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FINDING LEMONADE IN SANTA BARBARA'S OIL

By GARRETT HARDIN

To hardheaded men, economics cry louder than dying seabirds. Fortunately for naturalists, there is a hardheaded reply: "The central core of business dogma, the cost-benefit analysis, can be shown to support the aims of conservationists better than those of commercial exploiters."

"An opportunist," said Elbert Hubbard, "is a man who takes the lemons fate has handed him and opens up a lemonade stand." Hubbard was a folksy philosopher, and most of what he wrote is as irritating to the modern reader as Edgar A. Guest's poetry. But I've always been fond of Hubbard's remark about the lemons. Incurable optimists like myself find it a soothing support.

In Santa Barbara, we need such support now. Miles of beaches covered with filthy oil turning to tar, hundreds of seabirds dead and dying from the oil, the air along the coast sour with the smell—all this is the grim legacy of the oil spillage that began in the channel in late January. Yet, I am optimistic enough to believe that what has happened in Santa Barbara can bring ultimate benefits not only to our city but to the entire nation. But it will take a fight.

I don't think it will do much good to dwell on the fate of the poor seabirds and all they symbolize. As a member of the Sierra Club, I am moved by their plight—but I know I am in the minority. Indignation over the rape of the environment is an avocation of many people who are paid to do other things. Making money is the full-time occupa-

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tion of the oil drillers. They can be patient. They can ride out a storm. Sooner or later, emotional fatigue overcomes the viewers-with-alarm. Even the worst news ultimately becomes a bore. Apathy and anomy set in, and the drillers take over.

TO reach hardheaded men, hardheaded arguments are required. In economic theory, according to Gresham's Law, soft money drives out hard. Economic analysis is governed by an inverse law (which has no name): *hard concepts drive out soft*. Red ink in the ledger book moves more minds than the missing cries of loon and merganser.

Fortunately for those who love unspoiled nature, a completely unemotional, rational analysis can be extracted from the Santa Barbara experience. The central core of business dogma, the cost-benefit analysis, can be shown to support the aims of conservationists better than those of commercial exploiters. We need only to take a deep look at the exploitation problem, unfettered by what Kenneth Galbraith has called "the conventional wisdom."

To look deeply at this vital problem we must first clear away a miasma of sophistical terms. Of all the forms of pollution from which we suffer today, verbal pollution is perhaps the worst. Spokesmen for the oil interests tell us that the "resources" of the world must be "developed" to meet the "needs" of a growing population. The quotation marks are essential to sensitize us to the assumptions hidden in the words. As conclusions can be loaded into premises, so can reflex responses be incorporated into these words, the content of which is more than mere description. To speak of a "resource" is to imply it must be used up, destroyed. To "develop" something is to somehow help it realize the full potential for which it was predestined (as a fertilized ovum is predestined to develop into a human being). There are men who desecrate the landscape with hundreds of tacky-tacky houses and boastfully call themselves developers, but would never dream of living in their own developments. Natural resources that are destroyed are also said to be developed.

Possibly the trickiest word of all is "needs." Few men are so rich that they don't feel they "need" more. Informed that the population is growing—and accepting as gospel that such growth is inevitable—few people question the legitimacy of the "needs" of a growing population. Seldom is it asked: "Is this growth necessary?" How often is the question raised as to the possibility that what we really "need" is a smaller population?

Conventional wisdom should be challenged. This can best be done by in-

vestigating its hidden implications so that we may fully understand the practical, human consequences of accepting the conventional view.

A larger population, enjoying a high standard of living, can certainly use more oil. In a statistical sense, we can say that oil can be converted into people. With the generous U.S. standard of living, about 150,000 calories are required per person per day. Of these calories, only 3,000 are needed for food. The rest of the energy units are used for the many other purposes of our life: heating our houses, manufacturing and operating our automobiles, radios, televisions, washing machines, etc. Therefore, the average American requires about 55,000,000 calories per year.

A barrel of oil can furnish 1,000,000 calories. So, if a man obtained his energy from no other source, he would require fifty-five barrels a year. In his lifetime, he would require approximately 4,000 barrels. In this context, the energetic cost or value (they become synonymous) of an American life is 4,000 barrels of oil. This materialistic way of looking at the matter will prove useful in building a case for the preservation of the non-material goods of life.

HOW much oil is there under the Santa Barbara channel? The oil companies, of course, play their cards close to their chests. The truth is not publicly known. Geologists have told me, however, that an educated guess would be that the channel reserve amounts to billions of barrels. Scuttlebutt has it that the reserve is apparently not as big as had been hoped in the beginning, so let's assume that it amounts to only a few billion barrels. To make the arithmetic easier, let's say there are four billion barrels of oil under the channel.

If the lifetime value of each American is 4,000 barrels of oil, four billion barrels would support 1,000,000 Americans for their lifetimes. This means—to develop the sort of argument favored by those who would exploit this reserve—that using the channel oil will make it possible for 1,000,000 more Americans to live—for just one lifetime (what happens to their descendants one is not supposed to ask).

The matter can be put another way: if the wells are closed down, the country foregoes the possibility of 1,000,000 additional Americans. Is that good or bad? An unprincipled protagonist can easily lead the public to believe that those who propose to shut down the wells are proposing to kill 1,000,000 Americans. No one is in favor of that, so the proposal to plug the wells is likely to be rejected.

But foregoing is not the same as killing. Lives never begun can never be ended. With modern medicine the aver-

age mother could have fifteen children instead of the present three; however, it would be ridiculous to say that a mother's selfish concern for her own comfort deprives the world of a dozen people. She does not murder twelve children by not having them.

To say that shutting down the Santa Barbara channel oil drilling will prevent the population from increasing by 1,000,000 people involves the hidden assumption that our population size is carefully (or at least accurately) determined by available income. This is a hard position to defend. On the contrary, it is possible that the number of babies born is independent of foreseeable income, and is determined by other factors which we need not specify. Taking this view, and assuming that the population in the years ahead will be uninfluenced by cutting down drilling operations in the channel, it would appear that the result of giving up this oil would result not in a diminution in population but rather a relative impoverishment of the population. If, for simplicity, we disregard the changing population base and assume a static population of the present 200 million, an increase of 1,000,000 without a concomitant increase in energy income would mean that everyone would figuratively have to "tighten his belt" by one-half of 1 per cent. At the present time, the aver-

"... hundreds of seabirds dead and dying — this is the grim legacy."

—Wide World



age family in the United States has a median yearly income of about \$8,000. Foregoing the channel oil would mean a diminution in yearly income of about \$40 per family.

The arithmetic used in these calculations is rough, but it is precise enough to make a rational decision. If there is a "need" to produce this oil in order to support more people, there is also a need to face the question: *Why?* Is there a shortage of people now? Does the country really need more people? Would the country be better off with a larger population?

ON the other hand, if the position is taken that the country needs the oil to prevent a diminution in our scale of living by one-half of 1 per cent, then the question naturally arises as to whether a consideration of energy alone gives a fair measure of what is called the "scale of living." It is a convenient measure, because it is so easily quantified.

But energy is clearly not all that is involved in the scale of living or in the quality of life. There are other components in the good life, and these are often diminished by a release of energy. The burning of petroleum products in automobiles produces smog. Using en-

ergy for transportation increases the traffic problem, which wastes time and slows movement and thus adds hidden costs to many other items. An increase in population made possible by any energy source diminishes the quality of those aspects of the environment that cannot be multiplied or subdivided, such as national parks. Every barrel of oil pumped out of the ground diminishes the value of the Grand Tetons. All too often it is taken for granted that every additional oil field discovered is a gain for society. This is principally because conventional economic analysis does not take into account the "soft" concepts of natural beauty and peace of mind. Quantifying these concepts is difficult but it is insanity to say that the value of that for which there is no conventional method of measuring can be assumed to be zero. To make such an assumption is to lay the burden of proof on the wrong side of the balance sheet.

THE gallon of gas that makes it possible for an individual to drive his automobile increases smog, increases traffic, wastes time, increases medical bills, decreases recreational areas, and increases nervous strain. Of the direct and indirect effects that result from the utilization

of one more barrel of oil there is no end. This is an illustration of the general ecological principle that "we can never do merely one thing." This principle is in sharp conflict with the unthinking philosophy of business enterprises.

When it was found that spraying fields with DDT diminished the shell thickness of the eggs of predatory birds, thus heading them toward oblivion, such effects were promptly labeled "side effects." Rachel Carson identified this verbal pollution, pointing out that effects are effects, period. What one individual calls a side effect is influenced by his perceptions and his selfish interests. Effects that I do not want to have to pay for, I will call side effects. Effects that I do not want to think about, I will call side effects. Language is more than a tool for the objective description of the world; it is also a form of word-magic to be used in trying to control the world, or at any rate to control others' perception of it. "Side effects" is powerful word-magic.

So also is the economist's word "externalities." Consider the manufacture of some bit of hardware that involves heating and grinding processes. What are the costs that the manufacturer must recover in the price of his product? A partial list might include such considerations as raw materials, capital investment, labor costs, management overhead, silicosis of workers, poisonous effluent wastes, and smoke. If he can get away with it, the manufacturer will maintain that his only costs are the first four items. The other items—the very existence of which he will deny if he can—he will refer to as externalities. They are external to *his* balance sheet. But they are not external to the whole manufacturing system as the ecologist sees it.

THE word "externality" is part of the word-magic of the business accountant. By this word-magic, the costs—to the firm, but not to society—are kept down, and business profits increased. To ecologists, the whole concept of externalities is fiction. All externalities are a true part of the cost. Ecological justice dictates that he who produces a cost should be responsible for paying it.

If the object the manufacturer is making involves a grinding process that in the long run produces silicosis in some of the workers, then, strictly speaking, the cost of silicosis, however reckoned, is part of the cost of manufacture. The manufacturer will try to deny his responsibility; he is pursuing his own self-interest. But society as a whole long ago decided to block the door to externalizing such costs. A manufacturer should be obliged to pay the medical and disability costs incurred by his workers, if they are probably attributable to the manufacturing process. Thus the line be-



"I'm getting tired of your constant attempts at apocalyptic humor."

tween "internal" and "external" economic factors evaporates.

Suppose the process produces waste waters that are toxic to fish or other aquatic life? Suppose it produces smoke, which poisons nearby trees and makes the air foul for a considerable distance? Society is still in the process of making manufacturers internalize these externalities. A bitter battle is being waged; it is far from being won.

THE media of the world are water, air, and ether (the medium of light and radio waves). Industrial poisons cast into the air or water, supersonic booms via the air waves, visual pollution of the landscape by billboards, audible pollution from radio and TV, all these and more corrupt the media. A man may own the land on which his smelter, tannery, or television station stands: he does not own the media that surround it. When the population was sparse, what a man did to the media could be safely ignored, but no more. Now it is time to say, "Let the polluter pay the cost of pollution"; better still, let him be enjoined from polluting in the first place.

E. B. White has expressed the ecological ethic in his usual, succinct way. Reacting to a newspaper account that the Atomic Energy Commission had "authorized" the dumping of radioactive waste into the ocean, White remarked: "I sometimes wonder about these cool assumptions of authority in areas of sea and sky. The sea doesn't belong to the Atomic Energy Commission, it belongs to me. I am not ready to authorize dumping radioactive waste into it, and I suspect that a lot of other people to whom the sea belongs are not ready to authorize it, either."

The sea belongs neither to an agency of the Government nor to the oil well drillers. The cost of drilling an oil well in the Santa Barbara channel includes not only the cost of the drilling platforms, the labor costs, raw materials, and management overhead, but also the cost of any pollution that results therefrom. What the total cost of the recent pollution is, is anyone's guess. It should be noted that to date the lawsuits resulting from the spill total more than \$2 billion. For a yardstick, the value of the oil lost in the first twelve days of spillage was less than \$1 million.

For bargaining purposes the damages claimed in a lawsuit are almost always overstated. I doubt, however, if they have been in the present instance. We are only beginning to quantify damages to the media and the environment.

Dr. Robert R. Curry, a geologist at the University of California in Santa Barbara, has recently published a detailed study showing the measures that would have to be taken to make the tapping of the channel oil sufficiently



"I am an over-thirty. Hath not an over-thirty eyes? Hath not an over-thirty hands, organs, dimensions, senses, affections, passions? If you prick us, do we not bleed? If you tickle us, do we not laugh? If you poison us, do we not die? And if you wrong us, should we not revenge?"

safe in this earthquake-ridden area. Sixty-six earthquake epicenters have been identified in the channel by his geological colleague, Professor Arthur G. Sylvester. The five-mile-long pipelines required to bring the oil from the marine platforms to shore would need to have numerous automatic shutoff valves in them, for just two such lines (and there are already a dozen oil platforms in the channel) would contain more oil than has already spilled during the Santa Barbara catastrophe. Many other expensive safety features would be needed. It is doubtful the oil companies could afford to drill in the channel if they were forced to internalize the true costs.

Significantly, Dr. Curry's title is assistant professor of environmental sciences. In the past, established professors of geology, as well as younger assistant professors, have not been notably courageous in laying down the law to the petroleum industry. Money talks. However, it is an encouraging sign of the awakening ecological conscience that there are a few faculty berths labeled "environmental sciences." In such a berth a man may be more independent of industry pressure than geology department members usually are.

The Santa Barbara crisis will be neither the last accident nor the last battle. The idea that there is an environment that professors and others should be concerned about is taking hold. The

heresy that no one has a right to pollute the media of the world is changing to orthodoxy. Sooner or later the ecological ethic will prevail. Sooner or later industries will be forced to internalize so-called externalities.

The lemons of Santa Barbara may become part of the nation's lemonade stand.

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Edited by ARTHUR SWAN

The object of the game is to complete the poem by thinking of one word whose letters, when rearranged, will yield the appropriate word for each series of blanks. Each dash within a blank corresponds to a letter of the word.

Sand in the feed
Made the farmer curse.
Stones in the seed—
The —————
— —————!

—Contributed by
ROGER HAYWARD.

(Answer on page 67)