The Great Heretics

A sage's 'indispensable ways to understand new realities'

RICHARD D. LAMM

"In every age," writes Bronowski in *The Ascent of Man* (1973), "there is a turning point, a new way of seeing and asserting the coherence of the world." Similarly, Abraham Lincoln (1862) said, "As our case is new, we must think and act anew. We must disenthrall ourselves…."

It seems clear that the great forward leaps of human progress have been made by people who "disenthrall" themselves and develop "a new way of seeing and asserting the coherence of the world." We see this in Galileo and Copernicus, who had the audacity to claim the Earth was not the center of the universe. We see this in Charles Darwin, who took on the religious establishment with the heretical idea that man was a product of evolution. We see it in political systems where Locke and Jefferson had the revolutionary ideas that humankind could govern themselves. We see it in Freud with his upsetting idea that man was not always a rational animal. All of these people challenged the current ordained wisdom of the time, and all of them proved correct.

These people were labeled heretics. Their ideas aired amidst great controversy. Huxley once observed that, "All great truths begin as heresy." Humankind falls into a routine way of viewing the world and then, breaking the continuity, someone observes that the current orthodoxy is at variance with reality. A great debate ensues. New ideas are upsetting. Attempts are made to shout down new opinion. If the idea is grounded in reality, the heretical idea eventually prevails and becomes accepted wisdom. One generation's heresy is frequently the next generation's orthodoxy, which thus sets the stage for the next new heresy. New ideas replace old ideas, but often only after a struggle. This is as it should be. The poet of old observed: "New occasions teach new duties. Time makes ancient good uncouth" (Lowell, 1844).

The great Earth-shaking controversies of our history, between science and religion, between church and state, between Christianity and modern culture and, recently, within science itself, all have been characterized by a heretic or heretics who challenge the straightjacket of orthodoxy.

New ideas come hard in public policy. Public policy is reactive, and new problems are addressed as long as possible with old solutions. It has a hard time adjusting itself to new ideas. As Barbara Tuchman observed:

> Policy is formed by perceptions and by long implanted biases. When information is relayed to policy makers, they respond in terms of what is already inside their heads and consequently make policy less to fit the facts then to fit the baggage that has accumulated since childhood (1981, p. 289).

In the same spirit John Stuart Mill wrote:

> When society requires to be rebuilt, there is no use in attempting to rebuild on the old plan…. no great improvements in the lot of mankind are possible, until a great change takes place in the fundamental constitution of their modes of thought (cited in Commager, 1982, p. 13).

II

Who are the modern prophets whose heresies will turn into tomorrow's truths? We know they are there, but we differ strenuously on who they are Some would say Mother Teresa and others Paul Ehrlich. Every person would have his or her own list. "We see the world not as it is, but as we are" goes an old aphorism. We choose our prophets because they lead us where we already think we are going. Like beauty, contemporary prophets are mainly in the eye of the beholder. It is only the future that vindicates our choices. Current assessment of new ideas is so notoriously flawed that we all tell each other that "prophets are without honor in their own country."

***Richard D. Lamm**, former governor of Colorado, is executive director of the Center for Public Policy and Contemporary Issues.* *This article first appeared in* Population and Environment, *Spring 1991: 213-219.*

I have been convinced for over twenty years that Garrett Hardin is one of the prophets of our time. He has had the courage, intellect, and audacity to take on many of the orthodox assumptions of our age. We will look back from the future and recognize the growing importance of his message.

III

Time and geometry are on Hardin's side. I suggest there is massive and mounting evidence that we live on the upper slopes of some awesome logarithmic curves. The "new way of seeing and asserting the coherence of the world" in our time is to show that infinite growth cannot take place in a finite world. I choose not to repeat all the depressing statistics. Let me instead use a metaphor. John McPhee has written:

> Compare the six days of Genesis as a figure of speech for what has in fact been four billion years geologic time. On this scale, a day equals something like 666 million years and thus:
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> All day Monday until Tuesday noon, and the beautiful organic wholeness of it developed over the next four days. At 4:00 pm Saturday, the big reptiles came. Five hours later, when the redwoods appeared, there were no more big reptiles. At three minutes before midnight Christ arrived. At one-fortieth of a second before midnight, the Industrial Revolution began.
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> We are surrounded by people who think that what we have been doing for one-fortieth of a second can go on indefinitely. They are considered normal, but they are stark raving mad (McPhee, 1971, p. 79).

I believe when the history of these times is written it will show that our prophets were those confronting the finiteness of our world. Each year our population grows, the deserts creep, pollution seeps and forests shrink, the globe warms, our topsoil erodes; habitats degrade and more and more species disappear. We are in the hinge of history, where ethnocentrically we thought the Earth belonged to us, but ecologically we are finding out, to our great astonishment, that we belong to the Earth. We are finding that human genius can push the limits of nature, but that, ultimately, man cannot conquer nature but is subject to its timeless, inexorable laws.

Despite the massive and growing evidence that we are causing unprecedented harm to our ecosystem, a vast number of people choose to ignore it. No one today can "prove" global warming will inevitably act in a harmful way, and there will always be an optimist somewhere who will relate that the event will ultimately be good for humankind. There are always Simple Simons telling us against all evidence that a negative is actually a positive. It is this type of conflict that too often paralyzes public policy. We cannot know for sure, so we do nothing. Ken Boulding (1984) has observed that the essential human dilemma is that all of our experience is in the past and yet all our decisions relate to the future. That makes dramatic change hard to accomplish. In absence of proof of the negative, we are forever hopeful:

> Our images of the future themselves are affected by our evaluations of them. We tend to put too high a probability on those that we dislike (Boulding, 1984).

IV

I know and am sobered by the fact that there has been a myriad of Cassandras predicting doom that has *not* taken place. We know from the thoughtful study of history that most utopians and most doomsayers have been wrong. Will and Ariel Durant (1968), after a lifetime of studying history, observed that 99 out of every 100 new ideas that come at a society are bad ideas. It has been very stabilizing to societies and nations to give a heavy burden of proof to those arguing for dramatic change. History shows, as a group, they are usually wrong. Most prophets, alas, have been false prophets.

V

That said, I suggest the next major revolution in human thought will be where humankind confronts the finite. It will be the revolution in science, public policy, and human consciousness. It will assert that infinite growth cannot take place in a finite world: that our atavistic thoughts on population and the way our economy is currently structured will be found obsolete and dangerous to the survival of humans on Earth. It will bring about a new way of seeing and asserting the coherence of the world.

One anthropologist commenting on the worldwide crisis that humanity confronts said:

> The extreme novelty of humans as the dominant force on this planet is as surprising as is our current rate of destruction of our own habitat and that of the Earth's other life forms. This disregard is all the more striking since, in geological terms, our species has only recently departed from its "place in nature." The full implications of our derivation by the random processes of biological evolution in a mere 5 million to 7 million years from an animal much like a chimpanzee have yet to be incorporated in any manner into the fundamental beliefs or institutions of our own, or in fact, any society. In its very success, our species has raised grave problems that demand new kinds of solutions. Will we, by

> better understanding the processes that made us what we are, grow in capacity to solve the frightening problems of the future arising from our very selves? (Potter, 1989)

VI

This revolution in thought will be more contentious than any that has gone before. There is in the western world a deep-seated cultural belief in abundance, and that a world of plenty is the natural state of affairs. The developed world enjoys its lifestyles and the underdeveloped world seeks to emulate these lifestyles. But increasingly we are finding that resources are not unlimited; topsoil is too often ephemeral. We are schizophrenic about our technologies — we marvel at them but we realize that they are not always benign and often comes close to being a Faustian bargain. We are finding that economic growth increasingly has byproducts, which may cause more harm than the good incorporated by the product.

VII

These concerns will be a new chapter in "seeing and asserting the coherence of the world." Where past genius was recognized for pushing back these limits, future genius will be recognized on how to adapt to the very rapidly approaching limits inherent in living in a limited ecosphere. More accurately, we must both push back these limits *and* learn to live within the clear overall limits.

When I was 19 a wise person told me, "maturity is a recognition of one's limitations." It was hard for me to accept — I had a typical 19-year-old desire to read every book, travel to every country, hold every job, live every experience. But, truth won out and maturity was a recognition of my limitations.

So also, I suggest, with the world. We know that no trees grow to the sky; that no species of animal can grow without restraint; and that the harbingers of ecological destruction warn daily of a new set of limits.

VIII

Al Bartlett writes:

> If an enormous source of low-cost energy is discovered, it is easy to predict what the immediate consequence would be. Our political and economic leaders would collectively breathe a great sigh of relief and would then discard all notions of energy limits. They would rejoice over the advent of a period of uninhibited growth in global rates of energy consumption.
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> In order to estimate the consequences of likely rates of growth of global energy consumption, we must remember that essentially all of the energy released by human activity winds up ultimately as heat in the environment. First we need some data. The solar power incident on the Earth can be calculated by multiplying the solar constant (1.35×10^3 W/m^2) by the projected area of the Earth (pR_e^2). This gives 1.7×10^{17} watts, of which 34 percent is reflected back into space, leaving 1.1×10^{17} watts of solar power entering the Earth's atmosphere. Romer shows that the rate of energy use by humans is 8×10^{12} watts. A simple quotient shows that human activities put into the Earth's atmosphere about 10^{-4} of the power the sun puts into the Earth's atmosphere. The simple arithmetic of growth shows that one would gain a factor of 10^4 in 14 doubling times would take only about 300 years. The arithmetic would suggest that at this modest growth rate, in 300 years human activities would put about as much thermal power into the Earth's atmosphere as the sun puts in! The absurdity of this situation is obvious. Independent of the greenhouse effect, global warming from this direct heating would likely render the Earth uninhabitable long before the passage of 14 doubling times (Bartlett, 1989, p. 10).

IX

….Garrett Hardin has been one of the main voices of sanity directing our attention to the new realities in which we live. He has had a profound impact on my thinking and I am honored by his friendship. Time will be kind to Garrett Hardin. The future will look back on him as a prophet. His science and his metaphors help us in so many indispensable ways to understand these new realities within which we must live.

The Navajo have an old saying: "The storytellers rule the world." For good reason. It is not enough to see and understand the new realities; one must also articulate them in understandable ways.

Gleick, in his book *Chaos*, states, "The world awaits the right metaphor" (1987, p. 22). He points out that, no matter how smart we are, we often cannot see something without the correct metaphor. It is thus for his science, his humanity, his heretical ideas, and his ability to show us truth through metaphor that we honor Garrett Hardin. ■

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Source: *Population and Environment: A Journal of Interdisciplinary Studies*, Volume 12, Number 3, Spring 1991: 213-219.

Ethics and Numbers

GARRETT HARDIN

As the twentieth century draws to a close, uninvited immigration has become a problem worldwide. Migration from poor or troubled countries to rich and relatively peaceful nations was always an intermittent fact of life, but few governments have seen it as a "problem." Most have just tried to hold the would-be immigrants at arm's length. Of the powerful nations, the newest one, the United States, is somewhat confused in its policy.

The troubles of the present are rooted in the past. We need to understand how the compromises worked out early in the [twentieth] century produced difficulties in later years. Alone among the nations of the world, America boasts a Statue of Liberty. Within the base of the statue are displayed verses that welcome the immigrants — unconditionally. No other nation has adopted such a policy (deductions from these facts are left to the reader).

Over the eons of evolution and history, a congenital distrust of new acquaintances has no doubt been of survival value. For all species, distrust seems to be the default position in social interactions. Our biological nature places the burden of proof on any implications of trustworthiness.

[Between 1986-1992] several acts of Congress affected immigration in various ways: in summary, both legal and illegal immigration increased…. Simply put, immigration may be defended as a positive good for either of two reasons: (a) as a benefit to the immigrants; (b) as a benefit to the citizens of the receiving country. Discussants who are most committed to the first goal are — in America — likely to remind their fellow citizens that "we are a nation of immigrants." Under pressure, the idealists may admit that a similar assertion can be made of every nation in the world: it's just that some immigrants are recent while others are very remote. But, say some, is it not selfish of us to deny our land to others?

Emotionally, the argument is a moving one. Its shortcoming is not obvious, but it is nonetheless real: there is no reference…to numbers, either of human beings or of the resources available for human life. It is a literate, or verbal argument; it is not numerate or quantitative.

What we should do about immigration is certainly in part an ethical problem. No stable solution is possible so long as we refuse to look at the numbers: the numbers of immigrants; the rates at which they are admitted; the resources available for all the members of an operating group like a nation; and the quantitative consequences of over-stressing the resource base. The "resources of the environment" are subject to constant revision, but at each stage in the development of our thought we must admit that the environment practically available to the human species is limited.

A metaphor often helps us to get our thoughts straight. Any territory or environment that is admitted to be finite suggests the metaphor of a lifeboat (which is certainly finite)…. Unfortunately, in the rhetoric of traditional ethics there is almost never any hint of limits…. Above all, we must take the future into account. ■

[From the essay, "Whose Ox is Gored?" in *The Immigration Dilemma: Avoiding the Tragedy of the Commons*, Washington, D.C., Federation for American Immigration Reform, pp. 1-8, 1995.]