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A WARNING: E. F. SCHUMACHER ON THE OIL CRISIS

SHOCK waves from the Iranian revolution are still reverberating around the world. The old dream of ever-expanding prosperity fueled by limitless supplies of cheap oil has finally ended, replaced by the harsh reality of finite, expensive, uncertain oil controlled by others. The struggles of businessmen, governments, and individuals to adjust to the newly perceived dangers of oil dependence have thrown the world economy into disarray. Inflation is escalating. The international banking system is deteriorating. Confidence in all forms of paper wealth is eroding. Economic growth has come to a halt. Labor productivity is declining. Credit and commodity markets are chaotic. The threat of economic disaster is greater than at any time since the great depression of the 1930's.

The handwriting is now on the wall for those who are not afraid to read it, but many are still confused about the seriousness of the oil crisis and where it is likely to lead. Some still believe it to be a fabrication of the international oil companies, a heartless hoax designed to enlarge profits. Others see it as a serious but temporary problem, one that can be quickly solved if only those obstructing expansion of nuclear power, offshore oil exploration, and synthetic fuels can be pushed aside. Still others see only disaster ahead.

In attempting to sort through the confusion, one can do no better than to turn to writings of the British economist, E. F. Schumacher. Although he died in 1977, Schumacher's insights into the present situation are far more helpful than much of what is being written today. In contrast to most energy experts, who must revise their "forecasts" with every new development, Schumacher never needed to alter his initial vision. He had a profound understanding of the underlying forces that were at work—and thus he was able to focus on the deep current that carries events forward, rather than on the surface eddies that move first one way and then the other.

Schumacher foresaw accurately, far ahead of time, developments of the last decade, and, before he died, he laid out a clear picture of what he saw lying ahead. For those who want to believe the oil crisis is imaginary or can be easily brushed aside, Schumacher's vision will not be welcome, for it amounts to a warning to prepare for imminent, difficult, and far-reaching changes in the world. But, those who choose to ignore his warnings are likely to look back later in sorrow—as must the political and economic leaders of Europe who, when Schumacher began to sound the tocsin in the late 1950's about the inevitable consequences of continuing to expand consumption of Middle Eastern oil, not only ignored his alarms but treated them with derision and contempt, continuing to do so right up until the first oil supply scare hit Europe in 1970.

Schumacher is most widely known for a collection of essays, entitled *Small Is Beautiful,* in which he inveighs against the inhuman scale of modern production and its lack of concern for human, spiritual values. He argues instead for the development and use of sophisticated, small-scale technology, which he says "is conducive to decentralization, compatible with the laws of ecology, gentle in its use of scarce resources, and designed to serve the human person instead of making him the servant of machines." His writings and personal efforts have been the guiding force behind the "appropriate technology" movement that has spread rapidly in recent years.

All this has made Schumacher a hero of the anti-growth, environmentalist movement, perhaps explaining why his essays on energy have been ignored in establishment circles. The loss has been ours, for he is no wild man but a highly trained, brilliant, original thinker who, as the chief

economist for the National Coal Board of England from 1950 to 1970, began reflecting deeply on energy issues before most of the current crop of experts ever thought there might be a problem.

In 1961, in the dim prehistory of the energy crisis, he foresaw the present state of affairs. He recognized the inherent contradiction between continuing expansion in oil consumption at the then prevailing rates, six to seven per cent per year, and the finite nature of oil resources. He asked a simple question, one that could be answered purely arithmetically: how long could it continue? He calculated the answer and found:

> If there is any truth at all in the estimates of total oil reserves [proved and undiscovered] which have been published by the leading oil geologists, there can be no doubt that the oil industry will be able to sustain its established rate of growth for another ten years, there is considerable doubt whether it will be able to do so for twenty years; and there is almost a certainty that it will not be able to continue rapid growth beyond 1980. In that year, or rather around that time, world oil consumption would be greater than ever before and proved oil reserves, in absolute amount, would also be the highest ever. There is no suggestion that the world would have reached the end of oil resources, but it would have reached the end of oil growth.[1]

Thus, when most thought the world was just entering the age of limitless growth, Schumacher had dated the outer boundary of its demise. And he understood then better than most do today what would happen when the insatiably growing appetite for oil could no longer be satisfied:

> The oil crisis will come, not when all the world's oil is exhausted, but when world oil supplies cease to expand. If this point is reached, as our exploratory calculation would suggest that it might, in about twenty years' time [1980], when industrialization will have spread right across the globe and the underdeveloped countries have had their appetite for a higher standard of living thoroughly whetted, although still finding themselves in dire poverty, what else could be the result but an intense struggle for oil supplies, even a violent struggle, in which any country with large needs and negligible indigenous supplies will find itself in a very weak position.[2]

We have now reached 1980—and are in exactly the situation he described, with exactly the consequences he predicted.

There is no mention of OPEC in the 1961 analysis, for it had barely come into existence. Not until a decade later did it emerge as an important force in the world oil market, which until that time was controlled by the giant international oil companies. In 1970, Colonel Qaddafi, who had just come to power in Libya, nationalized the oil industry and ordered a slight reduction in output, rather than the increase that had been planned by the oil companies. This slight throttling of output by one country sent a major tremor through the consuming nations (little felt in the United States because she was then, such a few short years ago, only a small importer of oil). The ensuing scramble for oil gave OPEC the opportunity it needed. The following year, for the first time in history, a price increase was dictated to the international oil companies. The dictator was OPEC. The increase, 50 cents per barrel, was unprecedented at that point in time and brought forth cries of anguish. The new price was $1.75 per barrel.

Schumacher did not need the 1973 oil embargo to understand the significance of these events. While many were, at best, confused, Schumacher, writing before the embargo, was crystal clear:

> It used to be said that O.P.E.C.—the Organisation of Petroleum Exporting Countries—would never amount to anything, because Arabs could never agree with each other, let alone with non-Arabs; today it is clear that O.P.E.C. is the greatest cartel-monopoly the world has ever seen. It used to be said that the oil exporting countries depended on the oil importing countries just as much as the latter depended on the former; today it is clear that this is based on nothing but wishful thinking, because the need of the oil consumers is so great and their demand so inelastic [insensitive to price] that the oil exporting countries, acting in unison, can in fact raise their revenues by the simple device of curtailing output. There are still people who say that if oil prices rose too much (whatever that may mean) oil would price itself out of the market; but it is perfectly

> obvious that there is no ready substitute for oil to take its place on a quantitatively significant scale, so that oil, in fact, cannot price itself out of the market.[3]

In this short paragraph, Schumacher identifies all the unpleasant truths that are causing such consternation today:

- The overwhelming need of the industrial countries for OPEC oil: The industrial nations import twice as much oil, virtually all of it from OPEC, as they produce themselves.
- The inflexibility of oil requirements, which means that any small shortfall in supply causes those in need to bid prices up sharply.
- The unavailability of substitutes for oil "*on a quantitatively significant scale*."

I have emphasized Schumacher's qualification because it is the key to understanding the futility of efforts to achieve "energy independence" by expanding production of alternative fuels. Nuclear power could, for example, *theoretically* substitute for most uses of oil—although many technical difficulties with the electric auto would first need to be overcome. Efforts to implement a nuclear "solution" to the oil crisis will, however, founder on the obstacles of *scale* and, secondarily, *time.* American society has found it hard to digest the present U.S. nuclear program, which has produced the equivalent of 50 large nuclear plants (1000 megawatts each) in the last 10 years, and which might, if not halted by the myriad of technical, economic, and safety problems confronting it, complete another 90 plants in the next 10 years. But, to substitute for just *one-half* of present oil consumption would require, even under optimistic assumptions, construction, fueling, and safe operation of *five hundred* additional nuclear plants. A nuclear construction program of this size is surely politically, socially, and economically impossible and even if it were not, would take far too long to implement to help with the immediate problems posed by import dependency.

Similarly, the synthetic fuels program being promoted and heavily subsidized by the federal government will prove to be another false panacea. Efforts to minimize its environmental and social consequences, which will be very large in any event, will drive up costs and severely limit the final size of the sector. To produce 10 per cent of our present oil consumption, the overly optimistic 1990 goal of the federal program, would require the construction of about 90 immense coal liquefaction plants, each of which would cost several billions of dollars (indicating how large and complex they would be). As inputs, they would require an amount of coal equal to *one-half* the entire output of the U.S. coal industry in 1978. Surely, this scale of operation will not be easily achieved, and even if achieved, it would leave ninety per cent of the oil problem unsolved.

Schumacher does not mention the potential for reducing oil requirements by improving the efficiency of use. Energy use can be cut without depriving people of desired energy services by, for example, building lighter cars with more efficient engines, improving the design and insulation of buildings, and using heat recuperators and improved processes in industry. The potential of such measures is very large, especially when compared to the potentials of nuclear power and synthetic fuels. My own work indicates that, *given continued access to sufficient supplies of Middle Eastern oil at a affordable prices,* the industrial world could gradually improve energy efficiency and make the transition to renewable resources before world oil supplies were exhausted.[4] The difficulty, of course, is that the emphasized assumption of the last sentence appears increasingly untenable. To make substantial improvements in energy efficiency will require many years, but there is little basis for confidence that Middle Eastern oil will be forthcoming in sufficient quantities for long enough to permit a smooth transition.

Control of oil has shifted from the industrial world, which needs it desperately, to nations which have much less need for the products of the industrial world. The result is an unstable situation that is threatening momentarily to fall apart—and carry down with it the industrial world.

The vast influx of wealth into the Middle East is causing great social changes and internal struggles for control in nations that are still largely feudal, nomadic, and agrarian and, thus, ill-equipped to cope successfully with these pressures. And, there is really nothing that can be done to guide this process into safe, non-violent channels. Oil wealth is propelling the Middle East rapidly into unexplored ground. Politics, economics, and religion are undergoing dramatic changes. No one, *including the present leaders,* knows what will happen next. In these circumstances efforts by outsiders, such as the United States, to force events in directions favorable to them are as likely to hinder as to help. Violence could explode at any moment. Extended breakdowns in production, the rise of new governments hostile to the West, or outbreak of war between the oil states—any of these could shatter the fragile system of oil production and distribution on which continued functioning of the industrial world depends, and there is nothing that the industrial countries can do to prevent it from happening.

Even if political upheavals or war do not disrupt vital oil supplies from the Middle East, the industrial world faces rapidly escalating oil scarcity and rising prices. Again, Schumacher foresaw the immediacy of the threat while most were still complacent. In "End of an Era," based on a talk given in the mid-1970's, when oil prices were about $13 per barrel and most experts were predicting falling, stable, or at most slowly rising oil prices, Schumacher emphasized that the "very, very short period in history of cheap and plentiful oil is now over," and that prices would soon rise to much, much higher levels.[5] Oil producers, he explained, were being subjected to nearly irresistible pressures to reduce output, and although it might take some time for the pressures to accumulate to the point of forcing action, "the logic of the *facts"* argued "that in the next ten years or so, perhaps much sooner, the output will come down and down, to about 50 per cent of what it was." The more than twofold doubling of oil prices in 1979 was caused by a *temporary* reduction of only 4 per cent in OPEC production. It is, thus, difficult to imagine how high prices might be in 1985 if Schumacher's forecast proves correct. Quite clearly though, in his view, present prices of $30 to $40 per barrel (as I write) are likely to seem cheap before long.

In the years since Schumacher called attention to the likelihood that the Middle Eastern oil countries would reduce production, the logic of the argument has grown stronger. He noted, first, that the oil countries could not possibly spend all their enormous oil revenues, no matter how extravagant their investment projects; second, that having seen how easy it was to expropriate the property of the American and British oil companies, they would be reluctant to invest their surplus oil revenues in real property in other countries; and third, putting these surplus revenues into short-term deposits in European and American banks, the only remaining possibility, would hopelessly destabilize the international banking system; thus there would be no safe place for surplus revenues, and the oil countries would move to reduce output to bring revenues in line with their expenditures.

In the years 1976-78, it appeared on the surface as though Schumacher might prove to be wrong, but pressures were building below the surface (or as he put it, "certain accounts . . . were being filled up"). The Shah, for example, was spending nearly all of Iran's revenues, but was thereby creating the social disruption that led to the 1978-79 revolution; and the banking system was successfully "recycling" oil money, but only at the price of accumulating many tens of billions of

dollars of loans to developing countries that would now, under any reasonable standard of accounting, be considered bad debts (although they are still carried at full value by the banks).

As we enter the 1980's, OPEC's revenues are far higher than ever before, and additional oil price rises seem inevitable, while OPEC spending seems likely to stabilize or at least grow far more slowly than in the past. The days of lavish spending in pursuit of instant economic development are drawing to a close; the bitter harvest reaped by the Shah has not gone unnoticed by other leaders. OPEC foreign expenditures declined in 1979 by 5 per cent in value (and much more in volume) as Iran, especially, but also Nigeria and Venezuela, cut back in spending.[6] Officially, Saudi Arabia is still planning to go forward with its ambitious development program, but at any moment the Saudi leadership could substantially scale back the program in an effort to quell growing internal opposition to its rule. If it does not, the question becomes: How long can a country of five to ten million people, mostly nomadic, withstand the social stresses created by spending $50 to $100 billion *per year* on massive industrial development? (For comparison, total non-housing investment in the United States in 1979 was $250 billion.)

If oil trade were to continue at present levels and prices to increase by 1985 to $50 per barrel, in constant dollars, certainly a modest expectation in light of recent experience, OPEC nations would in all likelihood accumulate surpluses of oil revenues over expenditures in the period 1980-1985 of $500 to $1000 *billion* (compared to $200 billion in 1973-79)—*but* is it reasonable to expect them to do this? They will be acting against their own financial interests unless they expect to earn a greater return on these surpluses than they could by keeping the equivalent oil in the ground to sell later, when the revenues would be needed to finance foreign purchases. Under current circumstances, though, oil in the ground seems far safer and more profitable than money in foreign banks.

Interest rates on bank deposits have failed to match inflation rates for several years; thus the real value of existing bank deposits of oil countries has been eroding, while oil prices have risen sharply. The ability of the international financial system to provide positive real returns on $100 to $200 billion per year of additional oil-country investments seems questionable at best. Moreover, the U.S. freeze of Iranian assets (including all deposits in domestic and overseas branches of U.S. banks) in November 1979 made all oil countries acutely aware of how insecure would be their own foreign investments in future conflicts with industrial nations, conflicts that seem almost inevitable. Thus, as Schumacher said, "the logic of the *facts"* argues that OPEC oil production will move downward.

Indeed, the move toward lower production, although not yet general, has already begun. Iran's output is less than one-half of the pre-revolutionary level. Kuwait recently carried out a twenty-five per cent production cut and indicated that further ones are planned. OPEC "radicals," such as Iraq and Algeria, although not reducing output now, would gladly curtail production in exchange for higher prices. Even Saudi Arabia, which accounts for nearly one-third of OPEC production and has so far held output high to restrain price rises, recently emphasized that there was growing internal sentiment in favor of reducing output.

The peril posed for the industrial economies by the trend toward lower OPEC production is extremely grave. Because the need of the industrial nations for oil is so great, they will bid up oil prices by a multiple of the percentage decrease in production, causing the OPEC surpluses to *grow* rather than shrink as output is reduced. It is impossible to say at what price financial or economic collapse would become inevitable; thus, it might happen inadvertently, through miscalculation by OPEC. And even if the

direct burden of oil payments does not become too high, the international monetary system may well collapse under the burden of managing the ever-growing surpluses of the oil producing countries and the corresponding deficits of consuming nations.

If financial and economic collapse can be avoided, which in my view seems none too likely, the prospect is for sharply rising oil prices, to levels far above present ones, and this will create enormous problems for the industrial world, whose entire structure reflects the implicit assumption that unlimited supplies of cheap oil would always be available. Major transformations of the economies will be needed to adjust to the realities of oil scarcity, and these transformations, even if they could be done gradually, which again seems doubtful, would involve enormous financial losses and throw millions out of work, at least temporarily. Some businesses, industries, and even cities will be made largely obsolete by the higher oil prices.

The problems of adjustment, of course, do not all lie in the future. We are in the early phases of the process right now, and present economic and financial disruptions and difficulties thus provide an indication of what lies ahead. For example, the present difficulties of the U.S. automobile industry exemplify the type of economic disruption that seems likely to become more severe and widespread in the future. The losses in bond markets in the first months of 1979, over $400 *billion* in the United States, equivalent to six years of total U.S. personal savings, are indicative of the magnitude of the financial losses that will be incurred in adapting to a world of uncertain and high-priced oil supplies.[*]

Perhaps most discouraging of all, no matter how great the efforts of the industrial countries to conserve on oil and to develop alternative fuels, they are unlikely for a long time to obtain much relief from the uncertainties and foreign-exchange burdens of oil dependency. As a group, *the industrial nations now import two-thirds of their oil.* If they struggle heroically and make great sacrifices, they might be able to cut consumption by one-third, imports by one-half, in the next five to ten years. But, assuming that economic disaster were avoided, the remaining oil would be vitally important, far more valuable per unit than today; thus supply interruptions would be as great a threat as ever, and OPEC might well be obtaining prices three, four, or more times present ones, implying greater total revenues for half as much oil.

Although the United States appears, at first glance, to be far more favorably situated to move toward oil independence than most other industrial nations, since she imports only 45 per cent of oil requirements and has large domestic reserves of gas and oil, closer examination shows it to be no easier for her than for others. Oil and gas production in the United States are both being forced inexorably downward by rapid depletion of resources. Additional supplies of domestic gas will be unavailable to substitute for oil, and oil production itself seems likely to fall by at least 20 per cent in the next ten years.[7] Thus, to cut imports in half by 1990 would require reducing U.S. petroleum consumption by one-third. If the economy expands even modestly during this period, achieving this reduction without forced curtailments and major disruptions would be a substantial achievement (and if the economy does not expand, obtaining the necessary funds to convert to more energy-efficient structures, vehicles, and industrial processes will be very

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• Although government manipulation of the credit markets had, as of early May, 1980, apparently reversed most of the losses suffered in the bond market earlier in the year, these losses were not so much eliminated as transferred to others. They will show up as lost jobs, income, and profits during the coming recession (depression?) that the government finally "succeeded" in creating by driving up short-term interest rates and restricting access to loans. If the government's recent precipitous return to easy money succeeds in reversing the economic decline, the spectre of renewed inflation will once again erode bond values.

The worsening oil crisis has greatly reduced the expected, future, real income of the industrial nations. This is inescapable and unavoidable. Government action cannot cancel the loss in wealth, but only influence who is to bear it.

difficult). Americans, therefore, are likely to be as affected as others by the unexpectedly sudden end of the petroleum age.

This is such an unhappy picture that the natural human tendency is to believe there must be some quick and painless way out, but there is not. The "soft" and "easy" paths to renewable resources and improved energy productivity are only slow routes away from oil dependence, and the perils and costs of dependency are already upon us. The dependency is too large, the power of the oil countries too great to escape the present situation without paying a heavy price.

The present crisis is the inevitable consequence of pursuing economic growth well beyond the capacity of the planet to support it. In "The End of an Era," Schumacher used the analogy of an expanding balloon to describe the historic, worldwide growth of industrialization. Historians, he said, would record many landmarks in the growth of the balloon as it doubled and redoubled, becoming ever more impressive. He continued:

> All of these will be important and interesting dates. But none so important and interesting as the date when a hole appeared in the skin of the balloon—perhaps to start with, quite a small hole—and the air started whistling out.
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> That date was October 6, 1973.
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> Things will never be the same again.[5]

The date, of course, was the beginning of the Arab oil embargo. The balloon analogy conveys Schumacher's sense of the vulnerability of the industrial world. Signs are appearing on all sides that the industrial-economic order is in danger of imminent collapse. Many find it hard to believe that this could be possible. Schumacher is telling us not only that it is possible but that it is happening—and quickly. A hole in a balloon does not stay small for long.

If the stresses of oil dependence do cause a collapse of the industrial economy, the world will not end. Rather, a period of great ferment and change will begin. Some can see only disaster in this possibility, while many others would expect the industrial system to gradually re-establish itself with more energy-efficient homes, cars, and factories, and with major substitutions of solar or nuclear energy for oil. Schumacher shares neither of these visions.

In Schumacher's view, the end of cheap oil signals the beginning of the move toward a sustainable system of production. It is not just oil scarcity that threatens the present system, but the expanding need for non-renewable resources of all kinds. Attempts to circumvent oil scarcity by substitution of other resources will soon run into other limits. Far-reaching changes are required, not simply in industry, but in agriculture, transportation, and population patterns. Exploitation must give way to husbandry, and giantism must yield to smallness, both in cities and in manufacture. Schumacher's comments on the modern system of agriculture, which he notes would exhaust the entire world's supply of oil in 30 years if applied universally, are relevant to the entire system of industrial production: "We don't even have to argue for the more organic system on ecological or in nutritional terms. . . . It's not a matter of choice; it's a matter of *must*. . . . This system is necessary whether you like it or not."[5]

If Schumacher is correct, and although there are of course many who would dispute it, his past record of accurate foresight gives much weight to this possibility, the least painful way out of the present crisis is to move as quickly as possible toward small-scale, dispersed, industrial and agricultural production based primarily upon renewable resources. Efforts to prop up the present system, whether through subsidies, tax breaks, "bailouts," or (sure to come) rationing of oil products, will merely delay the day of reckoning and raise the cost of making the inevitable transition to an economy appropriate to the limits of the earth.

As the oil crisis continues to worsen, those who now control the industrial countries will call

upon people to make ever greater sacrifices to avoid "disaster." In deciding how to respond to these calls, it will be important to ask whether the sacrifices will help to move society toward a sustainable future or whether, as seems all too likely, they will be used to push society further along the road that led to the present crisis.

Fear of economic failure should not dominate our thoughts and blind our sense of discrimination. The costs have been outweighing the benefits of industrial expansion for some time now, but all attempts to alter its course have failed, the influence of those benefitting from its progress is too strong, its forward momentum too powerful to overcome. Temporary economic disruption may be the price that must be paid to end the dominance of industrialism and create an opportunity for new beginnings.

The world that Schumacher foresees emerging out of the death of the petroleum era is not a fearful one of poverty and despair, but one bright with the promise of more fulfilling life and work. The opportunity will be greater than at any time in recent history for developing an economy that is, in the words quoted earlier, "conducive to decentralization, compatible with the laws of ecology, gentle in its use of scarce resources, and designed to serve the human person instead of making him the servant of machines." This is an opportunity sorely needed, one to be welcomed, not rejected out of fear.

Schumacher emphasized that the real crisis confronting the world is not economic but moral. Its cause lies not in a lack of oil but in a deficiency of virtue. The traditional values of society have been replaced by an unrestrained quest for material wealth. Success in this pursuit has been bought at the price of men's souls.

Escape from the moral crisis "must come from within and cannot come from without." Neither revisions in politics nor in economics will suffice. Society can be saved from its present plight only if a sufficient number of individuals "turn around," away from materialism and toward the higher values that have governed the conduct of human affairs in every great civilization.[8]

The world without reflects the world within. This ancient truth places the oil crisis, which is forcing the world into new directions, in a fresh light. It suggests that rather than representing a failure of economics, the crisis reflects a change in human consciousness, a new awakening of the human spirit. Seen from this viewpoint, the unexpectedly rapid demise of the petroleum age is a cause not for mourning but for rejoicing.

Schumacher's early death deprived us of a rare voice of wisdom and compassion. During his life he illumined a vision of the world that most of us yearn for, often without knowing it, deep within our hearts. His writings live on, a source of understanding and inspiration available to all who are striving to build a better world.

Union of Concerned Scientists VINCE TAYLOR

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5. F. Schumacher, "The End of an Era," *Good Work,* Harper and Row, New York, 1979.
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8. F. Schumacher, "Epilogue," *A Guide for the Perplexed,* Harper and Row, 1977. Schumacher, I am sure, would consider this inquiry into the nature of man, knowledge, and reality his most important book. Although not concerned directly with energy, it is a key to understanding why he could consistently see clearly and accurately the unfolding of the energy crisis when almost everyone else was befuddled and confused.

REVIEW
PROGRESS REPORT

KIRKPATRICK SALE 'S*Human Scale* (Coward, McCann & Geoghegan, $15.95) is a brave attempt to show the validity of a new kind of thinking about the welfare of the modern world, admittedly in deep trouble. The fundamental critical theme is that the institutions of our society have become too big, too unwieldly, for any of them to function well, and this contention is illustrated with examples of decline and failure from numerous aspects and levels of enterprise—government, industry, commerce, and social relations. The author's affirmative thinking is concerned with the appropriate size of human undertakings, such that they become foci for the best qualities of human beings—intelligence and moral responsibility—instead of barriers to their exercise. He endeavors to show from practical experience what works well in contrast to what works badly or not at all.

The innovative aspect of the writer's thinking lies in his use of the principle of synergy. There are, he suggests, synergistic tendencies for evil as well as those for good. Giantism gives play to self-destructive tendencies while appropriate size multiplies the good effects of what we do. While small or appropriate size is not a guarantee of beneficent results, it is necessary to producing them, while activities out of human scale are sure to result in numerous evils. Much evidence is gathered to demonstrate this double effect of causation in human affairs. The principal difficulty in accomplishing this demonstration comes from the fact that both tendencies are intermingled in all but very small societies, so that tracing cause to effect is partly an act of faith.

The point might be that an act of faith is *necessary* in any original or creative undertaking by human beings, and that the most any writer can do is to justify his faith as reasonable, using diverse arguments based on both familiar and unfamiliar facts. The problem is to isolate the relevant facts and identify the causal sequences for the reader.

The author is especially adept at exposing the self-deceptions in the prevailing idea of "progress":

> Pollution, congestion, crime, waste, alcoholism, corruption, accidents, disasters—all of them end up in the GNP as plusses: they're *good* for the economy. Hence though we may be told that our GNP is ten times greater than it was three generations ago, and the sheer number of products available twenty times greater, it may merely mean that our problems are ten or twenty times greater; we would certainly be hard-pressed to say that as a society we are ten or twenty times better off, or happier, than our grandparents were. Indeed, in not a few respects—the health of the food we eat, say, or the stability of our families and communities—we may realize ourselves rather less well off. I do not believe anyone measuring the particulates in the air or comparing the taste of the chickens or examining the curricula in the high schools or studying the rates of teenage suicides or observing the litter along the roadsides or comparing the civility of salespeople could seriously argue that our "standard of living," in any real way, had *improved* as a result of mid-century industrialism. . . .

As we suggested earlier, Kirkpatrick Sale uses a hardheaded empirical approach for his criticism, pointing to the tangible ills of the operations and products and side-effects (now become major) of bigness, exhibiting mountains of hardly debatable evidence to support his indictment of size far beyond the human scale. In behalf of the goodness of productive industry on a human scale, of small communities, local government, and other modest enterprises and relationships, the argument is two-sided: the resulting benefits are both practical (material) and psycho-social, involving subjective and moral as well as economic values. Sale's analyses and arguments recall a profound though simple formulation of a nineteenth-century American educator to the effect that there are two kinds of good—those which are diminished by being shared (economic goods), and those which are multiplied through sharing—the goods of the human spirit. Kindness, for example, is

contagious, and so are fellowship and sympathy, enthusiasm, and vision. Yet since economic activity on a human scale encourages and opens a way for expression of the qualities of the spirit, something like a loaves-and-fishes effect applies to even the practical goods, making them seem less diminished even as they are shared. This, by implication, becomes an underlying argument tacitly offered by Kirkpatrick Sale, although it is obviously hard to prove at the empirical level. The intangible magic of synergy is involved. Showing how the two ways of reasoning work together, supplementing each other, is a virtue of this book.

But we certainly need the hardheaded line of argument, if only to clear space for the other kind of thinking. In a reply to John Kenneth Galbraith's advocacy of big government for its role as watchdog and controller, Sale says:

> Regulation? Aside from added costs to consumer and taxpayer, the trouble with government regulation is that it is always a catch-up operation, fighting the problem at the wrong end *after* the damage has been done. If the only criteria in the economy are those that capitalism dictates as they are, then of course there will be those problems that no amount of government law or supervision can correct; if the purpose of government is to protect the smooth workings of the corporate system, as it is, then of course its duodenary attempt to restrain its excesses by patchwork edicts is always doomed to failure. Thus the famous actions against cartels have proved insignificant, as the existence and growth of conglomerates and oligopolies makes clear; the regulation of public utilities has been almost useless, as the existence of telephone gougers and electricity polluters, the awful failure of nuclear plants, makes obvious. . . .
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> One needn't claim that economic regulations among small and self-regarding communities are going to be untrammeled bliss to reject the notion that state supervision will solve more difficulties than it manufactures. . . . careful balances would have to be wrought between upriver towns and down-river cities . . . between the community that had surplus steel and the community with surplus grain; between the city with all the copper and the other with all the zinc. But it need not be all that complicated, nor need it entail some *dens ex civitas.* . . . Would the cooperation of a half-a-dozen small communities in a single limited bioregion be all that hard to effect?

What about the transition from bigness to communities and enterprises of appropriate size? Kirkpatrick Sale has no blueprints for change-over, but he has lots of samples of both communities and even business and manufacturing enterprises that are working well on a small scale. The transition, in short, is on the way, and each achievement points out fresh advantages and possibilities. The main value of this book is its showing that human intelligence is now able to stand above the sort of society we have evolved, to look at it objectively and compare it with other forms of human association, without pride or prejudice. The work represents a new plateau of self-understanding for our culture and civilization, put together with balance, care, and a large amount of work. We strongly recommend *Human Scale* to MANAS readers.

COMMENTARY
SUCCESSFUL FAILURES

TO what is said in Review about Kirkpatrick Sale's *Human Scale* it might be added that he weaves in with his own thinking the themes and contentions of the best of contemporary critics, such as E. F. Schumacher, Herman Daly, Leopold Kohr, Lewis Mumford, Wendell Berry, Karl Hess, John Holt, Arthur Morgan, Mildred Loomis, Ian McHarg, Theodore Roszak, Peter Van Dresser, Paul Goodman, Ralph Borsodi, Hazel Henderson, Lee Johnson, Amory Lovins, Scott Burns, and others of like interest and ability.

Also omitted in Review is this account of the art of making useless when not dangerous commodities:

> It is sobering to realize just how much of (present) technology is not only dangerous and unhealthy and, not only resource- and energy-intensive, not only costly and indulgent, but downright *unnecessary:* it exists, more often than not, to correct some other previous technological or social error. We have all these devices around us, in other words, mostly because we *created* the need for them.
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> We have the technical miracle of power steering in the modern automobile not because anyone thought it was necessary to turn a corner with the press of a finger but because one year the engineers at Chrysler had created a car so heavy and unwieldy that there was no way to maneuver the thing by conventional steering mechanisms and they had to devise something to make it sellable. We have an ingenious array of "hypo-allergenic" cosmetics and skin medicines because normal cosmetics do such damage to most people's faces (according to the Cosmetic, Toiletries, and Fragrance Association, a trade group, it is nuns who have the best skin because "they normally don't use cosmetics"). We have remarkable chemicals that can make gray meat look red and keep aging food from rotting—even though they make the food taste worse and poison our systems besides—solely because we developed vast supermarket chains with mass buying and mass marketing and mass delays that kept real foods in the pipeline for too long and caused much of it to spoil.
>
> In case after case, we can trace the technological achievement not to success but to failure. Invention, it seems, has become the mother of necessity. As Fritz Schumacher used to say often, "Would the ancients be more amazed at the marvels of our dental technology or the rottenness of our teeth?" . . .
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> Indeed, I think it is fairly easy to make the argument that our material standard of living might be *improved* if we were ever to free ourselves of the high-technology economy and move in the direction of a small-scale and self-sustaining world.

CHILDREN
. . . and Ourselves

A DEFENSE OF SCHOOL

MANY years ago, a MANAS contributor had the privilege of auditing a philosophy class at the University of California in Los Angeles. The professor was Ernest Carroll Moore, who will be remembered by some as provost of the university and by others as the author of good books on education. That day, he told about the inhabitants of certain Pacific isles who constructed simple dwellings using the vegetation that was all around. To keep out intruders the islanders would hang an enormous palm leaf over the principal opening. Question: Is it a leaf or a door? Nearly half an hour was spent in ringing the changes on this question. It wasn't very exciting, but the point became unforgettable: Language is a matter of convenience. It doesn't matter so long as people know what you mean. In such case, function is far more important than thing-in-itself.

We have been thinking about this matter lately, because of the continuing argument about schools. Sometimes it seems as though any place at all, if you call it a school, has the mark of the Beast on its lintel. This is where children fail and sometimes die at an early age. But school is also the name of the place where Sylvia Ashton-Warner did so much for generations of Maori and other youngsters. And school is sometimes described as Mark Hopkins on one end of a log and a student on the other.

After all, the reality of a school is metaphysical. The word describes a relationship between people with experience who want to share what they know with people of less experience. This is called "transmission"—passing on practical knowledge from one generation to another, the more or less obvious business of education. But there is another function, difficult to define and presumptuous to claim, that also belongs to the schooling relation. It is to excite both wonder and suspicion, to provoke embarrassing questions and impertinent answers. This function can be courted but not transmitted. It involves a quality which often challenges mere transmission, and people who limit their idea of teaching to repeating what is supposed to be "known" are usually offended by it and try to outlaw its activity.

This habit of being satisfied with the "known" gives schools and education a bad name. It leads to a long list of abuses which have been catalogued by teachers who care about the young, all the way from Leo Tolstoy to John Holt. Yet Tolstoy started a school, and John Holt is a one-man perambulating school, wherever he goes. Holt's mind runs to analogy and illustration, which is the habit, the almost uncontrollable habit, of a good teacher. When we defend schools here, it is the metaphysical idea of a school that we refuse to abandon. The word, we think, can be reclaimed. While the worst crimes there are have been committed in the name of religion, religion, which is the name of a relationship between the individual and the mystery of life, remains all-important to humans, despite the corruption of the forms and practices which are said to represent it. So with the idea of the school.

But why do we need schools in the first place? The birds and the bees don't have them. Well, no. Actually, no one knows enough about the polarities called Nature and Nurture to be sure about such matters. Birds don't need a drill master in order to fly in perfect formation, and fish don't have to have a "stroke" calling out the rhythm of their finny progress. The human sort of learning is a much more problematic task. Something called "dialogue" is required, and probably the best examples of dialogue are to be found in Plato's portrait of Socrates at work in Athens. We humans have to make one decision after another, and when we stop making decisions we're either dead or perfect. So the teacher does two things: He turns the world into a source of instruction in the way things are—which is transmission—and he uses his imagination to

provoke questions, questions which may be without answers. Some of his art should be devoted to helping the young to realize that people stop being alive when they no longer wonder about questions that have no answers.

So, the school, if it is true to the role we have assigned it, will be a place where such work goes on, by reason of the people who teach. But few schools are like that. Even the "nice" schools of today are in an administrative straitjacket created by complex economic considerations, not the least of which has been the "consolidation" program which has made big schools out of little ones over the past fifty years or more. Centralization of authority and responsibility has systematically eroded the psychological independence and capacity of teachers, and meanwhile the textbook publishers have made appeal to the national market the guiding editorial principle in planning readers and other texts. The books, in short, are blandly uninteresting. Not many parents recognize this as a disaster for the children, and among those who do, fewer still feel able to do anything about it. Yet some will care so much about the quality of the mental life of their children that they will begin to set an example to other people by teaching their children themselves.

This is the true "beginning of things" so far as human growing and learning are concerned. It is here that the fundamentals become apparent in direct experience, and in a way that one parent or family can describe for other families, so that they can learn to use their freedom in similar ways. This sort of person-to-person collaboration is the foundation of all educational reform, since the institutional barriers are reduced to an absolute minimum. Yet the products of various institutions may be found useful and indispensable. One doesn't start out to change the meaning of education in an ideal, utopian world, but in a world messed up by countless mistakes and compromises and bad habits, and an essential part of change is learning to use available tools and facilities in ways that are better than were intended for them.

Called for is continuous use of the imagination; and, as the Biblical phrase has it, a little leaven leaveneth the whole lump.