

The Preservation of the Planet

Nathan Keyfitz

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The time has come when scientific truth must cease to be the property of the few, when it must be woven into the common life of the world.

—Louis Agassiz, 1863

Only One World: Our Own to Make and to Keep, by Gerard Piel. W. H. Freeman and Company, 1992 (\$21.95).

The last third of the 20th century has been marked by an issue rarely considered prior to the generation of our parents: the preservation of the planet. Astronomy and space exploration bring reports from the outside world that confirm what biology and geophysics working from the inside tell us emphatically. The planetary mechanisms governing climate, soils and plants are complex, fragile and probably unique in the universe—and we depend on them totally. The awareness that our lives depend on mechanisms we are far from understanding is unnerving. The more so when we realize that industrial progress has increased the scale of human activities to the point at which they can be counted a major terrestrial force, comparable in magnitude with the forces of nature.

A matter so important has stimulated much print, and this may be the thousandth book on it, but no other is more deeply immersed in the achievements of science and in whatever is known about the damage done to our environment by science-based technology. It examines the achievements from a thoroughly humane viewpoint and never ceases to be nonpartisan. The author stands between the embattled armies of the proponents of growth and consumption on the one side and, on the other, those who want the least possible change from the pristine planet that existed before our distant forebears came on the scene. It goes as far as any one book can go toward putting into effect Agassiz's admonition.

Gerard Piel is both a devoted statesman of science and a critic of many of the uses made of it. One of the founders of *Scientific American* in the form in which we know it, he has spent his days for half a century in the labor of scientific dissemination, and he submits his accumulated knowledge to the test of discerning where the world is heading. He shows little trace of the thoughtless arrogance so often associated with technical achievement, an arrogance that is an even greater hazard for laypeople who have identified themselves with science than for scientists themselves.

One of the achievements of the June 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro was to link permanently in our thought economic development and protection of the environment. This book presents the nature of that linkage. In Piel's words:

Local air pollution, regional acid rainfall, apparent global warming, and the "hole" in the ozone layer all testify to the planetary reach of the industrial revolution. Taken together with noxious solidwaste landfills, toxic chemical dumps, the acidification of lakes, the contamination of groundwater, streams, and estuaries, the erosion of the soil on all continents, and the

impoverishment of ecosystems invaded by human habitation, these offenses of the present and threats to the future have put “the environment” on the political agenda of every country in the world.

All of this is the price the world has been paying for the good fortune of the 25 percent of the population that lives in the industrial countries. They consume 75 percent of the now so vastly expanded world output of material wealth. For the first time, whole populations of nations are rich.

The massive impact of humankind on the planet did not start with modern industry. Long before the industrial countries came on the scene, unsustainable types of agriculture were in use, and these continue into the present: slash-and-burn practices account for 35 percent of the deforestation in the Amazon region, 50 percent in South and Southeast Asia and 70 percent in Africa.

But in earlier epochs, populations had been small enough that they could carry on slash and burn in reasonable symbiosis with the forest, cultivating land for only two or three years before moving on. Forty or 50 years later the forest had substantially recovered, and as long as the population was small enough in relation to the land at its disposal, so that it did not have to return too early, this long fallow cultivation could continue indefinitely. It is population growth that disturbs the stable relation with the forest. Maurice Strong in the foreword is broader and more emphatic: “The quality of future life on Earth will depend to a high degree on the size of the stable world population that is likely to be reached some time in the next century.”

This destabilizing effect of population has in some societies been stimulating. “People have doubled the food supply...to meet...doublings of their numbers.” Where possible they did so by doubling the area under cultivation. Where that was impossible, they were forced to move up the scale of technical and economic progress. Some enthusiasts have claimed as a general rule that progress results from overpopulation, but going around the world counting cases would show an immense majority of the overcrowded lands in which population growth has reinforced a perennial condition of want.

We can never have exact data on the age-old condition, but the recent past exemplifies in statistics this income immobility of the poorest countries. Bangladesh showed an income in 1970 of U.S. \$170 per capita; in 1990, after some ups and downs, it had returned to exactly the same figure. Its GNP had gone up by 70.4 percent, but this was offset by the rise in its population from 66.7 million to 113.7 million, just the same percentage. Could Bangladesh have had the same increase in its GNP if its population had been level? Some would say yes, that because of land shortage and lack of capital the marginal population brings little to the income of the community. But after all, others say, following John Stuart Mill, every mouth comes with a pair of hands, and surely people in their desperation will think of some way of gaining a livelihood, if only they are not hampered by government. That way of seeing the matter is more congenial to us in the advanced countries than to those closer to the action. The Third World, as innumerable surveys have shown, has an unsatisfied desire for information

and equipment to control births. According to the World Fertility Survey, some 25 to 50 percent of Third World women of fertile age want the wider choice that command of birth control would give them.

But there is a good side to this explosion of population; Piel goes so far as to call it a "benign event." The increase in population is not caused primarily by increasing births but by "the lengthening of their life expectancy... the beginning of their industrial revolution." Food shortage was the result of excessive population growth most feared through the 19th century, yet a member of the increased population of today typically disposes of more food than his or her ancestors did. In no area of endeavor has the achievement of science been more impressive than in agriculture, which has banned for most of the next century, perhaps forever, the specter of humankind's inability to feed itself. The starvation that provides a tragic spectacle to television viewers is attributable to causes quite other than inability to raise enough food in total.

The story of China that Piel relates offers an example of the importance of population control. Once it had overcome the idiosyncratic view of population promoted by Mao and inherited from Marx, China moved effectively to hold down its population increase. China's total fertility rate fell from 6.24 in 1950-56 to 2.30 in 1985-90, compared with the less developed countries as a whole at 6.19 to 3.90 over the same period. "With a net reproduction rate not far above 1, China is approaching zero population growth at a lower standard of living than any nation that has preceded it into industrial revolution." The relation of this accomplishment to literacy, especially the education of women, and to confidence that somehow the old age of parents would be secure, needs little underlining. "The sense of economic equity abroad among the people...has made it possible for the national government to promote population control by draconian measures," including the rationing of pregnancies and the decree of one-child families.

Piel discusses with similar detail the way development is going in other areas of the world, but the Chinese case has been especially revealing. Comparison with the U.S.S.R. and Eastern Europe shows that only the name of communism was shared. Under it, countries have been ruled by ruthless dictatorships, more than ready to suppress alien peoples, but aside from that unpleasant common feature the rule has been as varied as are national cultures and temperaments.

Now that all are trying to escape into free markets, China has an advantage. It freed its farmers to sell their own produce in the early 1980s and allowed foreign-operated and foreign-controlled industry almost as early. That has meant a much less sudden break with the past than Russia and Eastern Europe are having to face. The same pragmatism appears in the way that markets are introduced: first in sectors of the economy and in regions of the country where the infrastructure is adequate and the capital required is small. These practices permitted an immediate acceleration of production under private ownership, especially in South China and the area around Guangdong (Canton).

Looking at the other side of the world, what is called the North, Alfred Sauvy's "First World," Piel has a sharp eye for the difficulties of an economic system that has

matured—in the sense that material want, which has tried the human race from the beginning, no longer exists for the population as a whole in the advanced countries:

They are rich in the fundamental sense that, for them, the economic problem defined by Adam's first question after the Fall—"When do we eat?"—is solved. For them, toil is no longer their living and their life. Their work is done by machines in progressively workless economies. In the U.S. economy, the climax to which all are trending, less than 3 percent of the so-called labor force remains engaged in agriculture; less than 30 percent in the production of goods.

At per capita incomes of \$16,000 in current dollars in the European Community, \$21,000 in the U.S., \$24,000 in Japan, \$30,000 in Switzerland, no one need suffer hardship. Our problems arise from quite other causes than shortage of basic goods.

Our economic and social institutions have failed to adapt to the technology that has made physical work, the kind of work that prevailed from the beginning up to well into this century, entirely obsolete. Not only has arduous physical work disappeared in the advanced countries, but even light work that is repetitive is now taken over by automation. And repetitive mental work is following that into obsolescence as computers dominate the workplace. Much of the repetitive work that remains is the keying of words and numbers from written or printed text, and most of this will be eliminated as soon as scanning apparatus is made more reliable.

Among many other signs of the lack of adaptation is persistent unemployment, on the one side, and on the other side purposelessness. Our ancestors, whose work was hard and often dangerous, always necessary simply to keep alive, seemed to know what they were here for. Now "anomie and preoccupation with the isolated self recur as a central theme of U.S. popular culture. That they find resonance in every other industrial country suggests that the solving of the economic problem brings on these quandaries everywhere. The answer to the simplifying question of survival asks a host of new questions for which there are no ready answers."

Attempts at explanation of this maladaptation have many traps into which the explainer can fall. No one can doubt that the dominance of the question of sheer survival in all past times simplified the life philosophy of those who had to face it. Yet why does its solution release all the commotion that we know, the personal as well as the social disorganization? Piel cites one answer by a distinguished social psychologist, in which the blame is placed on the two-child family, "an inadequate institution for the socialization of the young." Children are "in minimal contact... with adults, including their own parents."

But, I say, that is surprising; one would think that with the small family, children would have far more opportunity for contact with adults, especially their parents. If they do not, then it is not the small family that is to be held responsible. On the contrary, it must rather be some force that overcomes the smallness of the family. It

must be some unidentified change in the underlying culture. If that change had not occurred, the contact with parents would surely be greater with two children per family than with eight. I do not pretend that my expression “change in culture” constitutes a satisfying explanation; it is closer rather to an assertion that we do not know the explanation. My point here is only that admitting ignorance is better than attribution of lack of contact with adults to the small family— that is, to something that cannot be its cause.

It is especially in the past few years that there has been a lag on the economic part of adaptation:

Technological disemployment has been absorbed up to now in the United States and other industrial countries, by resilient economic and social institutions. Shorter and fewer working days in the year and years of prolonged education and earlier retirement may be counted the principal product of automatic production. In the United States, nearly half of the rising generation goes on to some higher education; such opportunity is opening to the young throughout the industrial world. The value of this time eludes quantification; it is not reckoned in the gross national product. The values beyond economic value to be had from the exercise of human capacity liberated from the compulsions of getting a living defy imaginations presently bound to that task.

One failure of institutions is reflected in distribution, on which, as Piel says, economics has never had much to say. It concerns itself with efficiency and allocation, where it has remarkable achievements, but rarely discusses allocation between rich and poor. And the failure to handle that is one of the causes of the problems that the advanced societies face. These problems are no less real for being unmeasurable in dollar terms: among the young and the poor, crime, drugs and suicide; among the better off, confusion of values. Projecting present tendencies, one can readily imagine increasing prominence of inequity between rich and poor, of restless subnational societies, each with its own culture demanding recognition, of fundamentalist religious communities gathering into their folds both those that economic advance has bypassed and those who And too little satisfaction in what economic advance does for them. And these sources of social instability are set in a physical world that is itself unstable as our system of production and consumption multiplies assaults on the environment. Now that the economic questions are partly behind us, perhaps the social sciences, including economics, which is the most advanced among them, could turn their attention in this direction more wholeheartedly than they have so far done.

This debasing of the natural environment in which we and our economy have to sit is a charge on the future. Only so much forest can be cut worldwide because there is only so much there. Only so much greenhouse gas can be released without intolerable results. What we draw of the tolerance of the biosphere, our children will not be able to draw.

Very well, some say, that is an economic problem; people should not be allowed to cut trees or release greenhouse gas—in general, to carry on activities for which others are being forced to pay part of the cost—and then to retain the whole profit. If people driving less will preserve the environment, then a suitable tax on gasoline will push them in that direction. Once they cover all the costs of driving, the market will ensure that just the right amount of driving is done. Gasoline in Europe is taxed at 75 U.S. cents per liter; if necessary to secure the desired reduction in the U.S., then such a tax should be imposed. We have here a purely economic problem to which there is an economic solution, discussed in textbooks under the heading of externalities.

Not for Piel is it a purely economic problem. He puts reducing contamination of the environment, along with good schools and maintenance of the infrastructure, in the category that “require[s] political as well as market choices.” And once we come to politics we must not think that politicians will put some measure into the laws just because they are advised by experts to do so. When the U.S. administration proposed a seven-cent (not 75-cent) federal tax on gasoline the Congress rejected it. Congress will vote laws that its constituents urge it to vote. It is curious that advisers who firmly believe in market economics—which holds that when people act according to their personal interests the social product is maximized—urge legislators to do something (tax gasoline, balance the budget) that will lose them their seats. Without public understanding, there will be no action.

The academy, of course, helps in the education of the public, but it is held back by an innate conservatism. That conservatism shows itself in unwillingness to recognize fundamental social change. The unwillingness comes out most conspicuously in the powerful methodologies being developed to solve problems that history has already solved for us, or simply bypassed.

Indeed, academics are not mere eccentrics writing purely out of their heads; they partake of the public consciousness of their time. It is an odd circumstance that in this moment when the economic problem, insofar as it is the aggregate production of the goods needed to sustain life, is essentially solved for the advanced countries, academics as well as the public are more preoccupied by it than ever. Ever since World War II no measure has been more commonly referred to than the GNP. Its rate of current increase is everywhere taken as the most precise index of the happiness of nations. While we stand hypnotized by that aggregate measure we could well come to grief through failure to recognize the deadly threats hiding in four quite different needs that the rising aggregate income seemingly does not help to satisfy: First, the division of the economic product within the rich countries, and most especially providing opportunities for employment among all those able and willing to participate in production. Second, the development of the poor countries. Third, the integrity of the global environment. And last, the defense of social order against attack by crime and the alienation of the young.

The Enlightenment produced two giant figures, Adam Smith and Karl Marx. Each carried conviction in his time. Smith’s prescriptions spread and are still spreading,

generating luxury and relief from physical toil for the masses. Marx's prescriptions gave the masses little but poverty and slavery in those countries that professed to follow them. What Smith and Marx have in common is that the doctrines of both are historically bounded. There is no reason why either should prevail for the indefinite future.

None of the four groups of needs listed above is being met by the calculus of the market. I read in this book what I read in John Maynard Keynes. Keynes spoke of that future day, which in 1931 he thought only half a century away, when the economic problem would have been solved for most citizens of Europe and America: "The love of money as a possession—as distinguished from the love of money as a means to the enjoyments and realities of life—will be recognized for what it is, a somewhat disgusting morbidity, one of those semicriminal, semi-pathological propensities which one hands over with a shudder to the specialists in mental disease."

Keynes goes on to express the hope that greed, a temporary necessity in the period when people had to be motivated to work and abstinence, to accumulate capital in the face of scarcity and hardship, will give way to a return to the classical virtues of altruism and sacrifice of self, as they appear in the recorded literature of all ages before the industrial revolution. With the facilities we now have, we should be able to come closer to practicing these virtues than did our ancestors who often merely preached them.

Piel's exposition implies at many points that those ancient and universal virtues fit with the present predicament of the rich countries as the virtue of self-seeking fitted with the harsh requirements of the industrial revolution. He and Keynes are not alone in this view. A significant minority of the young people of America and Europe are feeling their way to an escape from the ethic of greed: eating less meat, dressing simply, backpacking to see the world, looking for ideas in the primordial religions of Asia. They point to a more hopeful future than the still dominant debt-financed, planet-destroying, ostentatious living of us, their parents. What gives *Only One World* vitality is its combining the healthy dissatisfactions of the young with a mature appreciation of the power of science and the industrial economy to move us to a more sustainable course than the one we have been following.

NATHAN KEYFITZ, Andelot Professor Emeritus at Harvard University, is senior scholar at the International Institute of Applied Systems Analysis in Austria.

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