

# Critiquing the Biotech Worldview

## An Interview with Andrew Kimbrell

Casey Walker: In *The Human Body Shop*, you wrote, “Extending technology and commercialization to the living kingdom and body is among the most significant transitions in history.” Will you begin by describing the importance of the larger picture, of systemic analysis, when we critique biotechnology?

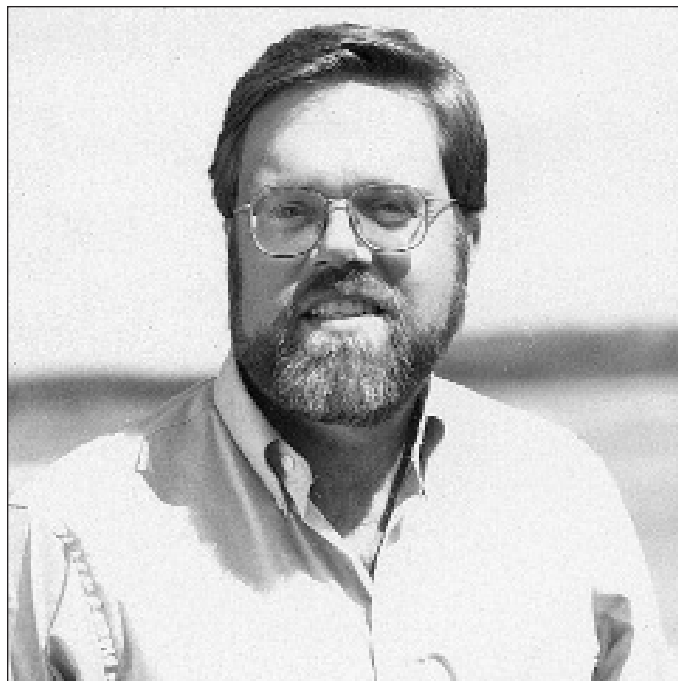
Andrew Kimbrell: Yes. Systemic analysis of biotechnology, or any technology, is not easy and is rarely even attempted. In the past our society has failed to ask the important questions about a technology prior to its widespread use. More typically we allow a technology to become a routine part of our lives and then rely on regulatory agencies to work out the problems through so-called “cost-benefit” analysis, which usually takes place long after any rational limit to the technology is possible. This “too little-too late” approach to technology has resulted in catastrophic impacts on the environment and on our society and culture. Unfortunately this is the path corporations and government bureaucracies are currently pushing for the regulation of biotechnology.

What we fail to appreciate in our current approach to biotechnology is the extent to which technology *is* legislation. Deciding to use the combustion engine or nuclear power or biotechnology legislates our lives far more than most bills passed in Congress. The technologies we choose to implement determine much of who we are and what we do as a society. Technologies that destroy the natural world or encourage undemocratic and technocratic control of the basics of life should be vetoed like any other piece of pernicious legislation. Unfortunately, though we call ourselves a democracy, we do not have any mechanism by which we can vote on technology. The vast majority of Americans oppose cloning humans, the genetic engineering of foods, and much of the biotechnology revolution. But their voices are not heard.

*Given that society is rarely given a role in technology decision making, how can we change policies on biotechnology or other important technology issues?*

I’m a litigator and an activist. Though I write books and articles, I’m not an academic. I’m in the trenches. Most often this means filing suits or organizing campaigns to “stop the bleeding” caused by industrial technologies. We do want to stop as many forests from being clearcut as possible, we do want to protect wetlands, and we do want to stop as many creatures from being engineered and released into the environment as we possibly can. It’s very, very important to fight these battles and I’ve devoted much of my adult life to it, as have many, many others. However, I also understand that this activist approach is profoundly inadequate in dealing with the problems we currently face.

Halting our indiscriminate destruction of the natural world, and the grotesque attempt of biotechnology to



ANDREW KIMBRELL is a public interest attorney, activist, and author. After eight years as Policy Director at the Foundation for Economic Trends, Kimbrell established the International Center for Technology Assessment in Washington, DC in 1994, and the Center for Food Safety in 1998. His books include *The Human Body Shop: The Cloning, Engineering, and Marketing of Life* (1997), *The Masculine Mystique: The Politics of Masculinity*, & *The Human Body Shop: The Engineering and Marketing of Life* (1993) He is well-known for key litigation, legislation, and media spokespersonship on issues pertaining to technology, human and environmental health. *Utne Reader* named Kimbrell one of the world’s leading 100 visionaries.

remake life, also requires that we change our collective consciousness and habits of perception in regard to nature. Until we change our reductionist views of nature we will continue to destroy it. A major priority for all of us, I think, is to become part of a new revolution of consciousness about life and the natural world.

*Will you speak to how issues associated with biogenetic engineering should be articulated for the public?*

I often say that biotechnology is taking the unthinkable, making it debatable, and then making it routine. Most people, when hearing of government researchers putting human genes into pigs, or corporate scientists cloning numbers of identical cows, instinctively are repulsed. There is great wisdom in this repulsion. It reflects an intuitive respect and empathy for the integrity of life and appropriate limits of



human interference with the living kingdom. We need to affirm this popular repulsion against two powerful reductionist habits of thinking about life—modern modes of thinking which consciously or unconsciously are used by the biotech industry, academic science and the media to break down public opposition to genetic engineering.

The first is the view that the life forms of the earth are little more than biological machines. This doctrine, called “mechanism,” has been around since the days of Descartes. It is a very dangerous habit of perception. It glorifies efficiency over all other values. Efficiency is, of course, the optimal trait for machines. However, making efficiency the optimal trait for living beings is a pathology. Yet this is the goal of the genetic engineers. When I have asked researchers why they are genetically engineering animals or plants, they almost always respond that the goal is to make these life forms more “efficient.” Genetic engineering they say makes all of nature more efficient. What’s the problem, they ask? Who’s against efficiency?

I think when taken to this extreme we are all naturally repulsed by efficiency. I have never met a person who treats their children, friends, pets or any living being that they care about primarily on an efficiency basis. Only an insane person would calculate how they can put minimum time and energy into the children to get optimal results in behavior or productivity. We don’t treat the things we love efficiently. Yet the mechanistic mode of thinking has so dominated our minds that we rarely use the language of empathy or love when talking about nature, especially in the context of policy making or in academia. But to defeat the eugenic drive of biotechnology towards making ever more efficient life forms, we are going to have to defeat the mechanistic world view and substitute one of empathy and respect for life.

Beyond the mechanistic tradition, we also have a tradition of “self-interest” that Adam Smith and the early proponents of the free market decided was the principal incentive for human activity. The drive for personal gain has become over the last two centuries the basis for capitalism. This now global pursuit of ever more commodities has destroyed kinship, tribal relations, and spirituality. What’s worse, our economic system has commodified everything. Everything is for sale as long as a profit can be made. The question that biotechnology and other advances in biology now present us with is the limits of commodification.

Are blood, organs, and fetal tissue commodities to be bought and sold? Can childbearing and children be sold through surrogate mother contracts? Can human genes and other body parts be patented by corporations? Clearly creating this human body shop of biotechnology demeans life, our respect for one another, and results in unconscionable

exploitation of those who through poverty are forced to sell parts of themselves. Stopping the habit of thinking of life as a commodity is why I’ve been involved in litigating against surrogate motherhood and the patenting of life.

In this sense, biotechnology, with all of its perils, does offer activists the opportunity to stop the invasion of market into the body commons and, by doing so, raises the vital question of establishing limits to the market system and the commodification of nature.

*Will you describe the way you look at the systemic impact of biogenetic engineering?*

The biotechnology revolution now is transforming agriculture, human health and reproduction, and even military weaponry. This widespread application of the techniques of genetic engineering is creating a growing number of environmental, economic and ethical impacts. As for impacts on the environment and human health, one little discussed area of

biotechnology is its use by the military. The U.S. has spent hundreds of millions of dollars in biowarfare research over the last two decades, without regard for the potential effects of a release of the deadly pathogens they are working with in dozens of college and corporate labs around the country. We’ve won several lawsuits against the Department of Defense limiting their biowarfare research, but this aspect of genetic engineering and the potential for bio-terrorism are the kinds of scenarios that keep you up at night.

More generally, the environmental risks of genetic engineering

are not widely understood because of the failure of many in the environmental community to understand the nature of biological or genetic pollution. Most environmentalists have devoted themselves to the important issue of chemical pollution. Chemical pollution is a contamination model of pollution—a variety of toxics are emitted into our air, water, and soil, causing contamination. Most environmental groups grew up in this country fighting for legislation based on the contamination model: the Clean Air Act, the Clean Water Act, FIFRA, TOSCA, and so forth. Now, many of these same environmentalists are calling genetic engineering “green technology” because it does not cause chemical contamination of the environment.

Environmentalists such as these completely miss the biological pollution paradigm, which is not a contamination model of pollution but a disease model. It’s how we get sick. Right? Three people have a cold and I am exposed to them. I sit across the table from you and the bug goes to you, and so on. This is not a contamination model of pollution, it’s a disease model. Some call it bio-invasion. The pollution of an ecosystem by a biological invader has of course already caused extraordinary devastation. We know how the chestnut

*Each instance of the release of a genetically engineered organism is a kind of ecological roulette. Scientists refer to such releases as low probability-high consequence risks. We could release a thousand types of genetically engineered bacteria into the environment and only a few will create a negative effect, but that effect could be catastrophic.*





HANK MEALS

blight and dutch elm disease virtually wiped out those trees across the country and how kudzu vine and zebra mussels have wreaked havoc. Now, through genetic engineering, we're creating hundreds of thousands of genetically engineered microbes, plants, animals, and releasing them into the environment. This represents a real biological pollution problem. In contrast to chemical pollution, which dilutes over time, the organisms involved in biological pollution reproduce, mutate, and disseminate. There's no control of them and you can't limit their spread.

Each instance of the release of a genetically engineered organism is a kind of ecological roulette. Scientists refer to such releases as low probability-high consequence risks. We could release a thousand types of genetically engineered bacteria into the environment and only a few will create a negative effect, but that effect could be catastrophic. One graphic potential example of the devastation involved here is a genetically engineered enzyme that breaks down vegetative

matter into biomass. Many environmentalists see this as a wonderfully clean new technology that could reduce our need for fossil fuels. We're trying to substitute oil and gas for biomass and here's this little enzyme that breaks down vegetative matter with amazing efficiency. Well, what if that enzyme escapes? I admit, the oil crisis would be solved, but we'd also have all our forests, crops, and vegetative life as one large bog of biomass. It would mean the end of nature. That's biological pollution by a genetically engineered organism.

A subset of biological pollution is genetic pollution. This involves a genetically engineered organism passing on a deleterious genetic trait to a native species. A classic example: The Canadian government and several corporations have taken human growth genes and put them into salmon to create super-salmon. They've also inserted chicken genes to change salmon reproduction, so the salmon don't follow their life cycles up rivers. If one of these genetically engineered salmon is released inadvertently, or not—it makes no difference—we'll have a huge salmon swimming around with human genes and chicken genes in every cell of its body. This salmon will mate with wild salmon, and some of that human and chicken genetic material will pass over to the native salmon. The native genetic pool will be contaminated forever. And assuming that the greater size of the gene-altered salmon makes them easier prey or requires that they consume more than the ecosystem can sustain, the entire species could be compromised. Over the next decades we could begin to see biological pollution matching chemical pollution as an environmental threat. It is essential that the environmental movement begin to understand biological and genetic pollution and make stopping it a top priority.

*It's not difficult to see these blindspots as rooted in the difference, too, of a shallow environmentalism geared to the political wins of clean air, water, and food for humans, rather than a deep ecology with values for life itself.*

Yes. And we can also see the biotechnology revolution as an extension of the pyrotechnology revolution. Since the Industrial Age, we've burned, forged, and melted the inanimate to create our metastasized nightmare of modern cities and factories. Now, from the industrial mindset, we've simply added biology to physics. The only reason you and I find that so shocking is that we, just as in almost all traditional cultures, have deep regard for living things. The idea that we're going to use the same engineering principles of abstraction, quantification, manipulation, predictability for living things as we have done on inanimate nature is wholly shocking. The devastation that we have seen with the engineering of mountains, rivers, and soils is now becoming routine for all engineered life forms, including the human body.

Then, too, over the last two hundred years of patenting,



machines have long since usurped our control over them. As Mumford noted, the archway over the 1939 World's Fair carried the motto: "Science Explores, Technology Executes, Man Conforms." This was the religion of progress.

*What an admission to slavery!*

Yes, but initially a seductive one. When I was a kid, we thought we were going to become the Jetsons. Then suddenly, in the sixties and the seventies, it became very clear that life as we knew it was not compatible with a technological system. We had so altered the biochemistry of earth with fossil fuels and global warming, ozone and topsoils depletion, that problems weren't localized but globalized.

Yet we have a whole technological system that has become the milieu in which most of us live and from which most of us relate to "life." It is not a natural milieu, nor the social milieu of agrarian societies, but a system thoroughly mediated by TV, markets, vast information and communication networks—all of which, as it turns out, is divorced from and destructive of life. In response, many of us worked hard within the "appropriate technology" movement. We read Schumacher, saw the wisdom of simplicity and small-scale economies, and believed we could devolve technology and devolve the system so that it would comport with ecological limits and not destroy, or perhaps only minimally destroy, the world.

Suddenly we are presented with another "solution," the solution of biotechnology. Which, instead of comporting technology to benefit life, asks, why not comport life so that it becomes technology? We've now come full circle with the complete invasion of technology—life actually becomes technology. We see this quite literally in the aim to download human brains into silicon chips. We see it in more subtle ways, too, in patented chickens and turkeys without genes associated with brooding, for greater efficiency at egg laying. Quite clearly, most agricultural research is working to make fruits and animals and vegetables comport better to factory farming. We're doing it! We're working hard to create weather resistance in a number of crops so that they can survive global warming. In other words, large-scale efforts are now being made to comport all of life to the technological system. It's within that context that biotechnology can be best understood. We can all point to corporate greed, but in this larger, systemic context there's an impossible contradiction between a system of nature, or creation as it exists, and the technological system. One or the other has to give.

To a remarkable degree, we have already redefined life as machines and manufacturing under the patent system of the United States. We have done it legally. We also see a huge amount of computer literature referring to us humans as "biological machines." Our minds are software. As I mentioned earlier, this is the triumph of mechanism, the technologization, if you will, of life.

One of the greatest prides of modernity is that it is very pluralistic when it comes to religions. But, the reason the larger system can be so generous is that this religious pluralism is irrelevant. Every religious tradition is completely irrelevant to the religion of modernity, which is the religion of

progress, of the mastery of nature. So there is a default religion afoot. Make no mistake about it. We live it every day. It is the complete mastery of nature through technology to create convenience and wealth. I will go so far as to say that there's a new Trinity, a secular reductionist trinity which mimics the sacred Christian Trinity. Science is God, all knowing, yet unknowable to most of us who didn't make it through reductionist college science courses; and it remains unknown, very mysterious. Science isn't too available or tempting, just like the God of the Old Testament, Yahweh. So, science incarnates through Technology, the Son. And the Son is with us. It's not abstract. Technology is the magic that works. How do we participate in the worship of Technology? We have the ersatz Holy Spirit, the Market. People don't get up in the morning for Science, and they don't get up just for the magic of Technology. They get up in the morning with the urge to make money so they can buy things. Filled with the spirit of the Market, we pursue upward mobility, more technology in our lives, and more consumer pleasures. Belief in the secular trinity is an essential dogma of the religion of Progress. Heretics to this religion are dismissed by scientists, businessmen, and economists alike. You tell us that science is going to let us know everything, technology is going to let us do everything, and the market is going to let us buy everything. That's progress.

*Do you believe our best critique of biotech and modernity in general rests on our manner and motive of knowing?*

Yes. You've brought up a good point, which is the violence we commit in relationship to the "other." I see this in the environmental movement and in myself sometimes. There's this sense that to know the other is in some sense to violate it, to push the other so you can know more. This often happens in relationships when we mistakenly think we're going to figure something out by pushing at it, pulling at it, teasing it, poking it to make it come out of itself. There's very little sense that the only way to know the other is to be in loving participation with it.

*Do you view biogenetic engineering as an enterprise that not only denies but destroys limits of a natural and spiritual order?*

It's the whole enterprise. The whole enterprise is to do two things. One is to make limits ontologically evil and drained of all meaning. Second is to destroy any kind of sacramental imagination of life. Life can be seen as sacramental, even in, or perhaps especially in its limits. The technological world view views limits as ontologically evil. A recent ATT ad promised a "world without limits where everything is possible." The goal of what I call the technological imagination is to destroy all limits and boundaries. Genetic engineering is now destroying even the boundaries and limits between species. The failure of the modern mind to appreciate limits is of course destroying the environment as well as indigenous societies and cultures around the globe. Traditional societies view limits very differently. They see them as meaningful and even as sacramental. We need to regain this view of limits if we are to stop the juggernaut of biotechnology. In a sense we need to create, or revive, a new



sacred understanding of limits. This does not mean that we can give up the daily battles in courts and legislatures and in the grassroots. They need to be fought. But we will also have to attack the problem as its root which is the technological imagination and counter it with a revival of the sacramental view of life.



Originally published in *Wild Duck Review* Vol. V No.2 on “Biotechnology.”

A complete index of pdf downloads is available at:  
[InstituteforInquiry.org](http://InstituteforInquiry.org).

© 1999 Wild Duck Review / © 2005 Institute for Inquiry

*The Institute for Inquiry acknowledges and encourages the appropriate use (i.e., reproduction, distribution, performance, and display) of the copyrighted works and materials herein for teaching, scholarship, educational, and research purposes consistent with federal copyright law and the standards for fair use.*

