Capitalism and Morality

BUSINESS ETHICS IN THE DIM LIGHT OF UNCERTAIN SCIENCE[1]

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A characteristic of educated people is that they do not expect more from a science than a science can deliver. This paraphrase of Aristotle's remark about ethics applies to contemporary empirical science. Yet there is a tendency to think that scientific judgments should be certain, and that otherwise they are not scientific. Decisions in business ethics as well as those in public policy are often dependent on scientific evidence. The problem that vexes policy makers in industry as well as in government is that scientific knowledge develops over time and does not necessarily proceed in a straight line toward true conclusions. Especially at the beginning of a new field of research, there are many unknowns and therefore uncertainty and disagreement among the experts. The research into the connection between human made chlorofluorcarbons (CFCs) and the stratospheric ozone depletion, is a stark example of this uncertainty.

Scientific Discourse on CFCS[2]

The first major study that indicated a connection between CFCs and ozone depletion was done in 1974 by Sherwood Rowland and Mario Molina at the University of California-Irvine. This study was not based on evidence of actual depletion since no convincing evidence would be found until twelve years later. The conclusions were a hypothesis based on how chlorine reacts with ozone. The hypothesis was based on a complex chain of conditions.[3]

The scientific discourse took place mainly between 1974 and 1985. In the years immediately preceding the hypothesis by Rowland and Molina, there was a skeptical attitude toward science within the Nixon administration. John Ehrlichmann, Nixon's chief of staff, was reported to have said in 1971 "... if scientists could not agree with each other the White House would not pay attention to any of them." Nevertheless, when Rowland and Molina hypothesized that chlorine from the CFCs could destroy stratospheric ozone, the National Academy of Science (NAS) undertook a major study from April 1975 to September 1976. The outcome of the study was a prediction that the ozone would be depleted in the range of 2 to 20% with the most likely depletion between 6 to 7.5%. The NAS did not recommend a ban of CFCs but warned that some regulation would be necessary at some time in the future. In May 1977, Congress passed legislation banning all non-essential aerosols.[4]

The questions challenging this theory were whether the CFCs would rise to the stratosphere, whether they would break down, and if so, whether they would destroy ozone faster than the natural ozone cycle

could replenish itself. Critics argued that there have always been natural ozone depleters such as volcanic eruptions, that the ebb and flow of the ozone goes on constantly, and that the amount of human-made chlorine is insignificant. Between 1979 and 1984 the predicted loss of ozone was steadily lowered. Actual monitoring showed no evidence of depletion. The critics seemed to be vindicated and those who had sounded the alarm for the "crisis that wasn't" were discredited.[5]

As the picture looked less frightening and the need for action less urgent, the Reagan Administration affirmed a reluctance to regulate business. The Reagan Executive order 12291 mandated that all major new regulations required cost-benefit analysis. Critics pointed out that this requirement would curtail any administrative regulation of alleged ozone depleting sub- stances since there is no readily available data to show the future cost of action not taken.

DuPont, which had spent over 15 million dollars to develop alternatives to CFCs and were the only company to do so, ended the project in 1981. Joe Steed of DuPont, who would later become an advocate of regulation, described the industry's point of view as it looked in 1981: "There wasn't scientific or economic justification to proceed. How do you trade a possible [environmental] risk for a [business] risk that is real? [6]"

The picture changed suddenly and decisively in the Antarctic spring of 1985 when British scientists discovered a dramatic loss of ozone. This came to be called the "hole in the ozone layer" and changed forever the attitude of government and industry toward CFCs. The terms "ozone layer" and "hole" are metaphors. The "ozone layer" refers to the space from twelve to thirty five kilometers above the surface of the earth in which the ozone is normally concentrated at a few parts per million. The "hole" refers to the depletion of the ozone over an area of the Antarctic. Some of the critics were not convinced, and argued that the conditions that occur in the extreme cold of the Antarctic would have no ill effect on humans or on the environment and would not be repeated in temperate climates. The prevailing view of scientists was that the ozone-poor air of the Antarctic would circulate and cause a thinning of ozone that would be disastrous. This had become the policy of the United States and nearly all of the industrialized nations by the time the Montreal Protocol was accepted in September 1987. The Protocol called for the regulation and phasing out of all CFCs.

The story of the end to CFC production involves the interlocking processes of science, government, and industry. If scientists are not always unanimous and if their progress in not always even and one-directional, what can be said for government and business? Government and business leaders must pay attention to the changing picture of science as best they can while also fulfilling the changing needs of their respective constituencies. But science, government, and business do not operate in isolation from each other. The government ban on CFCs not only made the development of substitutes necessary; they also made them possible. While it is obvious that banning an essential product makes the development of a substitute a necessity, we can show that the ban also makes development a possibility. If reductions in CFCs were merely suggested, some companies would continue to make and market CFCs. Since substitutes are necessarily more expensive, at least initially, they could not compete. Creating a substitute involves a heavy investment in time and resources with no guarantee of success. In a competitive business environment, no company would undertake the risk and expense with no reasonable expectation of gain. This argument is based on the assumption that the substitutes are physically possible. The international ban makes them economically possible.

Two chemists whom DuPont hired to focus on the study of the CFC—ozone connection attended the Ozone Trends Panel Press Conference on March 15, 1988. One of them was the only business representative on the Panel and had read the full report before the press conference. After the Conference, they called Joe Glas, head of DuPont's Freon division and informed him that the assessment was accurate. There was a scientifically supported link between CFC and ozone depletion. Scientific research had

caught up with the pledges made in 1974 by the chairman of DuPont, and repeated by CEO Richard Heckert only three weeks before the March 15 Press Conference, namely, that they would stop production when and if the evidence warranted it. Joe Glas took the report into consideration and ordered the end of DuPont's CFC production.[7]

DuPont had already changed its position on regulation, and in 1986 sup- ported controls of CFC's. However it insisted that the controls be international. The demand for international controls made sense both from a scientific and business point of view. If only American industries were prohibited from producing CFC's as was the case in the 1977 ban of the non-essential aerosols, then foreign production would continue to deplete the ozone and DuPont and other American manufacturers would suffer an economic set- back with no environmental benefits. But if an international ban were imposed, then the environmental goal of ozone conservation could be achieved, and DuPont stood to be a leader in the development or a substitute. In supporting the international treaty, DuPont announced that a substitute could be available within five years. This announcement was a boost for the negotiations, which would have been considerably more difficult if there were no substitutes in sight.[8]

There was some suspicion, especially among British and European manufacturers, that DuPont already had a substitute and that the American sponsored international ban would give DuPont complete dominance of the new market. However DuPont had stopped working on the substitute in 1980. At that time the head of the Freon Division, Joe Glas had said that alternatives were seven to ten years away. When they resumed research the projected time was reduced to five years. The difference was that the agreement itself provided an incentive. Without regulation there would be no market for alternatives and industry is reluctant to invest heavily in an uncertain product. With the empirical verification of depletion, and the acceptance of the Montreal Protocol, the uncertainty was over.

The Role of Business Ethics

The crisis lasted from 1974 when the first major study implicated CFC's in the depletion of stratospheric ozone until 1987 when CFC's were banned. This period was marked by the conflicting forces of a greater sensitivity to environmental degradation on the one hand, and a strong move for deregulation on the other. Some advocates of a more libertarian approach to business see environmentalism as a thin end of the wedge to regulate business. Some environmentally sensitive ethicists, by contrast, see any criticism or resistance to regulation as a shortsighted grasping for profits at the expense of the long-term health of the planet. Each side tends to emphasize the experimental results that support its case. The ethical business leader must sift through the data to develop an environmentally sound policy while providing jobs, return on investment, and beneficial products.

Business ethics as it exists in the literature and textbooks is made up of material which is mostly irrelevant to the kind of problem facing an executive trying to make a decision in the midst of uncertain science. This fact is not itself an indictment of business ethics, since there are other roles that it fulfills. Business ethics includes understanding compliance with laws and contract provisions, loyalty to employers in such things as honesty, avoidance of conflicts of interest, etc. It also deals with fair treatment of employees regarding safety, dignity, and protection from discrimination and harassment. But business ethics also deals with large issues such as how corporate policy impacts the above issues and those issues such as consumer safety and environmental protection.

The real test of business ethics is how well it can help leaders handle issues in which the right course is not certain and in which there are not exact precedents. These problems are especially acute for those at the executive level who cannot refer the problem to a higher official. The CFC case was clearly such an issue because there were no laws in place and the question of harm was not certain.

Ethical executives will make environmental protection a factor in every decision by asking how they can improve the environment or at least, how they can minimize the harm. But as beneficial as such an attitude can be, it does not throw much light on situations in which the science is uncertain. The situation will continue to be uncertain in the foreseeable future as technological developments outrun the scientific understanding of their total impact.

Because of the uncertainty, there is an inclination among some business theorists to dismiss the entire notion of environmentalism. They may see environmentalism as a cover for leftists who want government to control business. They believe environmentalism is opposed to "sound science." This position might have some appeal to business leaders. But it poses a problem since it underestimates the harm that human activity can do to the environment. Worse yet, it poisons the wells of discourse.[9]

Among those who are willing to engage in a productive dialogue, there is a wide spectrum of opinion. Some oppose regulation and believe that the market is sufficient to motivate business to act rightly toward the environment. This was the position of the Reagan Administration in the early years and is still held by some political conservatives. An example of this position is the religious based "Cornwall Declaration" published by the Acton Institute and the Interfaith Council for Environmental Stewardship. Its immediate purpose is to counter the trend of the churches to adopt environmental positions that the signers of the Declaration consider to be based on "... certain misconceptions about nature and science, coupled with erroneous theological and anthropological positions."[10] The charter signers include many respected Catholic, Protestant, and Jewish thinkers, including former Secretary of the Interior, Donald Hodel, who led the fight against CFC controls in the early 1980's. Since there is no shortage of environmental ideas based on misconceptions, the Declaration can serve the purpose of weeding out bad ideas.

However, in the context of the CFC issue, the Declaration makes some statements that are problematic and potentially harmful. It makes a distinction between environmental concerns that are well founded and those that are unfounded or greatly exaggerated. Two of the five contrasting characteristics are: "The former are proven and well understood, while the latter tend to be speculative," and "The former are often localized, while the latter are said to be global and cataclysmic in scope." Unfortunately, science is not always certain, and damage can occur whether human beings are certain of it or not. In the case of CFCs, government and industry leaders had to make decisions without the comfort of certitude. The evidence was strong that CFCs could lead to "global and cataclysmic" damage. The only way to be certain would have been to do nothing and see whether such damage would occur. When warnings of danger are heeded, the reality of the danger is seldom established with certainty.

In contrast to the anti-regulators, many environmentalists favor regulation as a necessity for environmental protection. This is the position that CFC, producing corporations, especially DuPont, finally adopted. While industry has an understandable and rational bias against regulation, that position is different from the ideological doctrine that regulation is always bad. Sometimes regulation is reasonable and fair. Anti-regulators may argue that the market gives business enough incentive to avoid harm, and this might be true if the harm is known quickly enough to affect the market. But for long term problems, it is not enough. Further, those industries that acknowledge a problem would be put at an unfair disadvantage if competitors could continue the harmful practice. In the case of the CFCs, regardless of what DuPont would do, there was no hope of solving the problem without international regulation. Ethical business leaders would avoid activities that they consider to cause unwarranted harm to the environment, and support regulation that prevents others from doing such harm. That position promotes environmental safety and economic self-interest.

Regarding environmental issues, there are several disincentives for responsible action. Developing a sound economic policy within a company takes resources. Well-staffed departments of environmental concern not only compete with line managers for funds, but they interfere with their work. It is the

production side that produces economic value on which upper management is judged. Therefore emphasis on the environment runs contrary to the individual and collective self-interest of the executives. Managers are rewarded for their solutions to short term problems and for financial gains rather than long-term production goals, much less environmental protection. Actions that ward off future disasters are seldom known, much less acknowledged.

The Larger View: The Move toward a Greater Environmental Responsibility

While it is easy to paint a grim picture, the situation is not hopeless. There has been progress in environmental protection and the effort to preserve the ozone is a good case in point. In spite of the resistance on the part of industry, key members of government, much of the international community, and even some scientists, the conservationists finally prevailed.

The ozone case can be seen as an instance of a long-term move toward greater environmental responsibility. Several factors are behind this. There is more awareness of the harm that can be done by human activity. Until the second half of the twentieth century environmentalism was seen as primarily of aesthetic interest and necessary to preserve such things as picnicking and sport fishing. At worst it was seen as a local health hazard that should be cleaned up but not at the price of lost jobs. As science and industry gained more power to alter the environment the awareness dawned that environmental deterioration affected not only the leisure of the rich and the health of the poor, but the well-being of the human race and of the planet itself.

In addition to the grim awareness of threatening doom, there was another quite different reason for environmental awareness. Societies such as those in the First World which have an abundance of goods, can turn their attention to "bads." The whole problem is one of joint production of "goods" and "bads." As economist Kenneth Boulding stated:

> "If goods are very scarce, you put a very high value on them and you're ready to put up with a lot of 'bads.' As the old Lancashire saying has it, 'Where there's muck, there's money.' Its only when you get richer that you become interested in what are really superior 'goods,' the quality of life and so on." [11]

But while economic development enhances environmental concern, ethics becomes more difficult as decision-makers become aware of the uncertainty of science. Technology is always experimental and any innovation is by definition untested. Inventors and industrial developers of technology make educated guesses and unexpected results are always a possibility. Some recent examples are thalidomide, DDT, and asbestos. Business leaders who initially decided to manufacture these products were performing experiments. Sometimes there are warnings about safety, but the only way to find out if the warning is justified is to test it. In some fortunate cases the testing can be done in a laboratory without risk to consumers or the environment.

In other cases this is not possible. For example, before the fatal launching of the space shuttle, some of the engineers at Morton-Thiokol warned of the danger facing the Challenger because of the unreliability of the O rings at low temperature. If these engineers had prevailed, the launch would have been delayed, but nobody would have known that the engineers had saved the lives of the crew. Sometimes the warnings come before the fact, and other times the evidence of danger emerges only after the product has been launched. The evidence in such cases is seldom clear and certain. Companies are therefore tempted to keep the knowledge hidden with the hope that the danger is not real and the fear that companies might be harmed by an unfounded scare. In the case of asbestos, which was considered a safe product because of its fireproof quality, the evidence was suppressed with disastrous results. In the case of silicon breast implants, there was some suppression of evidence, but apparently there was

no real harm from the product. The suppression of evidence magnified rather than eased the scare.

The case of the CFCs began as a low risk experiment that would replace higher risk experiments such as ammonia refrigerants. By 1974, CFC's were no longer an experiment but simply a safe, useful, proven product. When the first warnings concerning danger to the ozone were published by Rowland and Molina, the continued manufacture and use of CFC's once again became experimental. This is of course a retrospective view, and it is not likely that anyone at that time, including DuPont executives, thought that continuing production was an experiment. The CFC case is different from many others, in that the data could not be hidden in company archives. It was in the stratosphere for scientists and governments to examine.

When there are reasonable doubts about the safety of a product for consumers, full disclosure of facts and an understanding of the risk would allow consumers to decide whether they wanted to take part in the experiment by purchasing or using the product. But when the risk is environmental, individuals do not have a choice. Nevertheless, full disclosure would enable them collectively to exert political and economic pressure. Risks, whether to consumers, employees, or the environment, should be known throughout the organization, including the engineers, the whole management team, executives, and the board of directors. The information should be shared with the public before the risky product or process is put into effect. As ethicists Sandra Rosenthal and Roger Buchholz expressed it:

> Everyone involved in a product must ask themselves whether the result of the experimental testing conducted thus far warrant a real life experiment. And should the experiment fail, would they be willing to take responsibility for the decision and show the public that it was rationally and morally justified based on the evidence available.12

In the case of CFC's, the "experiment" was well underway before anyone was aware of the risk. If the warnings were accurate, then the results of inaction could be catastrophic. The quick ban on non-essential CFC's reflected this awareness. But a complete and immediate ban on all CFC's would have caused severe economic and health problems because of the loss of refrigeration and air-conditioning. A ban could not be implemented without a substitute, but development of a substitute was not economically feasible until there was a ban on CFC's that would make the more expensive substitute marketable. Neither the ban nor the creation of the substitute would solve the problem without international cooperation. All of these conditions had to be met in the dim light of uncertain science. As described above, the investigation, dialogue, and negotiation that took place over a twelve-year period produced a surprisingly acceptable result.

Many fortunate circumstances came together to facilitate the CFC ban. DuPont was the dominant producer of CFCs as well as the largest potential producer of its substitute. Nevertheless, the cooperation of business, science, and international governments on this issue serves as a model of rational ethical behavior.

Leaders of business, science, and government face many similar and perhaps more difficult decisions in the immediate future. The task of philosophy in this context is to create or uncover a vision that is large enough to include all people with life-affirming values. In developing a vision, there is no need for ideological conformity. In a pluralistic society, such a thing is probably not possible and maybe not even desirable. Analogous to the way that diversity in nature provides a stability lacking in a monoculture, a variety of spiritual and intellectual traditions may prevent any of them from slipping into a one-sided emphasis. It is important that all individuals and groups find symbols that fit their own ethical, philosophical, and religious framework, e.g. Christian, Jewish, humanistic, etc. This does not imply relativism or tolerance of destructive views. There are universally valid beliefs and they include respect

for all people, care for all living beings, commitment to sustainable environment, and dedication to scientific investigation in the face of uncertainty. These shared values make tolerance, diversity, and cooperation possible. As William James argued a century ago, we have a political republic, we now need to work toward a republic of beliefs and values.

Notes

1. This is a shorter version of a paper written with financial assistance from the West Virginia Humanities Council, a state program of the National Endowment for the Humanities.
2. Karen T. Litfin, Ozone Discourses: Science and Politics in Global Environmental Cooperation. (New York: Columbia University Press, 1994). Based on Litfin's analysis, the term "history of scientific discourse" is more appropriate than simply "the history of scientific research." Science must be expressed in language and this involves interpretation. A key role is played by those whom Litfin calls "knowledge brokers" who serve as intermediaries between the producers and consumers of knowledge, i.e. between the researchers and the policy makers. Brokers must be adept at both science and communication. "Knowledge brokers are especially influential under conditions of scientific uncertainty that characterizes most environmental problems" p. 4.
3. R. S. Stolarski, "The Antarctic Ozone *Hole.*" *Scientific American* 258:30-36 Jan. '88. This is a summary of Stolarski's explanation. Chemists know that chlorine destroys ozone. (The controversial issue was whether the chlorine in CFC's destroys ozone in the stratosphere.) Ozone (O3) composed of three oxygen atoms is formed in the stratosphere when ultra-violet light breaks down a molecule of oxygen (O2) into two oxygen atoms. The free atoms bond with molecules of oxygen to form new molecules of ozone. The ozone absorbs ultra- violet light which breaks it into its component parts of an oxygen molecule and a free oxygen atom (O2 and O). The free oxygen atom then combines with another oxygen molecule to reform as ozone. The process is continuously repeated. The net result, under stable conditions, is that the amount of ozone remains stable over time. Chlorine atoms upset the balance. When a chlorine atom collides with a molecule of ozone, it takes one of the oxygen atoms resulting in a molecule of oxygen and a molecule of chlorine monoxide (CIO) which is a free radical containing an odd number of electrons and therefore reactive. When the chlorine monoxide molecule meets a free oxygen atom, the two atoms of oxygen unite to form an oxygen molecule and the abandoned chlorine atom is free to destroy another molecule of ozone.
4. Ian H. Rowlands, *The Politics of Global Atmospheric Change.* (Manchester and New York: Manchester University Press, 1995) P 45.
5. Litfin p 6
6. Litfin p 70.
7. Litfin p 70.
7. Rowlands, p 113.
8. "DuPont Freon division" in Goodpaster and Nash, *Instructor* s *Manuel to Accompany Policies and Person: A Casebook in business Ethics. third edition (McGraw-Hill, 1998)p* 191.
8. Litfin, p 93.
9. A journalistic example of discrediting environmentalists is an article by syndicated columnist Mona Charen called "A Bias toward Environmentalists." Citing the work of Michael Fumento she begins the column by referring to the increasing acceptance of such things as astrology and talking to the dead. Then after citing some of the advantages of technology such as medicine and refrigeration, she asks: "So if the benefits of science are so apparent, why do we fret about environmental hazards like pesticides and chemical additives? ...The bias toward environmentalists and against science is so strong that the American people have been repeatedly exposed to large doses of unnecessary panic." *Wheeling Intelligencer.* November, 1999. The implication is that one cannot be scientific and environmentally concerned.
10 "The Cornwall Declaration on Environmental Stewardship" in *Environmental Stewardship in the Judeo-Christian Tradition*, edited by Michael B. Barkley, Grand Rapids Michigan: Acton Institute, 2000.
11 Anne Chisholm, *Philosophers of the Earth* (New York: E. P. Dutton co. 1972) p32.
12 Sandra B Rosenthal, and Roger Buchholz. *Rethinking Business Ethics: A Pragmatic Approach* (Oxford University Press, 1999) p 22.

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