment and liberty. Environmental problems and greater coercions in the form of heavy values on environmental services or emergency state action or environmental necessity are stored up for the future because of liberal fears of the state in the present.

Green technology?

I have discussed proposals for solutions to environmental problems within existing capitalist and market structures. Another proposal for solutions within existing structures and without having to change them involves the idea that new forms of environmental technology can be introduced which will diminish or rid us of problems we presently face without us having to make societal changes in economic structures or social lifestyles. If what causes environmental problems is technology, then we do not have to change the economic system that underpins society. We can change the technologies we use and keep capitalism.

Let me give three sets of examples of how technological solutions under capitalism could be pursued: non-polluting technologies, the use of renewable resources and recycling.

First, non-polluting technologies. There are technologies which pollute. Many of these are associated with heavy manufacturing industry. Burning coal, natural gas and petroleum, for example, creates carbon dioxide. CO₂ emissions

are a direct threat to human health and are thought to be a factor in global warming. CFCs, meanwhile used as propellants and coolants in aerosols and fridges, among other things, are thought to cause depletion of the ozone layer which protects us from radiation from the sun which, as I have mentioned, causes skin cancer and damages food production.

However, these can be replaced by cleaner non-polluting technologies. Nuclear power is a target of much environmental criticism because of the dangers of radiation. However, governments argue that nuclear power is environmentally friendly because it is a source of energy which does not involve CO₂ emissions. CO₂ can also be reduced by the use of other alternative sources of tidal, wind and solar - the reduction of vehicle emissions and forest burning and massive tree planting. Aerosols and fridges can do without CFCs although at present the alternatives are expensive. The Montreal Protocol (1987) is an agreement aimed at phasing out CFCs and related substances by the year 2000.

These are technological changes which can cut down on pollution. Technical change can also deal with resource depletion problems. This brings us to the second technological change under capitalism. There are technologies that use up a lot of non-renewable resources - coal, oil and gas for example. These are resources which once they are used are gone forever.

The solution is to introduce new technologies which exploit renewable resources which cannot be used up and depleted. This might include the use of wind, sun and wave in wind-powered, solar-powered and water-powered machinery or the conversion of waste to liquid and gas fuels. Sun, wind, wave and much waste will always be there, however much we use them up to create energy. Another set of technical solutions to resource depletion involve more efficient ways of storing and retaining heat and energy so that less energy needs to be used in the first place.

Third, there is recycling. This involves technological developments which allow us to recycle goods for reuse rather than disposing of them. This cuts down on resource depletion for the production of goods that can be produced using recycled waste - paper, glass and certain metal products for example. It also sometimes reduces the polluting effects of extractive and manufacturing processes.

However, many greens, while keen that clean technology be developed to diminish environmental degradation, are not convinced that technical solutions alone can solve environmental problems. There are two issues here: first, whether technologies exist or can be developed which could beat environmental problems; second, whether technological solutions are always clean enough themselves.

There are two ways of approaching the first issue. The first is to look at whether technological solutions exist which can overcome environmental crises. The second is to try to judge, if such solutions do not at present exist, whether humans are skilful and adaptive enough to develop ones that will.

The first issue is fairly clear cut. Technological solutions, some of which are mentioned above, do exist to many environmental problems and the issue now is to make them economically cheap enough to be usable and to mobilize political will behind their wider proliferation. However, there is relative unanimity among greens and technocrats that technological solutions adequate to resolve existing problems do not yet exist over a sufficiently widespread range of such problems. Where technological optimists pin their hopes is on the ability of humans to come up with technological solutions in the future.

Greens argue that the main problem with technical fixes is that environmental problems are at root social rather than technical (Meadows et al. 1983; Trainer 1985). They are caused by high levels of consumption and production underpinned by acquisitive and materialistic lifestyles rather than by the technologies through which production and consumption are pursued. Ecologists reject the idea that ecological problems can be resolved by technical fixes or reforms within existing economic and social practices. It is fundamental value systems and practices of industrial societies which are at the basis of ecological problems and introducing new clean technologies will not solve environmental problems if levels of production and consumption remain excessive.

The second way of approaching the issue of existing or potential technologies to beat environmental problems is to say while technologies that can solve environmental problems do not yet exist on a large enough scale they can do in the future. Humans are an adaptive intelligent species who can develop technical ways of combining existing lifestyles with ecological sustainability (Cole et al 1973). In the past we have proved technologically adaptable and we should extrapolate to the future on the basis that we will continue to be so.

However this optimism, even assuming it is well placed, worries many greens because it is so risky. As of yet we have not sufficient technological solutions to environmental problems, and to continue with present rates of growth and consumption in the confidence that we will is a risky business.

'How good are the grounds for thinking that sufficient technical breakthroughs will occur? ... we must be given good reason to think that solutions to each and all of the serious problems ahead will be found. Would it not be much wiser and safer to undertake social change and structures that do not generate any of these problems? (Trainer 1985: 208)

The second issue mentioned above is that environmentally-friendly technological developments may themselves not be as clean as they are thought to be. Some enthusiasts for the post-industrial or information society look optimistically at the environmental implications of a shift from heavy manufacturing industry to service and information industries based on computerization and information technology.

However, many of the processes that go into the manufacture of computer technology are actually very dirty chemically. I have already mentioned nuclear power. This does not produce CO₂ emissions which is the green argument in its favour. However, environmental defences of nuclear power rest on the assumption that highly dangerous substances can be stored safely and kept secure. Furthermore there is medical and scientific evidence on untypical incidences of health problems among workers in the nuclear power industry and communities close by. Renewable resource technologies and recycling, meanwhile, are still parts of industrial production processes. The machinery which can harness renewable resources and recycle is developed industrially, and recycling itself is an industrial process.

This chapter and the last have discussed environmental problems under industrialism and changed patterns of economic, social and political life which could be compatible with sustainability. A more complex version of the low-consumption prescription of greens - one which discriminates between environmentally damaging and harmless forms of growth and consumption - is environmentally powerful, although I have expressed doubts about some of the social benefits claimed for it. Green strategies for decentralization and economic liberal hopes for capitalist solutions are problematic. My discussions have suggested the need for global and interventionist approaches. Technological change is important but not without reductions in acquisitive values and levels of consumption in the developed world.

In the next two chapters I want to look at environmentalism as a set of ideas and a social movement. What are its main philosophical bases and what has contributed to its greater popularity in recent years.

Guide to further reading

Andrew Dobson (1991) collects radical green views on sustainability in the sections on 'The Green Society' and 'Green Economics' in *The Green Reader*. His discussion in chapter 3 of *Green Political Thought* (1990) is similarly an accessible outline of the radical green view. Pirages's *The Sustainable Society* (1977) is a useful collection as is Daly's *Towards a Steady-State Economy* (1973). Goldsmith et al.'s 'A Blueprint for Survival' (1972) in the journal *The Ecologist* is an influential and classic manifesto, especially for the decentralist case. Schumacher puts the 'appropriate scale' argument for decentralization in *Small is Beautiful* (1973). Kirkpatrick Sale puts the 'bio-regional' case for it in books like *Dwellers in the Land* (1985) and *Human Scale* (1980). Irvine and Ponton provide a short, fierce and unapologetic version of the radical green vision in *A Green Manifesto* (1988). Irvine has also written a useful critical discussion of green consumerism in his 1989 Friends of the Earth pamphlet *Beyond Green Consumerism*. A more favourable presentation of what green consumerism can be like is laid out in Elkington and Hailes' *Green Consumer Guide* (1988). Pearce et al in *Blueprint for Green Economy* (1989) make the influential case for a market solution to environmental problems. Jacobs provides an important recent discussion of many of the economic issues in *The Green Economy* (1991). See also Ekins's edited collection *The Living Economy* (1986).