SMALL IS BEAUTIFUL

E. F. SCHUMACHER

Few can contemplate without a sense of exhilaration the splendid achievements of practical energy and technical skill, which, from the latter part of the seventeenth century, were transforming the face of material civilisation, and of which England was the daring, if not too scrupulous, pioneer. if however, economic ambitions are good servants, they are bad masters.

"The most obvious facts are most easily forgotten. Both the existing economic order and too many of the projects advanced for reconstructing it break down through their neglect of the truism that, since even quite common men have souls, no increase in material wealth will compensate them for arrangements which insult their self-respect and impair their freedom. A reasonable estimate of economic organisation must allow for the fact that, unless industry is to be paralysed by recurrent revolts on the part of outraged human nature, it must satisfy criteria which are not purely economic."

R. H. Tawney
Religion and the Rise of Capitalism

'By and large, our present problem is one of attitudes and implements. We are remodelling the Alhambra with a steam-shovel, and are proud of our yardage. We shall hardly relinquish the shovel, which after all has many good points, but we are in need of gentler and more objective criteria for its successful use.'

Aldo Leopold
A Sand County Almanac

Part One

THE MODERN WORLD

One

The Problem of Production

One of the most fateful errors of our age is the belief that 'the problem of production' has been solved. Not only is this belief firmly held by people remote from production and therefore professionally unacquainted with the facts - it is held by virtually all the experts, the captains of industry, the economic managers in the governments of the world, the academic and not-so-academic economists, not to mention the economic journalists. They may disagree on many things but they all agree that the problem of production has been solved; that mankind has at last come of age. For the rich countries, they say, the most important task now is 'education for leisure' and, for the poor countries. the 'transfer of technology',

That things are not going as well as they ought to be going must be due to human wickedness. We must therefore construct a political system so perfect that human wickedness disappears and everybody behaves well, no matter how much wickedness there may be in him or her. In fact, it is widely held that everybody is born good; if one turns into a criminal or an exploiter, this is the fault of 'the system'. No doubt 'the system' is in many ways bad and must be changed. One of the main reasons why it is bad and why it can still survive in spite of its badness, is this erroneous view that the 'problem of production' has been solved. As this · error pervades all present-day systems there is at present not much to choose between them.

The arising of this error, so egregious and so firmly rooted. is closely connected with the philosophical, not to say religious, changes during the last three or four centuries in man's attitude to nature. I should perhaps say: western man's attitude to nature, but since the whole world is now in a process of westernisation, the more generalised statement appears to be justified. Modern man does not experience himself as a part of nature but as an outside force destined to dominate and conquer it. He even talks of a battle with nature, forgetting that, if he won the battle, he would find himself on the losing side. Until quite recently, the battle seemed to go well enough to give him the illusion of unlimited powers, but not so well as to bring the

possibility of total victory into view. This has now come into view, and many people, albeit only a minority, are beginning to realise what this means for the continued existence of humanity.

The illusion of unlimited power, nourished by astonishing scientific and technological achievements, has produced the concurrent illusion of having solved the problem of production. The latter illusion is based on the failure to distinguish between income and capital where this distinction matters most. Every economist and businessman is familiar with the distinction, and applies it conscientiously and with considerable subtlety to all economic affairs - except where it really matters - namely, the irreplaceable capital which man had not made, but simply found, and without which he can do nothing.

A businessman would not consider a firm to have solved its problems of production and to have achieved viability if he saw that it was rapidly consuming its capital. How, then, could we overlook this vital fact when it comes to that very big firm, the economy of Spaceship Earth and, in particular. the economies of its rich passengers?

One reason for overlooking this vital fact is that we are estranged from reality and inclined to treat as valueless everything that we have not made ourselves. Even the great Dr Marx fell into this devastating error when he formulated the so-called 'labour theory of value'. Now, we have indeed laboured to make some of the capital which today helps us to produce - a large fund of scientific, technological, and other knowledge; an elaborate physical infrastructure; innumerable types of sophisticated capital equipment, etc. - but all this is but a small part of the total capital we are using. Far larger is the capital provided by nature and not by man - and we do not even recognise it as such. This larger part is now being used up at an alarming rate, and that is why it is an absurd and suicidal error to believe, and act on the belief, that the problem of production has been solved.

Let us take a closer look at this 'natural capital'. First of all, and most obviously, there are the fossil fuels. No-one, I am sure, will deny that we are treating them as income items although they are undeniably capital items. If we treated them as capital items, we should be concerned with conservation: we should do everything in our power to try and minimise their current rate of use; we might be saying, for instance, that the money obtained from the realisation of these assets - these irreplaceable assets - must be placed into ii

special fund to be devoted exclusively to the evolution of production methods and patterns of living which do not depend on fossil fuels at all or depend on them only to a very slight extent. These and many other things we should be doing if we treated fossil fuels as capital and not as income. And we do not do any of them, but the exact contrary of every one of them: we are not in the least concerned with conservation: we are maximising, instead of minimising the current rates of else; and, far from being interested in studying the possibilities of alternative methods of production and patterns of living - so as to get off the collision course on which we are moving with ever-increasing speed - we happily talk of unlimited progress along the beaten track of 'education for leisure' in the rich countries, and of 'the transfer of technology' to the poor countries.

The liquidation of these capital assets is proceeding so rapidly that even in the allegedly richest country in the world, the United States of America, there are many worried men, right up to the White House, calling for the massive conversion of coal into oh and gas, demanding ever more gigantic efforts to search for and exploit the remaining treasures of the earth. Look at the figures that are being put forward under the heading 'World Fuel Requirements in the Year 2000'. If we are now using something like 7,000 million tons of coal equivalent, the need in twenty-eight years' time will be three times as large - around 20,000 million tons! What are twenty-eight years? Looking backwards, they take us roughly to the end of World War II, and, of course, since then fuel consumption has trebled; but the trebling involved an increase of less than 5,000 million tons of coal equivalent. Now we are calmly talking about an increase three times as large.

People ask: can it be done? And the answer comes back: it must be done and therefore it shall be done. One might say (with apologies to John Kenneth Galbraith) that it is a case of the bland leading the blind. But why cast aspersions? The question itself is wrong-headed, because it carries the implicit assumption that we are dealing with income and not with capital. What is so special about the year 2000? What about the year 2028, when little children running about today will be planning for their retirement? Another trebling by then? All these questions and answers are seen to be absurd the moment we realise that we are dealing with capital and not with income: fossil fuels are not made by men; they cannot be recycled. Once they are gone they are gone for ever. !But what - it will be asked - about the income fuels? Yes, indeed, what about them? Currently, they contribute (reckoned in calories) less than four per cent to the world total. In the

foreseeable future they will have to contribute seventy, eighty, ninety per cent. To do something on a small scale is one thing: to do it on a gigantic scale is quite another, and to make an impact on the world fuel problem, contributions have to be truly gigantic. Who will say that the problem of production has been solved when it comes to income fuels required on a truly gigantic scale?

Fossil fuels are merely a part of the 'natural capital' which we steadfastly insist on treating as expendable, as if it were income, and by no means the most' important part. If we squander our fossil fuels, we threaten civilisation; but if we squander the capital represented by living nature around us, we threaten life itself People are waking up to this threat, and they demand that pollution must stop. They think of pollution as a rather nasty habit indulged in by careless or greedy people who, as it were, throw their rubbish over the fence into the neighbour's garden. A more civilised behaviour, they realise, would incur some extra cost, and therefore we need a faster rate of economic growth to be able to pay for it. From now on, they say, we should use at least some of the fruits of our ever-increasing productivity to improve 'the quality of life' and not merely to increase the quantity of consumption. All this is fair enough, but it touches only the outer fringe of the problem

To get to the crux of the matter, we do well to ask why it is that all these terms – pollution, environment, ecology etc. – have so suddenly come into prominence. After all, we have had an industrial system for quite some time, yet only five or ten years ago these words were virtually unknown. Is this a sudden fad, a silly fashion, or perhaps a sudden failure of nerve?

The explanation is not difficult to find. As with fossil fuels, we have indeed been living on the capital of living nature for some time, but at a fairly modest rate. It is only since the end of World War II that we have succeeded in increasing this rate to alarming proportions. In comparison with what is going on now and what has been going on progressively, during the last quarter of a century, all the industrial activities of mankind up to, and including, World War II are as nothing. The next four or five years are likely to see more industrial production, taking the world as a whole, than all of mankind accomplished up to 1945. In other words, quite recently that most of us have hardly yet become conscious of it – there has been a unique quantitative jump in industrial production.

Partly as a cause and also as an effect, there has also been a unique qualitative jump. Our scientists and technologists have learned to compound substances unknown to nature, against many of them, nature is virtually defenceless. There are no natural agents to attack and break them down. It is as if aborigines were suddenly attacked with machine-gun fire: their bows and arrows are of no avail. These substances, unknown to nature, owe their almost magical effectiveness precisely to nature's defencelessness - and that accounts also for their dangerous ecological impact. It is only in the last twenty years or so that they have made their appearance in bulk. Because they have no natural enemies, they tend to accumulate, and the long-term consequences of this accumulation are in many cases known to be extremely dangerous, and in other Gases totally unpredictable.

In other words, the changes of the last twenty-five years, both in the quantity and in the quality of man's industrial processes, have produced an entirely new situation - a situation resulting not from our failures but from what we thought were our greatest successes. And this has come so suddenly that we hardly noticed the fact that we were very rapidly using up a certain kind of irreplaceable capital asset, namely the tolerance margins which benign nature always provides.

Now let me return to the question of 'income fuels' with which I had previously dealt in a somewhat cavalier manner. No one is suggesting that the world-wide industrial system which is being envisaged to operate in !he year 2000, a generation ahead, would be sustained primarily by water or wind power. No, we are told that we are moving rapidly into the nuclear age. Of course, this has been the story for quite some time, for over twenty years, and yet. the contribution of nuclear energy to man's total fuel and energy requirements is still minute. In 1970. it amounted to 27 per cent in Britain; 0·6 per cent in the European Community; and 0·3 per cent in the United States, to mention only the countries that have gone the furthest. Perhaps we can assume that nature's tolerance margins will be able to cope with such small impositions, although there are many people even today who are deeply worried, and Dr Edward D. David, President Nixon's Science Adviser, talking about the storage of radioactive wastes, says that 'one has a queasy feeling about something that has to stay underground and be pretty well sealed off for 25,000 years before it is harmless'.

However that may be, the point I am making is a very simple one: the proposition to replace thousands of millions of tons of fossil fuels, every

year, by nuclear energy means to 'solve' the fuel problem by creating an environmental and ecological problem of such a monstrous magnitude that Dr David will not be the only one to have 'a queasy feeling'. It means solving one problem by shifting it to another sphere - there to create an infinitely bigger problem.

Having said this, I am sure that I shall be confronted with another, even more daring proposition: namely, that future scientists and technologists will be able to devise safety rules and precautions of such perfection that the using, transporting, processing and storing of radioactive materials in ever-increasing quantities will be made entirely safe; also that it will be the task of politicians and social scientists to create a world society in which wars or civil disturbances can never happen. Again, it is a proposition to solve one problem simply by shifting it to another sphere, the sphere of everyday human behaviour. And this takes us to the third category of 'natural capital' which wt: are recklessly squandering because we treat it as if it were income: as if it were something we had made ourselves and could easily replace out of our much-vaunted and rapidly rising productivity.

Is it not evident that our current methods of production are already eating into the very substance of industrial man? To many people this is not at all evident. Now that we have solved the problem of production, they say, have we ever had it so good? Are we not better fed, better clothed, and better housed than ever before - and better educated! Of course we are: most, but by no means ail. of us: in the rich countries. But this is not what I mean by 'substance'. The substance of man cannot be measured by Gross National Product. Perhaps it cannot be measured at all. except for certain symptoms of loss. However, this is not the place to go into the statistics of these symptoms, such as crime. drug addiction, vandalism, mental breakdown, rebellion, and so forth. Statistics never prove anything.

I started by saying that one of the most fateful errors of our age is the belief that the problem of production has been solved. This illusion, I suggested, is mainly due to our inability to recognise that the modern industrial system, with all its intellectual sophistication, consumes the very basis on which it has been erected. To use the language of the economist, it lives on irreplaceable capital which it cheerfully treats as income. I specified three categories of such capital: fossil fuels, the tolerance margins of nature, and the human substance. Even if some readers should refuse to accept all

three parts of my argument, I suggest that any one of them suffices to make my case.

And what is my case? Simply that our most important task is to get oh our present collision course. And who is there to tackle such a task? I think every one of us, whether old or young, powerful or powerless, rich or poor, influential or uninfluential. To talk about the future is useful only if it leads to action now. And what can we do now, while we are still in the position of 'never having had it so good'? To say the least - which is already very much - we must thoroughly understand the problem and begin to see the possibility of evolving a new life-style, with new methods of production and new patterns of consumption: a life-style designed for permanence. To give only three preliminary examples: in agriculture and horticulture, we can interest ourselves in the perfection of production methods which are biologically sound, build up soil fertility, and produce health, beauty and permanence. Productivity will then look after itself. In industry, we can interest ourselves in the evolution of small-scale technology, relatively non-violent technology, 'technology with a human face', so that people have a chance to enjoy themselves while they art: working, instead of working solely for their pay packet and hoping, usually forlornly, for enjoyment solely during their leisure time. In industry. again - and, surely, industry is the pace-setter of modern life - we can interest ourselves in new forms of partnership between management and men, even forms of common ownership.

We often hear it said that we are entering the era of 'the Learning Society'. Let us hope this is true. We still have to learn how to live peacefully, not only with our fellow men but also with nature and. above all. with those Higher Powers which have made nature and have made us; for, assuredly, we have not come about by accident and certainly have not made ourselves.

The themes which have been merely touched upon in this chapter will have to be further elaborated as we go along. Few people will be easily convinced that the challenge to man's future cannot be met by making marginal adjustments here or there, or, possibly, by changing the political system.

The following chapter is an attempt to look at the whole situation again, from the angle of peace and permanence. Now that man has acquired the physical means of self-obliteration, the question of peace obviously looms