

# ECOLOGY AND SOCIALISM

## A Socialist View of Environmental Issues

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### PREFACE

## Why ecology is important

In recent years the environment has become a major political issue. And rightly so, because a serious environmental crisis really does exist. The air we breathe, the water we drink, the food we eat have all been contaminated and polluted to a greater or lesser extent. Ecology - the branch of biology that studies the relationships of living organisms to their environment - is important in this respect, as it can provide an explanation of what exactly has been happening and the extent of the problem.

Ecology teaches that the mineral and chemical constituents of natural matter are continually being used and transformed by the activities of living organisms; under natural conditions these materials get transformed back into what they originally were, so that the whole process can begin again. This is why ecologists speak of natural cycles and the balance of nature. In doing so they are not expressing a personal preference but are describing laws of nature.

But these laws have been, and are being, ignored. Natural materials are being transformed into substances (including waste) which nature cannot decompose, or such substances are being created at too fast a pace for nature's decomposing processes to be able to keep up with them. The result is the current environmental crisis - or, more accurately, the ecological crisis, since what is involved is much more than unsightly skylines in cities or ugly factories in rural areas. Substances which are poisonous or cannot be decomposed are being released into nature - for instance lead and the pesticide DDT and also the other heavy metals and a host of chemicals. These substances eventually find their way back to us through the air we breathe, the water we drink and the food we eat. Ecology is not just about protecting nature - animal rights, saving the whale and other moral issues. It is about human beings too - the way we live and the quality of our life.

Since ecological research has revealed that the present mode of production is damaging to nature - and so to humans as part of nature - it is understandable that those who have an ecological awareness should want to organise to do something about this. Hence the appearance of organisations such as Greenpeace and the Friends of the Earth and, on the political field, parties such as Die Grünen in Germany and the Green Party in Britain.

Ecology has a very definite political message: the urgent need for humans to take action to change the way they relate to the rest of nature. We in the Socialist Party agree that capitalism has devastating consequences for the environment, which will continue to be damaged unless action is taken to protect and repair it. In our view, nature and the environment are being damaged today because productive activity is oriented towards the accumulation of profits rather than towards the direct satisfaction of human needs. Not only does the economic mechanism of the profit system function in this way but it can function in no other way. Profits always take priority both over meeting needs and over protecting the environment.

Where we differ from the various Green parties and movements which share this ecological perspective is over what should be done. In this as in other cases, to find an effective solution, awareness and indignation must be accompanied by an understanding of the cause of the problem. This pamphlet, beginning with an account of the laws of ecology and of the place of humans in nature, argues in more detail the case that the profit system is the prime cause of the present environmental crisis and that a society based on common ownership and democratic control, with production solely for use not sale and profit, alone provides the framework within which humans can meet their material needs in an ecologically acceptable way.

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## The biosphere

The invention of the term ecology is generally attributed to the German biologist Ernst Haeckel who used it in 1866 to describe the study of the relationships of living organisms to each other and to their non-living environment. The idea however was generally around at the time and Darwin himself in *The Origin of Species* which had appeared seven years previously, had written of a study of the place of organisms in what he called "the economy of nature" revealing "how infinitely complex and close-fitting are the mutual relations of all organic beings to each other and to their physical conditions of life". This was to be a key concept, indeed a basic principle, of the branch of biology that came to be called ecology.

### MUTUAL INTERDEPENDENCE

The biosphere is that part of the planet where life-forms (plants, animals, bacteria, fungi) exist. It comprises the whole land surface of the globe and the ground underneath (but nowhere to a depth of more than a few metres), lakes, rivers, some underground cavities, the oceans and the sea-bed. It also includes, in most definitions, the atmosphere, which is essential to life.

The atmosphere before life appeared on Earth is believed to have been composed mainly of hydrogen and its compounds, methane, ammonia and water vapour. As the Earth cooled the water vapour began to condense and the seas, composed of water and various salts and carbon compounds, were formed. Life is essentially a chemical process. The theory is that this process was originally set off (whether once or continuously over a period of time is still a matter of speculation) as a result of the effect of the rays of the Sun acting on the so-called "primeval soup" formed by the original seas, aided perhaps by electrical charges from the thunderstorms resulting from the effect of the heat of the Sun on the Earth's atmosphere.

In any event, once the chemical process of growth and reproduction we call life had been set in motion, it never stopped. Over a period of hundreds of millions of years it spread from the seas to colonise the whole land surface of the globe with a great variety of life-forms - bacterial, plant and animal. In the course of doing so, through the oxygen breathed out by plants and the nitrogen released by bacteria, it changed the composition of the atmosphere from hydrogen and its compounds to predominantly nitrogen and oxygen. At the same time it created the protective layer of ozone (a form of oxygen) that prevents the more dangerous of the Sun's ultra-violet rays reaching the Earth's surface and destroying life here.

It is not only the Earth's present atmosphere that is a direct product of the activity of life-forms. So is the soil and much of the solid rock underneath us. Sedimentary rocks, as their name implies, were formed as a result of the bodies of plants and animals accumulating and decomposing at the bottom of the oceans and lakes. Many minerals such as the oxides of iron and aluminium can also be attributed to the existence and activity of life on Earth. So can coal and petrol, formed as they were from decayed vegetable matter in lakes and lagoons.

Life was not just initiated by the action of the Sun's rays, it is also sustained by them. The Sun can be seen as a huge nuclear fusion reactor in which atoms of hydrogen are fused into helium, releasing energy in the form of rays of different sorts. Those which sustain life on Earth are the light rays, which are converted by plants, through the process of photosynthesis, into a form of chemical energy. All other life-forms depend on this as food to live. Insects and other animals eat parts of the plant - its leaves, its roots, its fruit and seeds - and are in turn eaten by other animals which in their turn may be eaten by yet other animals. Their droppings and their bodies when they die, as well as those of plants, are decomposed by other insects and by bacteria and fungi. These bacteria and fungi play a fundamental role in that they release into the soil the various minerals which plants must have to exist and grow. So the circuit is completed; all life-forms ultimately depend on each other in order to live.

This mutual interdependence of all living things is not just a food chain or a food web. Plants and animals are complementary in another respect. Plants breathe out oxygen, which is precisely the gas animals must breathe in to stay alive. Animals breathe out carbon dioxide, which plants need to carry out the process of photosynthesis. Although carbon dioxide is being continually released into the atmosphere, and not just by the breathing of animals, in percentage terms it exists there only in minimal amounts because most of it is reabsorbed by plants. Since it is opaque to heat rays too much carbon dioxide in the atmosphere would lead to the same greenhouse effect being

produced on Earth as makes Venus a veritable hell in which life (as it has developed on Earth) would be quite impossible. The fact that plants keep carbon dioxide in the atmosphere to a minimum is yet another example of how life itself helps sustain the conditions for its continuation.

In fact so interrelated and interdependent on each other are all life-forms that, from one point of view, it could be said that the biosphere itself is a single living organism of which individual life-forms, including human beings, are merely parts. In other words, only the biosphere is alive, with the various life-forms that exist within it having the same status that we attribute to the cells in our bodies.

## ECOLOGICAL SUB-SYSTEMS

Although the biosphere is one big ecosystem, it is still possible to distinguish various sub-systems within it on the basis of the different climatic and physical conditions that exist in different parts of the world. For the land area of the globe, ecologists have distinguished a number of such "biomes" as they call them. These range from the tundra of the Arctic through the coniferous and deciduous forests and steppes to the savannah and tropical rain forests of the regions near the equator.

To each of these physical and climatic conditions there corresponds a stable ecosystem which evolves to its "climax" through a series of successive stages. This stable climax will be the situation where the amount of food produced by the plant life is sufficient, after taking account of the plants' own respiration needs, to meet on a sustainable basis the food energy requirements of all the animal life-forms within the system. It will be in fact the situation which makes optimum use, in terms of sustaining all the life-forms within the system, of the Sun's light rays falling on the area.

Under present climatic conditions, for most of Europe this stable climax, in the absence of human intervention, would be the deciduous forest which developed after the last Ice Age and which existed in Britain in untouched form till about 4500 years ago. If humans were to withdraw from the British Isles it is this forest that would tend to develop again within a few centuries. For other parts of the world, the climax is the tundra, steppe, savannah and coniferous or tropical rain forests mentioned above.

An ecological climax is defined in terms of the existing physical and climatic conditions. It is clear that if these latter change, as they have done relatively frequently in the course of the thousands of millions of years life has existed on Earth - through such things as volcanic eruptions and earth movements, the lowering and raising of the sea-level, and the coming and going of ice ages - then the previously existing balance will be upset and a new one will tend to develop in accordance with the new physical and climatic conditions.

The break-up of the old ecosystem would have plunged the different species and varieties of life-forms into a state of competition. In the case of plants, the competition would be to capture the Sun's light rays. In the case of animals, it would be to recover the food energy produced by plants. It would have been both the species and the individuals proving to be the best adapted to the new conditions ("the fittest", as Darwin put it) who would have survived and flourished. Eventually a new stable ecosystem, with a different "climax", appropriate to the new geophysical conditions, would have evolved. At such times biological evolution would have tended to speed up as whole species could disappear leaving the ecological niche they occupied to be filled by newcomers.

Natural selection

Initiative takes place through genes, and normally when there is reproduction the new organism will inherit the features of its parents (or parent in some cases). But, due to the action of normal background radiation coming from the Earth's rocks as well as from space, in some cases a gene is changed, so that an organism can come into existence having a feature which neither of its parents (or other ancestors) had. In most cases this new feature is neutral or harmful for survival in the environment, but in some rare cases it can be useful. In this event the descendants of the "mutant" concerned, being better adapted to the environment, will on average survive better than those of the non-mutants, so that the average features of the life-form in question will begin to change. In time - and we are talking about millions of years - the change may become so great as to render inter-breeding with the original form impossible; in which case a new species will have evolved, with the old form either becoming extinct or finding itself a different ecological niche.

Darwin's theory of the evolution of species by such "natural selection" can in fact be seen as an essentially ecological theory of evolution, in that it makes the development of a new species depend on biological adaptation of organisms to their environment as made up by both its physical features and its other life-forms. Darwin was able to show,

from the evidence he collected, that the different species of life-forms, past and present, had evolved and disappeared through a process of natural selection. But he was not able to explain the exact mechanism of this because, as he openly admitted, "we are profoundly ignorant of the causes producing slight and unimportant variations." He was prepared to accept that at least some acquired characteristics could be inherited from one generation to another, which is now generally agreed not to be the case.

It was not until the 1930's that the theory of inheritance through genes and chance mutations due to background radiation was incorporated into the general theory of evolution.

Evolution tends towards the improvement of the organs of life-forms to fit their particular ecological environment. One of these organs is the brain, which controls the reaction of the life-form to outside stimuli. This too has tended to evolve over time leading to the appearance of more and more intelligent animals (in terms of controlled responses to stimuli coming from the environment) and finally to *homo sapiens*: a big-brained, two-legged primate, capable of speech and abstract thought and of making and using tools. This introduced a completely new element into the biosphere - the conscious, deliberate planning of their actions by some living organisms. It was to prove to be of monumental importance, indeed to represent a radical new departure for life on Earth.

## Human intervention

It has been known for over a hundred years that earlier types of *homo* evolved into *homo sapiens* not just in response to externally-produced changes in their environment but also in response to changes they themselves made when they intervened in nature to meet their needs.

Some existing non-human primates, chimpanzees for instance, can and do use sticks as a means of obtaining food. So it is easy to imagine how some pre-human primate, whose hands had been freed from having to play any part in its locomotion by the fact that it walked upright on two legs, would be in a particularly good position to use tools (sticks and stones) and then, at a later stage, to make them. The concentration and application needed to fashion tools would put a premium on those individuals who had the brain capacity to do this. By the normal play of natural selection this would lead, over a long period of time, to the primates concerned coming to have on average bigger brains.

It has been suggested that humans are descended from a species of apes which left the tropical forests to establish themselves on the plains where some of them became meat-eaters as well as eaters of fruit, plants and insects which they had been until then. The plains of East Africa, where this species of hominid apes is assumed to have lived, would have supported huge herds of grass-eating animals (such as today's antelopes and zebras) and it is precisely these animals which would have provided the meat. But before they can be eaten they must be hunted, collectively, for instance by being driven by some of the hunters towards others armed with sticks and stones. To hunt collectively in this way requires communication and it is suggested that, once again through the normal play of natural selection, this would lead to the evolution of adequate vocal organs and to the development of speech and language. Speech and language, involving as they do memorising and using sounds as abstract symbols for objects and situations, requires an even greater use of brain-power than tool-making and so once again would have put a better survival value on bigger brain capacity.

Finally, with language humans acquire the ability to transmit knowledge by teaching, so that the new generation can learn from the experience of previous generations without having to go through the experience themselves. This once again requires a large brain capacity. In fact, by the time this stage has been reached *homo sapiens* has evolved and human evolution ceases to be biological and becomes social and technological. Having acquired the capacity both to transmit knowledge and to make tools, humans can adapt much more rapidly and flexibly to changes in their environment by changing and developing these tools than by the infinitely slower process of the biological adaptation of their bodily organs.

It is through the interaction of all these factors - upright stance, free hands, tool using, tool making, collective hunting, speech, language, learning - that our ape-like ancestors are most likely to have evolved into human beings. But what distinguished this particular process of biological evolution from previous ones was that those who were its object also played an active role in it through the non-biological mechanisms - tools and speech - which they developed and employed to help them obtain food from the rest of nature. This meant that literally "humans made themselves", that the various species of hominid apes contributed by their own productive activities to their evolution into *homo sapiens*.

### PRODUCTIVE ACTIVITY

This adaptation of nature rather than adaptation to nature is the main feature distinguishing human behaviour from that of the other animals. Whereas other animals satisfy their needs essentially by taking what nature spontaneously supplies, humans actively intervene to change nature to satisfy their needs. In one sense all life-forms "change" nature simply by being alive and breathing and consuming food. This is why the whole biosphere is in a constant state of movement and how it "spontaneously" supplies life-forms with their needs. But what is involved in human activity is not simply taking from nature in the process of satisfying life-needs but changing nature to get it to provide for those needs. Indeed changing nature to provide for needs is the basic definition of "production".

Other animals too can be said to engage in production in some sense. Birds change nature to satisfy their need for shelter when they build nests, and beavers change nature when they construct dams, as do bees with their hives and ants with their ant-hills. But nevertheless production remains an overwhelmingly human activity. It is not, as it is for

other animals, an inherited instinctive behaviour pattern but results from conscious, premeditated decisions. This in fact is the only way that humans can react to their environment. All their actions (except for certain basic bodily functions and reflexes) pass first through the mind and thus are both conscious and deliberate. Humans are "consciously-acting animals" and this includes when they intervene in the rest of nature to provide for their needs.

What humans are doing when they engage in productive activity is to apply their mental and physical energies to materials that originally came from nature with a view to changing their form so as to make them suitable for human use. Since humans are part of nature, what is happening from an ecological point of view is that one part of nature is acting on another part to change its form. This means that human work or labour is not the sole source of wealth. Useful things or "use-values" as they are sometimes called are combinations of two elements, the materials provided by nature and labour.

These materials fall into two categories: those supplied by nature and raw materials. Typical directly-given materials are wild plants and animals, fish in the sea, coal, oil, mineral ores and the wood of unplanted forests. But if coal in the ground is a directly-given material, coal used in a power station is a raw material because it has been previously worked on by labour, that of the miners who dug it up and of the transport workers who moved it from the mine to the power station. All raw materials are of course made up of materials that originally came from nature, though no longer in the form in which nature originally supplied them.

The objects of labour, together with the instruments of labour, make up the "means of production". An instrument of labour is anything humans use to help them change the form of materials that originally came from nature. But an instrument of labour is not simply some implement or machine. It includes literally any thing or process that humans use to produce useful things. Thus fire can be an instrument of labour. So can the wind, rivers, waterfalls and other naturally-occurring phenomena. In fact in agriculture it is nature itself that becomes an instrument of labour as it is the natural process of plant growth that is used as a means of producing the fruits, roots, leaves, etc, which humans use.

Human productive activity, both by its massive scale and by its form (using instruments of labour), clearly has immense implications for ecology. In fact the evolution of an animal having the capacity to make tools and use them to change nature to provide what it needs was bound, sooner or later, to have far-reaching effects on the biosphere itself. For it introduced into ecosystems another potentially disturbing factor besides changes in climatic and physical conditions: the productive activity of this animal.

## AGRICULTURE

The most obvious way in which human productive activity affects the biosphere is through the practice of agriculture, which represents a direct interference in the functioning of an ecosystem. But is this now almost universal human activity compatible with a harmonious relationship with the rest of nature? In other words can agriculture be fitted into a stable, sustainable ecosystem?

The short answer is yes, but not without changing the previously existing balance. For agriculture involves, by definition, a fundamental change in the existing ecosystem. We saw in the previous chapter that to each climatic and physical condition there corresponds a stable ecological climax. In the case of Britain and most of the rest of Europe this is the deciduous forest. When agriculture was first introduced into Britain about 4500 years ago, this involved cutting down the forests and using the land to grow plants which humans found useful to the detriment of both the trees and the other plants that had flourished in the forest. In other words, agriculture involves deliberately preventing an ecosystem from developing towards its climax.

Some might be tempted to say "towards its natural climax", but this would be to commit the mistake of seeing humans as something outside nature whereas humans are both a product and a part of nature. This being so, once the species *homo sapiens* has evolved, there is no reason to regard an ecosystem in which humans, like other animals, live in limited numbers as "hunter-gatherers" in the forest as any more "natural" than one in which there is a greater number of humans and the plants they eat and a smaller number of trees and forest plants. There is no basis in ecology for saying that trees should be the main life-form and that the natural human condition is hunting and gathering.

Having said this, for an ecosystem involving agriculture to be a stable one requires deliberate action on the part of humans. Not just to plant the fields and keep them clear of the other plants which would otherwise tend to grow

there ("weeds"), but also to maintain the fertility of the soil which, without agriculture, would spontaneously renew itself. Things go wrong when humans, for whatever reason (and we shall examine some in a later chapter), ignore the ecological consequences of their actions, for instance, by permitting overgrazing by their domesticated animals or by taking out of the soil without restoring them the minerals and organic materials that are essential to normal plant growth.

But if the humans involved in the system observe these rules, then, as a number of historical examples testify, nothing prevents an ecosystem embracing humans practising agriculture from being as stable as one from which humans are absent or in which they practise only hunting and gathering. But it is not just food that humans need to extract from nature. They need to extract other means of subsistence, such as shelter and clothing. Above all, as "tool-making animals" they need to extract materials either to work on or for use as instruments to work with.

The materials humans take from nature can be divided into two categories according to whether they are renewable or non-renewable. Nearly everything of organic nature is renewable (since more of it can be grown in a relatively short period of time) as are certain natural forces which humans use as instruments of labour (rivers, waterfalls, wind, the sun's rays, etc). Non-renewable materials are those which can be extracted from nature only once, such as mineral ores, sand, clay and some materials of organic origin such as coal, oil and the guano deposits of Chile. Some of these could from an abstract point of view be regarded as being renewable since they are the products of the activity of life-forms (coal and oil, for instance) and are still being created. However this is at so slow a rate as to make them for all practical purposes non-renewable as far as their use by humans is concerned.



## Nature and society

Some animals associate together in structured, self-sufficient groups to survive in nature. Humans are among these social animals in that they too form groups and so face the rest of nature as members of a society rather than as isolated individuals. Indeed, as we have seen, it was only because they -and the various species of hominid apes from which they evolved - lived in societies that they came to acquire the capacity to think abstractly and to make tools.

To the extent that human societies are groupings of animals organised to obtain from nature what they need to live, in particular food, they are no different from the societies formed by other animals. From an ecological point of view, a human society is a self-sufficient group of consciously-acting, tool-making animals organised to obtain from nature food, shelter and materials to meet the needs of its members.

As social animals humans are members of a structured group in which different individuals perform different functions. Some individual humans do interact directly with the rest of nature - those, for instance, whose function it is to obtain directly-given materials - and so their actions do have an impact on nature. But these individuals are acting not as isolated animals trying to obtain a living on their own account, but as members of a structured group performing a role on behalf of the group as a whole. This is a relation between a particular human society and nature, not between particular individuals and nature.

As human societies are essentially associations of humans to survive in nature, the basic relationships of any human society are those that its members enter into with each other to ensure their survival. These consist of how its members organise to obtain the means of life (production) and how they organise to share them out (distribution). So the basic social relationships in any human society are those concerning the production and distribution of wealth, in other words the economic structure.

How the members of a particular society are organised to produce and distribute wealth is not, however, a matter of free choice. It depends on where, by what means and how abundantly they can produce wealth, i.e. on the material forces of production at their disposal. These forces are made up, firstly, of the natural features and resources of the area in which the society is operating: its geography and climate and the plants and other animals that live there. A second element is the instruments of production at the society's disposal, i.e. the technology and productive techniques it has inherited or developed. Finally, there are the productive skills of the members of the society themselves. It is the character and distribution of these three material conditions of production - natural features and resources, instruments of production, and productive skills - which determine the particular economic structure of a human society.

This relationship between production, nature and the structure of society forms the basis of the "materialist conception of history" and was summed up by Karl Marx as follows:-

“In production, men not only act on nature but also on one another. They produce only by cooperating in a certain way and mutually exchanging their activities. In order to produce, they enter into definite connections and relations with one another and only within these social connections and relations does their action on nature, does production, take place. These social relations into which the producers enter with one another, the conditions under which they exchange their activities and participate in the whole act of production, will naturally vary according to the character of the means of production” (*Wage Labour and Capital*).

The material conditions of production lay down the various different kinds of productive activity which a society has to engage in for its members to survive. One aspect of the economic structure of society is the social arrangements that are made for deciding who does what in the context of this technical division of labour. Another equally important aspect of a society's economic structure is the arrangements that are made for deciding who controls access to the means of production and who distributes the products.

### EARLY SOCIETIES

The earliest human societies - as self-sufficient producer groups - would have been composed of relatively small numbers whose members survived in nature as nomadic bands capturing and killing wild animals and gathering wild plants, fruits and insects. The particular character of these material conditions of production demanded a certain division of labour between hunters, gatherers and those engaged in making the tools used in these activities, but they also demanded free access to nature, the main means of production.

Thus, in accordance with the material conditions of production in which they operated, hunter-gatherer societies were societies which did not know private ownership of the means of production; nor was there private ownership of what was produced. What was produced - whether by hunting or by gathering - was not the private property of the hunter or hunting party nor of the gatherer or gatherers but was to be shared out amongst all the members of the society on an equitable basis. Hunting, gathering, tool-making were all regarded as essential activities performed on behalf of society entitling those who performed them to be maintained by society.

The practice of settled agriculture represented a major change in the material conditions of production. It meant an end to nomadism and the establishment of settled communities. It also meant an increase in the amount of food available, so permitting an increase in the size of human societies. But it also involved a different division of labour which paved the way, as it developed, for the emergence of minority control over access to the means of production.

The first settled agricultural communities would have been established by societies which had previously practised hunting and gathering and so which had had a communistic economic structure, characterised by the absence of private ownership of the means of production and by the sharing of products according to need. After the adoption of agriculture, these communistic economic arrangements could have survived for a while, and no doubt did, but would have tended to break down in the long run as they no longer corresponded to the material conditions of production.

The social arrangement for meeting the material requirements of early agriculture is most likely to have been the allocation to family units of a plot of land to cultivate. This was not yet the establishment of private ownership, but it would have represented the end of the free access to the means of production that had obtained in hunter-gatherer societies. For it ruled out any member of society simply going and helping themselves to the products of any plot of land. Normally they would only have free access to the products of the plot cultivated by the family unit to which they belonged. Nevertheless, this is not incompatible with the continuation of some communistic practices. The actual cultivators could still be regarded by society as performing a function on its behalf and be required by social custom to contribute any surplus product from the land they cultivated to a common store on which any member of society in need (as a result, for instance, of their crops having failed or been destroyed by a storm) could draw as of right. Such social arrangements have been discovered in societies at this stage of development which have survived into modern times.

The existence of a common store becomes another aspect of the society's material conditions of production and requires a social arrangement for managing this store - collecting and redistributing the surpluses. The usual arrangement seems to have been to confer this responsibility on a particular family. Arguments can go on as to whether being given this responsibility made the head of the family concerned "the chief" or whether this responsibility was conferred on a family whose head had already acquired this status for other reasons - perhaps military or religious. But the fact remains that this role of collecting and redistributing surpluses was one that had to be filled if all the members of the society were to be able to meet their basic needs as of right.

#### THE EMERGENCE OF CLASS SOCIETY

It is easy to imagine how over time this coordinating role in distribution could become a source of privileged consumption for the chief and his family. The duty to contribute any surplus products to the common storehouse could become a duty to contribute this to the chief, and the chief and his family could come to consume an excessive amount of the stores at the expense of redistributing them to those in need.

This tendency for what was originally a necessary technical function to evolve into a social privilege would have been even more pronounced when the technical coordinating role concerned production rather than simply distribution, as was the case when large-scale irrigation works had to be managed so that agriculture could be practised. This was what happened with the agriculture that was practised, for instance, in the Nile, Euphrates and other river valleys. It was the main material condition of production which gave rise to an economic structure in which the cultivators were exploited by a class of priests who collectively controlled the key means of production which the irrigation works represented.

The emergence of control over means of production by a section of society, or social class, represented a radical departure in human social arrangements, for production was no longer controlled by society as a whole. Such societies have in fact ceased to be communities with a common interest and have become divided, with one class, on the basis of its control over access to and the use of the material forces of production, exploiting the productive work of the other class and allocating itself a privileged consumption.

The emergence of class and property means that some humans acquire the power to exclude other humans from access to the material forces of production, including nature, except on their terms. In these circumstances, humans come to face the rest of nature not as a united community seeking to satisfy the needs of all its members, but as a class-divided society in which there is internal conflict over how the material forces of production should be used: to satisfy the needs of all or to accumulate wealth for the few.

Throughout history this conflict has nearly always been settled in favour of the class that has controlled the means of production. There are two main reasons for this. First, because the power of this class was based on a real functional role within the division of labour, at least originally. Secondly, because this class controlled armed bodies to enforce its will, thus enabling it to hold on to power, at least for a while, even after its original function in organising production had disappeared and been taken over by some other group as a result of technological change.

## HUMANS MAKE HISTORY

Because class-divided societies are maintained, at least in part, by the use or threatened use of force, class control of the means of production means that human societies acquire a political as well as an economic structure. However, since the function of the political structure is to maintain and enforce the social supremacy of the class that is economically dominant, it is the relationships that the members of society enter into to produce and distribute wealth that remain the basic social relationships of any society. In this sense the political - and legal and religious - structure of a society can be seen as a superstructure resting on a base made up of that society's economic structure.

Similarly, the social consciousness of any society, i.e. the body of ideas its members draw on when deciding how to act, can also be seen as a part of the superstructure resting on that society's economic structure. Humans do not have a completely free hand as to what they decide to do or think. In philosophical terms, they do not possess what has been called "free will". They do have a will, but how they exercise it depends on the material circumstances in which they find themselves, circumstances which limit their choice of action.

This may seem a deterministic theory of human behaviour, but in fact it does not deny the role of human will. This would be absurd since, as we saw, the nature of the human brain and nervous system means that all human behaviour (above the level of certain basic bodily functions and reflexes) is willed. Conscious, willed action is a necessary feature of human behaviour. In other words, humans make history, but out of conditions in which they find themselves. As Marx put it:

“Men make their own history, but they do not make it just as they please; they do not make it under circumstances chosen by themselves, but under circumstances directly encountered, given and transmitted from the past” (*18th Brumaire of Louis Bonaparte*).

There is another broader sense in which humans make history, which is that the circumstances in which they find themselves are to a large extent the product of past human actions. This does not make the circumstances any less constraining, but it does once again distinguish humans from other animals. Unlike them, humans have contributed to the environment which shapes their behaviour. This happens largely through the technological development of the instruments and techniques they use in production.

Just as the economic structure of society is determined by the material conditions of production, so changes in these material conditions will bring about a change in the economic structure. The main changes that have taken place over the years have been the development of increasingly productive technology and the increasing skills and knowledge of its makers and users. It is technological evolution that has been the basis of social evolution and historical change. But technological evolution has itself resulted from the actions of humans, and so it is ultimately human action that has brought about social and historical change.

Further, it is human action that is instrumental in bringing about the actual changes in the economic and political structure of a society. There is nothing automatic about social change: it has to be struggled for by real people, pursuing some class interest. For, as we saw, the dominant class at any one time will be the class that originally had some key organising role in the productive methods employed by society. Should the character of these material productive forces change, as with the development of a new method of production arising from technological change, then those who play the key organising role in the new productive methods will tend to emerge as the new dominant class.

However, this dominant position will not be handed to them on a plate by the old ruling class. On the contrary, the old ruling class will seek to use its control of political power to prolong its rule. The new class has therefore to struggle not only to extend the new productive methods which give it the key organising role in production, but also to capture control of political power from the old ruling class. Ultimately the new class will win, but the actual course and pace of events will depend, on the one hand, on how determined the new class is in the pursuit of its interests and the tactics it pursues to further them and, on the other hand, on the resistance put up by the entrenched ruling class in defence of its own interests.

For example in the 18th and 19th centuries in Europe, the spread of industrial methods of production brought the entrepreneur class which organised factory production on this basis to the fore, first economically and then politically. Their descendants are still the ruling class in the West.

So, humans very definitely make history but they do so under circumstances which limit both their choice of action and the ideas motivating this action. This means that if we are to explain why a particular society, such as present-day society, has an anti-ecological relationship with the rest of nature, we must seek this not in the attitudes of the individual members of that society towards nature (their ignorance or shortsightedness or whatever) but in its economic structure since it is this that will have shaped those attitudes. Armed with this understanding, we can now proceed to examine the economic structure of present-day, capitalist society.

## Capitalism and the environment

In present-day society the natural aim of human productive activity to provide for the needs of humans is subordinated to the accumulation of capital. All the elements needed to produce wealth - natural materials, raw materials, instruments of production, productive skills - become objects of commerce, items which are bought and sold, or "commodities".

### PRODUCTION FOR THE MARKET

Production is not carried on directly for the purpose of meeting human needs but is geared towards realising a monetary profit from market sales. Of course human needs are met - inadequately for the producers and more than sufficiently for the members of the dominant class - otherwise human society could not continue. But this is only incidental to the overriding drive to accumulate capital on a larger and larger scale.

Production for a market, the accumulation of wealth having a monetary value, and even the sale of productive skills for wages had existed since Ancient times but as more or less isolated practices rather than as a complete economic system. It was only in the 16th century that "the capitalist era" began with the emergence of the world market, that is, of a pattern of trade linking productive activities carried out not just in a single country but in a number of different countries.

Capitalism is essentially an economic mechanism in which production is geared to the accumulation of capital out of monetary profits realised on the market. This mechanism first came into operation when, beginning in Europe in the 16th century, wealth was increasingly produced for sale not just on some fixed and stable local market but for a market which, because of its extent, was unpredictable and liable to fluctuate and which no single enterprise or government could control.

The effect on the countries involved of producing for this market was to subordinate the production of wealth within their frontiers to a new logic. This meant re-investing profits so as continuously to cheapen methods of production as a way of remaining competitive in the struggle to realise further profits. As a result profound changes were brought about in the economic structure of these countries and so also later in their political superstructure amounting to the introduction of a new form of society - capitalist society.

Since the 16th century capitalism has spread to the rest of the world so that today it is a truly world system embracing all countries including, in the form of state-run capitalism, places like Russia, China and Eastern Europe. So when we talk about human society today we are talking about a world society of which all humans are members, even if on an unequal basis. Similarly, the relationship between this society and its natural environment is the relationship between the whole human species and the whole of the biosphere.

### WEALTH AND VALUE

In capitalism all the elements for producing wealth have become objects of commerce bought and sold on the market. The items of wealth produced by human labour acquire, in addition to their use-value, an exchange-value which governs the price they can command on the market and which reflects the amount of human labour required on average to produce them from start to finish. Human labour thus not only produces wealth by transforming natural materials into things useful to human life, but it also confers on the product an abstract economic value that can be converted into money by sale on the market. Exchange-value can in fact be measured only in units of money and not directly in units of working time and so is always expressed as price.

The distinction between wealth and value is crucial for an understanding of how capitalism works. Both are produced by human labour, but whereas wealth is the joint product of actual human labour and nature-given materials, value is the exclusive creation of human labour. Capitalism is a system where wealth is produced as value rather than as wealth as such; where it is produced for its exchange-value rather than its use-value, more precisely for the additional exchange-value conferred by human labour on some product in the course of its production. The aim

of capitalist production is to maximise the amount of this additional exchange-value that is produced and to accumulate it as capital.

The main feature of the economic structure of capitalism is that the actual producers of wealth - those who work on materials that originally came from nature - do not control the use of the productive machinery that is at the disposal of society. This machinery is in the hands of separate, competing enterprises. It is these enterprises that employ those who actually produce the wealth, paying them a wage or salary which is less than the value they produce.

#### STAYING COMPETITIVE

Each enterprise, whether it is a small business, a limited company or a state corporation, is a separate capital, or sum of money invested in production with a view to profit. Profits are created in the process of production and represent the new value conferred on the elements of production by the producers over and above what they are paid as wages. But these profits are realised on the market when the products are sold and converted into money. Enterprises are thus engaged in a competitive struggle with each other to make profits in which they all seek to maximise the difference between their sales receipts and the amounts of money they originally laid out in purchasing the elements necessary for production (materials, buildings, machines, power, productive skills, etc). Most of these profits are then re-invested in production, so increasing the size of the capital the enterprise controls.

This is not a matter of choice. It is an imperative imposed on all enterprises by their competitive struggle for profits as the price for their survival. Competition drives enterprises to seek to maximise profits by reducing their costs of production so as to be able to undercut their rivals.

Production costs can be reduced in a number of ways. Enterprises can get their employees to work harder; they can organise the process of production more efficiently; but above all they can employ more productive instruments of production. These are all measures which increase productivity, meaning that more of a product can be produced in the same period of time so that its cost per individual article, or unit cost, falls. In value terms, the price of the commodity in question falls because less labour time is required on average to produce it.

Whether an enterprise adopts an aggressive or a defensive approach in this battle the result is the same: all enterprises are forced to invest in new and better machines. Once one enterprise has put itself in a position to undercut its competitors through having adopted some new cost-reducing technique, then the other enterprises are forced to defend themselves by adopting a similar technique. Competition obliges all enterprises to run fast just to stand still. To remain in the race for profits, they must stay competitive and to stay competitive they must continually accumulate capital invested in new more productive equipment. The weaker enterprises are pushed out of the market and eliminated from the struggle for profits, their capital passing into the hands of other enterprises.

#### UNLIMITED GROWTH

This battle is fought throughout the whole world capitalist economy and in all industries. The end-result is two-fold: the concentration of capitals into larger and larger units and the build-up of the stock and productive power of the instruments of production. Large enterprises, whether private or state-owned, controlling huge concentrations of capital and a tendency towards unlimited economic growth are thus built into capitalism. They are unavoidable features of capitalist society brought about by the operation of its economic laws.

These laws make it impossible to establish a sustainable relationship between human society and the rest of nature in ways enabling nature to supply the materials and reabsorb them after human use. Such a relationship would only be possible in a society in which the aim of production was the natural one of supplying the life-needs of its members. But this is precisely not the aim of production under capitalism. Rather, as we have seen, the economic mechanism of capitalism imposes "accumulation for accumulation's sake", "production for production's sake".

In a society geared to meeting human needs a point would eventually be reached where the accumulation of means of production would stop because those in existence were sufficient to provide for the needs of the members of that society. But there is no such limit in a society where the primary aim is to accumulate abstract exchange-value. A tendency to unlimited economic growth is built-in to capitalism because what is being produced is precisely not physical wealth as such but abstract exchange-value. The accumulation of exchange-value entails an accumulation of physical means of production and therefore also an extraction and transformation of materials from nature on an

increasing scale. This takes place, for reasons we will now examine, with little regard for the ecological consequences.

Ecology is concerned with the circulation of natural materials and with ensuring that these should be extracted, transformed, consumed and decomposed in such a way as not to upset the balanced functioning of the biosphere. Capitalist economics, on the other hand, is concerned with the circulation of products, not as useful things made from natural materials, but only as goods to be sold on the market at a profit.

It is clear that, with such an economic mechanism governing production, no adequate account will be taken of the ecological consequences of which materials to use and which methods to employ in doing so. No proper account will be taken, for instance, of whether a material is scarce or abundant, nor of whether it is renewable or non-renewable, nor of whether its extraction will upset the ecosystem or ruin the environment, nor of whether its transformation or its consumption will release dangerous substances into the biosphere.

Barry Commoner, in his book *The Closing Circle*, listed the sort of criteria that would have to be taken into account from an ecological point of view in making such choices:

“For a rational decision about the need for displacing cotton with nylon, we should compare the two materials with respect to: energy requirements for production, and the resultant air pollution; environmental impacts due to production wastes such as pesticides, fertilizer, and chemical plant effluents; durability of the products, and the environmental impacts incident to maintaining them (e.g., laundering, ironing). From such an assemblage of facts, a rational strategy for using these alternative products could be worked out. For example, if the analysis were to show that cotton is generally more socially valuable than nylon, except that cotton requires ironing while nylon does not, it might prove useful to design non-ironing cotton fabrics, or even to develop and encourage clothing fashions that no longer call for ironed fabrics. What is important is that the relative benefits and costs associated with the alternative products be made explicit, so that a rational social choice can be made” (Knopf, New York, 1972, p.314).

Under capitalism, however, in this case as in all others, the sole deciding criterion is the minimising of the amount of human labour incorporated in the product. This is an economic law of capitalism ruthlessly imposed by the imperative of competition. Any enterprise which decided to adopt a more ecologically sound, but more expensive, production method would become uncompetitive and so would eventually be eliminated from the competitive struggle for profits. Only those which adopted the cheaper, but ecologically less sound method would have a chance of surviving. This does not mean that all new cost-saving techniques are necessarily more damaging to the environment than the techniques they replace, but simply that the effect on the biosphere is not a relevant consideration in their adoption. The techniques which keep the cost of production to a minimum will be adopted under capitalism, even if they are ecologically harmful.

This is why the Earth's easily accessible resources have been plundered without thought for the future throughout the history of capitalism; why chemical fertilisers and pesticides are used in agriculture; why animals are injected with hormones; why conifer forests are planted in Britain in preference to more ecologically appropriate deciduous ones; why existing power stations and factories release all sorts of dangerous and obnoxious substances into the air and water; why human waste is not recycled back to the land; why non-biodegradable plastics and textiles are produced; why lead is put in petrol, why goods are made not to last, and so on.

It is true that in the end capitalism is forced to take some account of the laws of ecology, but only after the damage has been done - after some resource has ceased to be available in abundant supply, after some source of needed water has been polluted - and only to the extent that this ecological damage raises production costs to a level where it becomes less costly to take steps to try to conserve resources or reduce pollution than not to do so. Too little, too late is neither a rational nor a satisfactory approach to protecting the environment but it is the most that the rigid economic laws of capitalism will ever permit.

## The Ecological Perspective

Human productive activity, understood as the transformation of nature to supply human needs, necessarily takes place in the context of nature and is subject to the laws of ecology. It can indeed take a form that is incompatible with these laws, but not without sooner or later undermining its own basis as the activity of an animal species to satisfy its needs. In short, humans are a part of nature and cannot permanently defy its laws.

In the 19th century, when industrial capitalism was in its period of triumphant expansion, a different perspective was generally adopted and the history of humanity was portrayed, even by many critics of capitalism, as a struggle against nature which was about to end in a complete human victory. But to talk about a struggle against nature is quite inappropriate. The utilisation of nature by humans to supply their needs involves cooperating with nature not battling against it. Production, to be sustainable over any period of time, has to respect the laws of ecology. If this necessary ecological dimension of production is taken into account, then there is no justification for seeing human productive activity as a struggle to conquer nature in which every technological advance represents a victory of human society over nature. Rather, human productive activity has to be understood as being the natural activity of a particular animal taking place within the context of nature and its cycles.

### WASTEFUL AND DANGEROUS TECHNOLOGY

As we saw in an earlier chapter, what humans take from nature can be divided into two categories: renewable and non-renewable. Materials are renewable when they are continually reproduced by some natural process, whether this is spontaneous (as in the case of fish in the sea) or results from human intervention (harnessing of natural plant growth, as in agriculture). Other natural processes - such as the sun's rays, rivers, waterfalls, the wind - are also used by humans in production, but as instruments of production rather than as raw materials. Most materials in the strict sense of the term that are renewable are of plant or animal origin.

Non-renewable resources on the other hand - such as mineral ores, coal, oil, clay, sand - are so called because they do not form part of some natural cycle that reproduces them, at least not with a timescale having any relevance for humans. Concern has been expressed that non-renewable resources will eventually run out but, despite some wild predictions that were made in the recent past, depletion of non-renewable resources is not an immediate problem and probably never will be, not even under capitalism despite the way it plunders and wastes these resources.

One advantage non-renewable materials have over most renewable ones is that they can normally be used more than once. With the important exceptions of coal, oil and natural gas when burned, they can be recycled. A proportion of some metals is lost through corrosion but all metals can in principle be recovered and re-used. It has been suggested, for instance, that most of the gold mined since Ancient times is still in use. Much of the iron, copper, tin and other metals mined since the same time is still around somewhere even if not still used as gold is.

The fact that a large proportion of non-renewable materials can be continually re-used is one reason why the threat of them becoming depleted is not likely to become a real prospect. Another is that these resources can be conserved by making instruments of production easier to repair and by manufacturing goods of all kinds to last rather than to break down or become unusable after a carefully calculated period of time, as is common practice under capitalism.

Further, non-renewable resources can be replaced in many cases by renewable ones. Electricity generation is a case in point. Most electricity is generated today by huge steam-driven turbines. At the moment the main ways in which this steam is raised are by the burning of the fossil fuels - coal, oil and natural gas - and increasingly by the heat given off by the process of nuclear fission.

Burning fossil fuels, besides preventing them from being used as raw materials for the manufacture of their various derivatives, contributes to atmospheric pollution, while nuclear fission is a quite reckless way of just raising steam to turn turbines. Even if nuclear power stations were as safe as they are officially claimed to be, they still represent a threat to the biosphere in that any increase in the level of radioactivity is dangerous because of the role it plays in provoking mutations.



Such mutations are already brought about by normal background radiation, coming from the Earth's rocks and from space, but, as we saw in the second chapter, it is very rare that such mutations are favourable; more are likely to be unfavourable to the organism affected. Any increase in the level of radioactivity beyond its natural level is bound to increase the number of mutations and so the number of unfavourable ones. Future generations will rightly regard the decision to utilise nuclear power on a widening scale for electricity generation, let alone for military purposes, as an act of folly, especially as right from the start it was known that there was no satisfactory solution to the problem of disposing of the radioactive waste that inevitably results from the process. Dumping this in the sea or burying it in the ground is merely to pollute a part of the biosphere for generations to come.

There exist, however, ecologically less damaging alternatives for generating electricity. Turbines can be turned by water, wind and tidal power or by steam raised by the heat of the sun's rays. These are not only clean ways of generating electricity - they do not pollute the biosphere - but have the additional advantage of being based on renewable natural processes. It may also be possible to make the burning of fossil fuels less environmentally intrusive. The eventual choice must be left for the majority to decide after a full consideration of all the facts, including any possible side-effects.

### NON-POLLUTING TECHNOLOGY

As for the techniques employed to transform materials, whether renewable or non-renewable, if these are not to upset the functioning of natural cycles they must not release into the biosphere or leave as waste products toxic substances or substances that cannot be assimilated by nature. In other words, a non-polluting technology should be applied. This is quite feasible from a technical point of view since non-polluting transformation techniques are known in all fields of production. However they are not employed on any wide scale today because they would add to production costs and so are ruled out by the economic laws of capitalism.

The main renewable material which humans extract from nature is of course food, derived from plants and from other animals. Some of this is provided spontaneously by nature and is simply gathered or hunted by humans, but most is deliberately cultivated or raised.

Some human productive activity essentially remains that of hunting and gathering, even if sophisticated technology is employed. What humans need to do is to fit it into a functioning natural cycle in much the same way as other animals do, taking care to leave enough of the plants or animals gathered or hunted for these to be able to continue reproducing their numbers, including a surplus for human consumption. This is an elementary rule, but one which has been neglected time and again under capitalism where the competitive struggle for profits makes cooperation between enterprises extremely difficult, whether they are privately owned or state controlled.

Where cultivation or rearing is involved humans have to do more than merely fit themselves into an already existing cycle; they have, in a very real sense, to create a new natural cycle. In the absence of human intervention (except as hunters and gatherers) the fertility of the soil tends to be restored automatically so that the ecological area concerned is able to go on supporting from year to year its particular pattern of plant and animal life. When humans practise agriculture or raising animals, this previously-existing cycle is inevitably upset. But this in itself is not serious from an ecological point of view as long as a new cycle, incorporating these human productive activities, comes into being. This, however, requires conscious human intervention in which deliberate steps are taken by humans to ensure that the mineral and organic matter their productive activity takes out of the soil is restored to it, precisely so that it can go on supporting the required level of plant and animal life.

This was understood and practised in the relatively self-sufficient agriculture communities which existed up until the coming of capitalism, where what was produced was largely consumed on the spot. The human waste resulting from consumption together with animal waste and those parts of plants and animals that were not used for food or other purposes were restored to the soil where they were decomposed by insects, fungi and bacteria into the elements that sustain the soil's fertility.

When, however, the place of production and the place of consumption are separated this cycle tends to break down, with the result that the fertility of the soil diminishes. If an area specialises in the production of a crop for export, i.e. for consumption elsewhere, this means that some of the mineral and organic matter incorporated in the crop will leave that area for ever and not be restored to the soil. The same applies to animal rearing. Animals require large amounts of calcium for their bones, as well as other minerals such as phosphorus, iron and magnesium, which also

come from the soil via the plants on which they feed. If these animals are exported, whether dead or alive, and consumed elsewhere, then the minerals they contain are lost to the soil of the area where they were raised.

A complementary problem arises at the other end, at the point of consumption: what to do with the human waste which, when the points of production and consumption were the same, was automatically restored to the soil and recycled by nature? Releasing it into the sea or into rivers or sewers means that it is lost to agriculture, even if not, unfortunately, to the biosphere since this contributes to water pollution by encouraging the proliferation of some life-forms (algae, bacteria) to the detriment of others which the water normally supports.

The "solution" that has been found under capitalism, because it is the cheapest in terms of the labour content of the products, has been to use artificial fertilisers - nitrates and phosphates that have been manufactured in chemical plants. This works in the sense of allowing the land to go on producing the same amount, or more, of the same crop or animal, but at a price in terms of polluting the water in the region concerned. Artificial fertilisers, not being held by the soil in the same way that organic waste is, tend to be leached off by rain into waterways where they cause pollution.

The ecological solution to the problem is to find some way of restoring to the soil the organic waste resulting from human consumption in urban areas. Barry Commoner suggested that this might be done by means of pipelines linking the town and the countryside. A longer term solution would be that envisaged by socialists from the earliest days and summarised in the following terms by Marx and Engels in 1848 in *The Communist Manifesto*:

“Combination of agriculture with manufacturing industries;  
gradual abolition of the distinction between town and country, by a more equable distribution of the population over the country”.

The underlying principle behind the changes in the materials and productive methods used which are demanded by taking proper account of the ecological dimension of production is that the productive system as a whole should be sustainable for the rest of nature. In other words what humans take from nature, the amount and the rhythm at which they do so, as well as the way they use these materials and dispose of them after use, should all be done in such a way as to leave nature in a position to go on supplying and reabsorbing the required materials after use.

In the long run this implies stable or only slowly rising consumption and production levels, though it does not rule out carefully planned rapid growth over a period to reach a level at which consumption and production could then platform off. A society in which production, consumption and population levels were stable has been called a "steady-state economy" where production would be geared simply to meeting current needs and to replacing and repairing the stock of means of production (raw materials and instruments of production) required for this.

It is obvious that today human needs are far from being met on a world scale and that a growth in the production of food, housing and other basic amenities would still be needed for some years even if production ceased to be governed by the economic laws of capitalism. However it should not be forgotten that a "steady-state economy" would be a much more normal situation than an economy geared to blindly accumulating more and more means of production. After all, the only rational reason for accumulating means of production is to eventually be in a position to satisfy all reasonable consumption needs. Once the stock of means of production at the disposal of a society which had set itself this goal has been built up to this level - and, logically, this point must eventually be reached, since the consumption needs of a given population are finite - then accumulation, or the further expansion of the stock of means of production, can stop and production levels be stabilised.

So if human society is to be able to organise its production in an ecologically acceptable way, then it must abolish the capitalist economic mechanism of profit accumulation and gear production instead to the direct satisfaction of needs.

## THE GREEN PERSPECTIVE

This is a point on which we differ from the various Green parties and movements. To find an effective solution, we would argue, awareness and indignation about a problem must be accompanied by an understanding of what is causing it.

But the explanations of the cause of the environmental crisis which circulate amongst Greens tend to differ from ours. Some blame modern technology rather than the use, or, more accurately, the abuse, that is made of it under the present system. Others attribute the pressure on resources and the environment to overpopulation. Others say that

humans are too greedy and preach restraint on consumption for moral reasons. But respecting the laws of ecology does not mean abandoning modern technological knowledge and going back to the productive methods and personal consumption levels that existed before the coming of industrial capitalism. It means rather using materials and methods compatible with a balanced functioning of nature. With appropriate modification, modern industrial techniques of production are quite capable of providing enough good-quality food, clothing and shelter for every person on Earth and of doing this without damaging the environment.

The Green Party in Britain correctly sees the solution to the environmental crisis as lying in the achievement of "a system of human activity which is in harmony with the Earth's life-sustaining systems", as they put it in their 1987 General Election manifesto. However, they see this as being achieved through the election of a Green Party government which would take measures to gradually transform the present growth-oriented and profit-motivated capitalist economy into a decentralised, democratically-run and ecologically-sustainable one. While awaiting the election of such a government the Green Party concentrates, like environmentalists in the Labour and other parties, on advocating reform measures to try to protect nature and the environment.

We are up against a well-entrenched economic and social system based on class and property and governed by coercive economic laws. Reforms under capitalism, however well meaning or determined, can never solve the environmental crisis - the most they can do is to palliate some aspect of it on a precarious temporary basis. They can certainly never turn capitalism into a democratic, ecological society.

The conclusion is clear: if the present environmental crisis is to be solved and the threat to - indeed the actual degradation of - the environment removed, then capitalism must go. It must be replaced by a socialist society based on the common ownership and democratic control of the means of production.

## **Production for human needs**

To produce the things that people need and want in an ecologically acceptable way presupposes a particular relationship between society and the rest of nature.

For this to happen the members of that society must be in a position to control production and direct its purposes. This cannot be done in a society where the means of production are owned and controlled by only a section of society nor in a society whose economic structure is such that production is governed by the operation of blind economic laws which impose their own priorities. Production for needs therefore demands an end both to minority control over the means of production and to production for the market.

Production for needs requires, first of all, that control over the use of the means of production (nature, raw materials, instruments of production) should cease to be the exclusive privilege of a minority within society and become available to all. Everyone must stand in the same relationship with regard to the means of production. Class control of the means of production must, in other words, be replaced by common ownership and democratic control. Secondly, production for needs demands an end to production for the market. It means that wealth is produced simply for its use-value, that is, capacity to satisfy human need.

Production for the market is an expression of the fact that means of production and therefore the products are owned, not by all the members of a society in common but by individuals or groups. Exchange would completely disappear in a society in which there were no property rights over the means of production.

### **DEMOCRACY AND COMMON OWNERSHIP**

Production for needs can only take place on the basis of common ownership. With common ownership, what is produced is no longer the property of some individual or group, which has to be purchased before it can be used, but becomes directly available for people to take in accordance with their needs. It is for the majority class, which does all of the work, to democratically take political control in order to end minority ownership of the means of production and distribution.

The social arrangements permitting production for needs are basically the same as those that prevailed the last time it was practised by humans, in societies based on hunting and gathering that existed until the arrival of class society: the absence of property rights over the means of production and the ability of each member of society to have access to enough products to satisfy their life-needs.

Today, however, humans are no longer living in small bands engaged in hunting and gathering but in a world society, embracing the whole planet and the whole human species, in which they practise agriculture and the industrial transformation of materials. When we say, then, that it is common ownership which provides the framework for the development of a balanced relationship between human society and the rest of nature, we are talking about the common ownership of all the Earth's natural and industrial resources by the whole of humanity. We are talking about a world socialist society which would recreate, on a world scale and on the basis of today's technological knowledge, the communistic social relations of freedom, equality and community which humans enjoyed before the coming of property society.

From the point of view of satisfying the needs of human beings, capitalism is a quite irrational system. Within this society food is not produced primarily to be eaten, houses to be lived in, or clothes to be worn. Everything is produced for sale, not for use. The aim of production, far from being the natural one of producing useful things to satisfy human needs, is to maximise profits.

Humanity is now in a position, and has been for some time, to supply in an ecologically acceptable way the needs of all its members. The means of production and the technological knowledge at its disposal are sufficient to allow this to be done. What is lacking is the appropriate social framework: the common ownership of the Earth's natural and industrial resources.

Common ownership is not to be equated with state ownership, which is another form of minority control over the use of the means of production since, as we saw, the state is a feature only of class-divided societies. Common ownership on a world scale means that there would be no property or territorial rights over any part of the globe nor over any of the instruments of production created throughout the world by human activity. The Earth and its natural and industrial resources would not belong to anyone - individuals, companies, or states. They would simply be there to be used in accordance with democratically-decided rules and procedures.

The precise details of the democratic decision-making structure of a world socialist society cannot be laid down today but it is possible to envisage, for instance, the local community being the basic unit of such a structure. In this case people could elect a local council to coordinate and administer local affairs. Delegates could be sent to regional councils for matters concerning a wider area, and so on possibly with a world council responsible for matters that could best be dealt with on a world scale (for instance, the supply of certain key minerals, the protection of the biosphere as a whole, the mining and farming of the oceans, and space research). The procedures for electing delegates to the various councils could vary, but would include machinery whereby the councils could be instructed by majority poll. (These matters are dealt with more fully in our pamphlet *Socialism as a Practical Alternative*).

On the basis of common ownership and democratic control, the world-wide network of productive units can be geared to meet human needs. This would not have to involve the organisation of production and distribution by a world planning authority, but the setting up of a mechanism which would enable the productive network to respond in a flexible way to the demand for products communicated to it.

#### FREE ACCESS

Gearing production to meeting needs means, in the first instance, making arrangements for individuals to have access to what they need. This access would be free; socialism not being a society in which goods and services are produced for sale, people would not have to buy what they needed. They would be able to decide for themselves what their needs were and then to take from the stock of products set aside for individual consumption.

Signals to the network of productive units as to what to produce would thus come from what people actually chose to take from distribution stores under conditions of free access. This would essentially be a question of stock control in the first instance at local community level. In this case, needs would be communicated by local communities to the productive network as demands for given amounts of specified products and materials. This would then be communicated throughout the system, from supplier to supplier, and where necessary to other regions or to the world level, again as demands for given amounts of products and materials.

Goods would be produced and distributed in their natural form as useful things intended to satisfy some human need or other. Because they were no longer being introduced for sale on the market, they would not have a price. So, instead, estimates of what was likely to be needed over a given period would be expressed as physical quantities of specified products and materials not money.

There would be no need for any universal unit of account to measure it. Calculations would be carried out directly in kind not money. Other more important factors than cost would be able to be taken into account in making choices about which materials and productive methods to use. Instead of what minimised the production cost of some product being the only criterion, other factors such as the health, comfort and enjoyment of the those doing the work the protection of the environment and the conservation and the ecological suitability of materials and energy could be given the important place they deserve. This would naturally lead to different, in many cases quite different, productive methods being adopted than now under capitalism.

#### PROTECTING THE ENVIRONMENT

In such a needs-oriented society, the concept of "profits" would be meaningless while the imperative to "growth" would disappear. Instead, after an initial increase in useful production to provide the whole world's population with an infrastructure of basic amenities (such as farms, housing, transport and water supplies) production can be expected to stabilise at a level sufficient to provide for current needs and repairing and maintaining the stock of means of production. A sustainable relationship with the rest of nature would be achieved and maintained in which needs on a world scale would be in balance with the capacity of the biosphere to renew itself after supplying them.

As the only consciously-acting life-form within the biosphere, humans ought to act as the biosphere's "brain", consciously regulating its functioning in the interest of present and future generations. But before humans can hope to play this role we must first integrate our own activities into a sustainable natural cycle on a planetary scale. This we can only do within the framework of a world socialist society in which the Earth and its natural and industrial resources have become the common heritage of all humanity.