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Turning up the Heat on Anti-GM Activists

As we begin the 21st century, environmental thinkers are divided along a sharp fault line. There are the doomsayers who predict the collapse of the global ecosystem. As expressed by my fellow Canadian and famous environmentalist, David Suzuki, there will be "an Apocalypse of Biblical proportions." There are the technological optimists who believe that we can feed 12 billion people and solve all our problems with science and technology. They try to debunk all environmental concerns and subscribe to growth for its own sake. I do not believe that either of these extremes makes sense. There is a middle road based on science and logic, the combination of which is sometimes referred to as common sense. There are real problems and there is much we can do to improve the state of the environment.

I was born and raised in the tiny fishing and logging village of Winter Harbour on the northwest tip of Vancouver Island, in the rainforest by the Pacific. I didn't realize what a blessed childhood I'd had, playing on the tidal flats by the salmon spawning streams in the rainforest, until I was shipped away to boarding school in Vancouver at age fourteen. I eventually attended the University of BC studying the life sciences: biology, forestry, genetics; but it was when I discovered ecology that I realized that through science I could gain an insight into the mystery of the rainforest I had known as a child. I became a born-again ecologist, and in the late 1960's, was soon transformed into a radical environmental activist.

I found myself in a church basement in Vancouver with a like-minded group of people, planning a protest campaign against US hydrogen bomb testing in Alaska. We proved that a somewhat rag-tag looking group of activists could sail a leaky old halibut boat across the North Pacific Ocean and change the course of history. By creating a focal point for opposition to the tests we got on national news and helped build a ground-swell of opposition to nuclear testing in the US and Canada. When that bomb went off in November 1971, at the height of the Vietnam War and the Cold War, it was the last hydrogen bomb ever detonated on planet Earth. Even though there were four more tests planned in the series, President Nixon canceled them due to public opposition. This was the birth of Greenpeace.

Flushed with victory and knowing we could bring about change by getting up and doing something, we were welcomed into the longhouse of the Kwakiutl Indian Nation at Alert Bay near the north end of Vancouver Island. We were made brothers of the tribe because they believed in what we were doing. This began the tradition of the Warriors of the Rainbow, after a Cree legend that predicted one day when the skies are black and the birds fall dead to the ground and the rivers are poisoned, people of all races, colors and

creeds will join together to form the Warriors of the Rainbow to save the Earth from environmental destruction. We named our ship the Rainbow Warrior and I spent fifteen years on the front lines of the eco-movement as we evolved from that church basement into the world's largest environmental activist organization.

Next we took on French atmospheric nuclear testing in the South Pacific. They proved a bit more difficult that the US hydrogen bomb tests. But after many years of protest voyages and campaigning, involving loss of life on our side, they were first driven underground and eventually stopped testing altogether.

In 1975 we set sail deep-sea into the North Pacific against the Russian and Japanese factory whaling fleets that were slaughtering the last of the sperm whales off California. We put ourselves in front of the harpoons in little rubber boats and brought the Save the Whales movement into living rooms around the world. That really put Greenpeace on the map. In 1979 the International Whaling Commission banned factory whaling in the North Pacific and soon it was banned in all the world's oceans.

In 1978 I was arrested off Newfoundland for sitting on a baby seal, trying to shield it from the hunter's club. I was convicted, but the photo of me protecting the seal appeared in over 3000 newspapers the next morning Die to this and other protest actions baby sealskins were banned from European markets in 1984, effectively ending the slaughter.

Can you believe that in the early 1980's, the countries of Western Europe were pooling their low and medium level nuclear wastes, putting them in thousands of oil drums, loading them on ships and dumping them in the Atlantic ocean as a way of "disposing" of the wastes. In 1984 a combined effort by Greenpeace and the UK Seafarer's Union put an end to that practice for good.

By the mid-1980's Greenpeace had grown from that church basement into an organization with an income of over US$100 million per year, offices in 21 countries and over 100 campaigns around the world, now tackling toxic waste, acid rain, uranium mining and drift net fishing as well as the original issues. We had won over a majority of the public in the industrialized democracies. Presidents and prime ministers were talking about the environment on a daily basis.

For me it was time to make a change. I had been against at least three or four things every day of my life for 15 years; I decided I'd like to be in favor of something for a change. I made the transition from the politics of confrontation to the politics of building consensus. After all, when a majority of people decide they agree with you it is probably time to stop hitting them over the head with a stick and sit down and talk to them about finding solutions to our environmental problems.

All social movements evolve from an earlier period of polarization and confrontation during which a minority struggles to convince society that its cause it is true and just, eventually followed by a time of reconciliation if a majority of the

population accepts the values of the new movement. For the environmental movement this transition began to occur in the mid-1980s. The term sustainable development was adopted to describe the challenge of taking the new environmental values we had popularized, and incorporating them into the traditional social and economic values that have always governed public policy and our daily behavior. We cannot simply switch to basing all our actions on purely environmental values. Every day 6 billion people wake up with real needs for food, energy and materials. The challenge for sustainability is to provide for those needs in ways that reduce negative impact on the environment. But any changes made must also be socially acceptable and technically and economically feasible. It is not always easy to balance environmental, social, and economic priorities. Compromise and co-operation with the involvement of government, industry, academia and the environmental movement is required to achieve sustainability. It is this effort to find consensus among competing interests that has occupied my time for the past 15 years.

Not all my former colleagues saw things that way. They rejected consensus politics and sustainable development in favor of continued confrontation and ever-increasing extremism. They ushered in an era of zero tolerance and left-wing politics. The features of this environmental extremism can be found in one or more of the following attributes:

Environmental extremists are anti-human. Humans are characterized as a cancer on the Earth. To quote eco-extremist Herb Hammond, "of all the components of the ecosystem, humans are the only ones we know to be completely optional". Isn't that a lovely thought?

They are anti-science and technology. All large machines are seen as inherently destructive and unnatural. Science is invoked to justify positions that have nothing to do with science. Unfounded opinion is accepted over demonstrated fact.

Environmental extremists are anti-trade, not just free trade but anti-trade in general. Witness the riots against the WTO and globalization. In the name of bioregionalism they would bring in an age of ultra-nationalist xenophobia. The original “Whole Earth” vision of one world family is lost in a hysterical campaign against globalization and free trade.

They are anti-business. All large corporations are depicted as inherently driven by greed and corruption. Profits are definitely not politically correct. The liberal democratic, market-based model is rejected even though no viable alternative is proposed to provide for the material needs of 6 billion people. As expressed by the Native Forest Network, "it is necessary to adopt a global phase out strategy of consumer based industrial capitalism." I think they mean civilization.

And they are just plain anti-civilization. In the final analysis, eco- extremists project a naive vision of returning to the supposedly utopian existence in the Garden of Eden, conveniently forgetting that in the old days people lived to an average age of 35,

and there were no dentists. In their Brave New World there will be no more chemicals, no more airplanes, and certainly no more polyester suits.

In 1970, at the beginning of the modern environmental movement, Ayn Rand published "Return of the Primitive" which contained an essay by Peter Schwartz titled "The Anti-Industrial Revolution"[1]. In it, he warned against the new movement's agenda, which he claimed, was anti-science, anti-technology, and anti-human. At the time he didn't get a lot of attention from the mainstream media or the public. The environmentalists were often able to produce arguments that sounded reasonable. Surely it would be wrong to dam the canyon, to build the nuke, to poison the bugs. And they did a lot of "good" deeds too. Whales were saved, the air and water were made cleaner, and atmospheric nuclear testing came to an end.

But now the chickens have come home to roost. The environmental movement's campaign against biotechnology in general, and genetic engineering in particular has clearly exposed their intellectual and moral bankruptcy. By adopting a zero tolerance policy towards a technology with so many potential benefits for humankind and the environment, they have lived up to Peter Schwartz's predictions. They have alienated themselves from scientists, intellectuals, and internationalists. It seems inevitable, that in time, the media and the public will see the insanity of their position. As my friend Klaus Ammann likes to wish, "maybe this will be the Waterloo for Greenpeace and their allies".

Well, maybe that is just wishful thinking. Perhaps they will succeed in ushering in a new intellectual Dark Age. After all, it was only 40 years ago that Khrushchev fired Lysenko, who, as head of agriculture for the Soviet Union, had sent hundreds of scientists who believed in genetics to prison and certain death for 30 years under Stalin. Will today's molecular biologists and geneticists be condemned to an intellectual Gulag with Greenpeace as their prison guard?

On October 15, 2001I found myself sitting in my office in Vancouver after Greenpeace activists in Paris successfully prevented me from speaking via videoconference to 400 delegates of the European Seed Association. The Greenpeacers chained themselves to the seats in the Cine Cite Bercy auditorium and threatened to shout down the speakers. The conference organizers decided to retreat to the Sofitel Hotel where many of them were staying. The auditorium is in a very important building and they did not want their conference to be associated with an incident there. As the Sofitel does not have videoconferencing capability my keynote presentation was cancelled.

When I helped to create Greenpeace from a church basement in Vancouver in 1971 I had no idea that I would spend the next 15 years as an international director and leader of many Greenpeace campaigns. I also had no idea that after I left in 1986 they would evolve into a band of scientific illiterates who use Gestapo tactics to silence people who wish to express their views in a civilized forum. And I could never have guessed that my

[1] Peter Schwartz in; Ayn Rand, Return of the Primitive, p. 270, Meridian, 1970 ISBN 0-452-01184-1

former colleague and then teen-age founder of Greenpeace France, Remi Parmentier, would be the one issuing the orders to silence me.

Over the years Remi has risen to the title of Political Director for Greenpeace International. (Remi is so political that when Francois Mitterand led the socialists to power in France he suddenly became a defender of French nuclear testing in the South Pacific) He has fought tirelessly against the reprocessing of nuclear waste, a campaign that I have some sympathy for. He has also directed the effort to prevent deep-sea disposal of harmless oil storage platforms in the Atlantic Ocean. This has resulted in hundreds of millions wasted for no good purpose. I imagine his intentions were good even though his priorities were misguided. But even if his intentions are good, he and his chain-gang have no right to deny freedom of assembly and freedom of speech by free people in a democracy.

The issue, in this case, is the application of biotechnology to agriculture, genetic modification in particular. The conference in Paris was the coming together of delegates from seed companies, biotechnology companies, and government agencies involved in regulation from across Europe. The purpose of their gathering was to discuss the role of biotechnology in the future of agriculture, surely a topic covered by the rules of free speech.

As a long-time leader of Greenpeace in its formative years, and someone who supports using biotechnology for the good of human welfare and the environment, I had been invited to give a presentation via videoconference from Vancouver. I would have told the assembled that the accusations of Frankenstein food and killer tomatoes are as much a fantasy as the Hollywood movies they are borrowed from. I would have argued that if putting a daffodil gene in rice can prevent half a million children from blindness each year then we should move forward carefully to develop the Golden Rice. I would have told them that Greenpeace policy on genetics lacks any respect for logic or science.

In 2001 the European Commission released the results of 81 scientific studies on genetically modified organisms conducted by over 400 research teams at a cost of US$65 million.[2] The studies, which covered all areas of concern, have "not shown any new risks to human health or the environment, beyond the usual uncertainties of conventional plant breeding. Indeed, the use of more precise technology and the greater regulatory scrutiny probably make them even safer than conventional plants and foods." Clearly my former Greenpeace colleagues are either not reading the morning paper or simply don't care about the truth. And they choose to forcibly silence those of us who do care about the truth.

In response to Greenpeace's scandalous attacks on the promising development of Golden Rice, one of its inventors, Dr. Ingo Potrykus, accused Greenpeace of "crimes against

[2] http://europa.eu.int/comm/research/quality-of-life/gmo/index.html

humanity".[3] I agree with him. But how can we fight back without resorting to crimes of our own?

What if 100 research scientists walked into a Greenpeace International meeting, chained themselves to the place, then called the media and stated their demands? Among those demands would be a promise not to prevent people from free assembly and free speech. What if those same scientists were to hang huge banners reading "Greenpeace is Wrong about Biotechnology", "Fight Anthrax, Not Corn", Millions of Children Condemned to Blindness by Greenpeace" etc.

Beginning with the Natural Resources Defense Council's scare tactics about the use of the pesticide Alar on apples,[4] the environmental movement has been very clever at inventing campaigns that make us afraid of our food. They conjure up invisible poisons that will give us cancer, birth defects, mutations, and otherwise kill us in our sleep. We will all soon be reduced to a hermaphroditic frenzy by endocrine mimicking compounds as we approach the Toxic Saturation Point.

Meanwhile, the National Cancer Institute of Canada conducted a joint study with U.S. counterparts beginning in 1994 to investigate the possible relationship between pesticide residues in food and cancer in humans. The findings published in the peer-reviewed journal "Cancer" in 1997, concluded that it could not find "any definitive evidence to suggest that synthetic pesticides contribute significantly to overall cancer mortality", a careful way of saying they found zero connection.[5] And yet, the article pointed out, over 30 percent of cancers in humans are caused by tobacco, a natural substance. And poor diet, mainly too much fat and cholesterol and not enough fresh fruit and vegetables cause another 35 percent. The main effect of the environmental campaign against pesticides is to scare parents into avoiding fresh fruit and vegetables for themselves and their children. Ironically, this results in a higher risk for cancer because fresh fruit and vegetables are important in reducing cancer risk.

The same kinds of scare tactics are now being employed in the campaign against biotechnology and genetically modified foods. Even though there is no evidence of negative human health effects and environmental concerns are blown completely out of proportion, great fear has been whipped up in the public.

It amazes me that in a few short years the molecular biologists that were hailed as crusaders in a new genetic revolution are now reviled and characterised as mad scientists in the grip of greedy corporations bent on destroying the environment. The public is given a fearful impression with images of Frankenstein foods, killer tomatoes, and terminator seeds. Is it any co-incidence that all three of these images are taken directly from scary Hollywood movies? I believe that the campaign of fear now waged against genetic modification is based largely on fantasy and a complete lack of respect for

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[3] Personal Communication, January 2001.

[4] See: http://www.acsh.org/publications/priorities/0301/alar.html

[5] Clark W. Heath Jr., Pesticides and Cancer Risk, Cancer 80: 1887-8, 1997

science and logic. In the balance it is clear that the real benefits of genetic modification far outweigh the hypothetical and sometimes contrived risks claimed by its detractors.

It is unfortunate that the term "biotechnology" has come to be synonymous with "genetic engineering" or "GMO's". Biotechnology is a very broad term used to describe all aspects of new technologies applied to living things. This includes advances in human and veterinary medicine, pest control, crop production and nutrition. Unlike some other aspects of biotechnology, genetic modification is a form of biological rather than chemical intervention. In other words, genetic engineering is an *organic* science. Why so-called "organic" farming doesn't embrace GM rather than reject it outright more or less proves that organic is a political rather than a biological concept.

Certainly any science or technology can be used for destructive purposes. We already have the ability to annihilate ourselves with physics, in the form of nuclear weapons, with chemistry, in the form of chemical weapons, and with biology, in the form of deadly microbes. I suppose it might be possible to increase the effectiveness of biological weapons with genetic modification, but as far as I am aware there is no need to do so. The ones we have already are more than capable of wiping us out.

But the programs of genetic research and development now underway in labs and field stations around the world are entirely about benefiting society and the environment. Its purpose is to improve nutrition, to reduce the use of synthetic chemicals, to increase the productivity of our farmlands and forests, and to improve human health. Those who have adopted a zero-tolerance attitude towards genetic modification threaten to deny these many benefits by playing on fear of the unknown and fear of change.

Many in the anti-biotech movement focus on the issue of corporate control. This is an entirely different subject than the science of genetic modification itself. Corporate control in the form of monopoly can occur in any sector. But, for example, just because Microsoft is alleged to have a monopoly over computer operating systems doesn't mean we should all throw our computers in the garbage or demand that computers be banned. The technology itself must be analysed and judged separately from the institutional framework that is used to deliver that technology. And, unless we wish to dismantle all the laws relating to intellectual property there will continue to be proprietary rights in new developments, thus requiring an element of control. This is generally accepted as beneficial in that it encourages innovation and competition.

The so-called "precautionary principle" is constantly invoked as an argument for banning genetic modification. Whatever the precautionary principle means, it is not that we should stop learning and applying that knowledge in the real world. We will never know everything and it is impossible to create a world with zero risk. The real question, as so ably put by Indur M. Goklany in "Applying the Precautionary Principle to Genetically Modified Crops"[6], is whether the risks of banning genetic modification are greater or less than the risks of pursuing it. Of course, if we pursue genetic modification, or any other new technology, it must be done with great care and caution. This results in the adoption of a precautionary "approach" or a precautionary "attitude" rather than treating it as a "principle". The daily example of crossing the street is sufficient to explain

[6] Policy Study Number 157, Center for the Study of American Business, August 2000

the difference between the two interpretations. If we would only cross the street when we had a 100% certainty that nothing would go wrong during the crossing we would never leave the curb. But that doesn't mean we should cross without pausing and looking both ways before venturing into the roadway. In summary, it is equally important to understand the risks of not doing something as it is the to understand the risks of doing something.

The case of the Golden Rice provides a clear illustration of this point. Last month I shared the podium with Ingo Potrykus, the Swiss co-inventor of golden rice, at the European biotechnology conference in Helsinki.[7] He pointed out that a commercial variety of golden rice was now ready and available for planting. Hundreds of millions of people in Asia and Africa suffer from vitamin A deficiency. Among them, half a million children go blind each year and millions more suffer from lesser symptoms. Golden Rice has the potential to greatly reduce the suffering. But Potrykus estimates that it will be at least five years before Golden Rice will be able to work through the Byzantine regulatory system that has been set up as a result of the activist's campaign of misinformation and speculation. So the risk of not allowing farmers in Africa and Asia to grow Golden Rice is that another 2 1/2 million children will go blind. What is the risk of allowing this humanitarian intervention to be planted? The only difference between the Golden Rice and conventional rice is that Golden Rice contains a gene from daffodils, the gene that makes daffodils yellow, the color of beta-carotene, and the precursor to vitamin A. What possible risk of could there be from a daffodil gene in a rice paddy? Yet Greenpeace threatens to rip the rice out if farmers dare to plant it. They have done everything they can to discredit the scientists and the technology, claiming that it would take nine kilos of rice per day to deliver sufficient vitamin A. Potrykus has demonstrated that only 100 grams of Golden Rice would provide 50 percent of the daily need.

Golden Rice is not the only example of civilization being held hostage by activists who some believe should be held accountable for crimes against humanity.

While taking part in a seminar on biotechnology in Jakarta, Indonesia, I met five farmers from South Sulawesi who had just completed a trial of Bt cotton on their farms. They reported that yields had risen from the normal 600 kilos per hectare to an average of 2500 kilos per hectare, a four times increase in yield. At the same time they had reduced pesticide applications from eight sprayings to one spraying, and the single spraying was for a secondary insect pest, not the bollworm that the cotton was now protected against. And yet, environmental NGOs are trying hard to thwart the efforts of these farmers. Indonesia imports over $1 billion in cotton each year, mainly from Australia. Bt cotton could help Indonesia to be more self-sufficient in cotton production. It could also improve the lot of farmers, reduce chemical use, and result in reduced clearance of natural forestland for agriculture. But none of this seems to matter to the activists; they continue to pump millions of dollars into campaigns to prevent the introduction of GM varieties that could improve both human welfare and the environment.

If the anti-GM campaigns weren't so serious in their consequences they would be laughable, yet entire governments and international agencies are caught up in their web of

[7] http://www.biohelsinkiconf.com/download/potrykus-biotechelsinki03.pdf

fabrication and fantasy. But these people know no shame. They behave like mischievous school children but their mischief causes human misery and prevents environmental improvements.

Since its introduction to Chinese agriculture in 1996, genetically modified (GM) cotton has grown to occupy over one million hectares, or one-third of the total area planted in what is northern China's most important cash crop. This particular GM variety, called Bt cotton, has been modified to resist the cotton bollworm, its most destructive pest worldwide.

On June 3, 2002, Greenpeace issued a media release announcing the publication of a report on the "adverse environmental impacts of Bt Cotton in China".[8] In typical Greenpeace hyperbole we were advised that "farmers growing this crop are now finding themselves engulfed in Bt-resistant superbugs, emerging secondary pests, diminishing natural enemies, destabilized insect ecology," and that farmers are "forced to continue the use of chemical pesticides."

Let's examine these allegations one at a time.

Bt-Resistant Superbugs. There is not a single example or shred of evidence in the Greenpeace report of actual resistance in bollworms to Bt cotton in the field. Instead, there is evidence from lab studies where bollworms were force-fed Bt cotton leaves. Any scientist knows that this kind of experiment will eventually result in selection for resistance. But Greenpeace is claiming this has actually happened to farmers. According to Professors Shirong Jia and Yufa Peng of the Chinese National GMO Biosafety Committee, "no resistance of cotton bollworm to Bt has been discovered yet after five years of Bt cotton planting. Resistant insect strains have been obtained in laboratories but not in field conditions."[9] So much for the "superbugs".

Emerging Secondary Pests. Greenpeace points out that there are more aphids, spiders, and other secondary insect pests in fields of Bt cotton that in conventional cotton. This is called an "adverse" impact in their report. The fact is that because Bt cotton requires much less chemical pesticide than conventional cotton, these other insects can survive better in Bt cotton fields. Sometimes they become so numerous that they require chemical control but in general there are more insects (other than the bollworm) in Bt cotton than in conventional cotton. This reduction of impact on non-target insect species is one of the environmental benefits of GM crops. How Greenpeace figures this is "adverse" is beyond comprehension.

Diminishing Natural Enemies. The Greenpeace media release states that there are fewer of the bollworm's natural predators and parasites in Bt cotton fields compared to conventional cotton, and calls this an "adverse impact". Again, a careful read of the report comes up with no evidence for this claim. And again, according to Professors Jia

[8] http://www.greenpeace.org/multimedia/download/1/8965/0/btcotton_china.pdf

[9] http://comet.sparklist.com/scripts/lyris.pl?visit=agbioview&id=213582951

and Peng, “As of today, there are no adverse impacts reported on natural parasitic enemies in the Bt cotton fields.” And isn’t it a bit obvious that if using Bt cotton reduces populations of the bollworm that the bollworm’s predators will also be reduced? Will Greenpeace now embark on an international campaign to “save the bollworm parasites”?

Destabilized Insect Ecology. This one is a hoot. To speak of “insect ecology” in a monoculture cotton field, sprayed with chemicals up to 17 times a year prior to the introduction of Bt cotton, is absolutely ridiculous. The main impact of Bt cotton is to reduce chemical pesticide use and therefore reduce impacts on non-target species.

Farmers Forced to Continue Using Chemical Pesticides. This claim gets the Most Misleading and Dishonest Award. Bt resistance does not always give 100% protection, and because secondary pests sometimes need to be controlled, farmers using Bt cotton usually use some pesticides during the growing cycle. Professors Jia and Peng sum it up this way, “the greatest environmental impact of Bt cotton was its benefit to the environment that was a significant reduction (70-80%) of the chemical pesticide use. It is known that pesticides used in cotton production in China are estimated to be 25% of the total amount of pesticides used in all the crops. By using Bt cotton in 2000 in Shandong province alone, the reduction of pesticide use was 1500 tones. It not only reduced the environmental pollution, but also reduced the rate of harmful accidents to the human and animals caused by the overuse of pesticides.”

The Greenpeace report is a classic example of the use of agenda-based "science" to support misinformation and distortion of the truth. Anyone who has studied the introduction of Bt cotton into China and other countries knows that it results in reduced chemical use, reduced impact on non-target organisms, including other insects, reduced exposure to chemicals by farm workers, increased productivity, and increased financial benefit to farm owners. To date there are no substantiated "adverse" impacts from Bt cotton. Once again, Greenpeace demonstrates that its policy on genetic modification (zero tolerance) can only be supported by resorting to distortion of the facts and false interpretation of data, in other words, junk science.

A hunger strike led by Greenpeace finally ended in Manila on May 22 after 29 days. They were protesting the introduction of Bt corn into the south of the Philippines. In order to whip up media attention activists have spread scare stories that GM corn "would result in millions of dead bodies, sick children, cancer clusters and deformities."[10]. Thankfully it would appear that the government is not going to give in to these fools and will stand by their decision, based on three years of consultation and field trials, to allow farmers to plant Bt corn this year.

For six years the activists managed to prevent the introduction of GM crops in India, including Bt cotton. This was largely the work of Vandana Shiva, Oxford educated daughter of a wealthy Indian family, who has campaigned relentlessly on the basis that she is protecting poor farmers from the ravages of multinational seed companies. Last

[10] http://comet.sparklist.com/scripts/lyris.pl?visit=agbioview&id=213584062

year she was given the Hero of the Planet award by Time Magazine for "defending traditional agricultural practices".[11] Read poverty and ignorance. It looked like she would win the debate until 2001 when unknown persons illegally planted 10,000 hectares of Bt cotton in Gujarat. The cotton bollworm infestation was particularly bad that year and there was soon a 10,000-hectare plot of beautiful green cotton in a sea of brown. The local authorities were notified and decided that the illegal cotton must be burned. This was too much for the farmers who could now clearly see the benefits of the Bt variety. In a classic march with pitchforks to city hall, they protested and eventfully won the day. Bt cotton was approved for planting in March of last year. Perhaps the poverty-stricken cotton framers of India will become wealthier, depriving Vandana Shiva of her parasitical practice.

The situation in Brazil is not so promising. A panel of three judges has managed to block approval of any GM crops there. Meanwhile the soybean farmers in the south of the country have been quietly smuggling GM soybean seeds across the border with Argentina where GM soybeans are legal. At least 8 million tonnes of GM soybeans are produced annually. The fact that Brazil is officially GM-free has allowed European countries to import Brazilian soybeans even though they have imposed a moratorium on the import of GM crops. All that is required is a wink and a nudge and the ability to pretend that Brazil doesn't grow any GM soybeans. But recently things have changed.

With the election of President "Lula" da Silva of the Workers Party the Green elements with the party are pressing for the government to enforce the ban on GMOs. There is something ironic about a Workers Party enforcing a policy that will damage farmers who have come to enjoy the benefits of GM technology. Will the Brazilian farmers rebel like those in India? I hope so and when I travel to Porto Alegre at the invitation of the Farmers Union next week I will do everything I can to help them get up the courage to defy efforts to enforce a ban.

Of course the most tragic circumstance is that of southern Africa where Zambia has refused US food aid because it contains GM corn. Millions of people are malnourished and starving yet President Levy Mwanawasa said, "We would rather starve than get something toxic" The insanity of adopting a "better dead than GM fed" policy seems to escape environmental activists altogether. Greenpeace has the nerve to declare on their website that "Starving people still deserve the dignity of choice." How about the choice between life and death? And how disgusting is it that Greenpeace infers it was the starving people who chose to refuse food aid when it was actually the well-fed president and his cohorts, spurred on by the activist's fear-mongering and Europe's intransigence?

Surely there is some way to break through the misinformation and hysteria and to get a more balanced picture to the public. Surely if reasonable people saw the choice between the risk of a daffodil gene in a rice plant versus the certainty of millions of blind children they would descend of Greenpeace offices around the world and demand to have their money back. How is it that these charlatans continue to stymie progress on so many fronts when their arguments are nothing more than scary speculation?

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[11] http://www.cnsnews.com/ForeignBureaus/Archive/200209/FOR20020917a.html

I believe the main reason for the failure to win the debate decisively is precisely because the supporters of GM technology have not acted decisively themselves. The activists are playing hardball while the GM side is soft-pedalling the health and environmental benefits of GMOs.

Biotech companies and their associations use soft images and calm language, apparently to lull the public into making pleasant associations with GM products. How can that possibly be an effective counter to the Frankenfood fears and superweed scares? As has been known for centuries it is often necessary to fight fire with fire. I suggest it is about time we took that sage advice. It may be that the only way to win this fight is to shock the public to its senses.

In a brief scan of the Monsanto, Syngenta, and Council for Biotechnology websites it is clear that they are trying to project positive, clean, and calming thoughts. This is all well and good but there is no way that this will turn the tide. Stronger medicine must be prescribed.

Imagine an advertising campaign that showed graphic images of blind children in Africa, explained Vitamin A deficiency, introduced Golden Rice, and explained how Greenpeace's actions are preventing the delivery of this cure. Imagine another ad showing impoverished Indian cotton farmers, explained Bt cotton, and gave the statistics for increased yield, reduced pesticide use, and betterment for farmers. Again it would be clearly stated that activists were the reason for the late and slowed adoption of the technology. How about an ad that graphically portrays the soil erosion and stream siltation caused by conventional farming versus the soil conservation obtained by using GM soybeans and Canola? And another one that shows workers applying pesticides without protection in a developing country versus the greatly reduced applications possible with Bt corn and cotton? What if all these ads were hosted by a well-known and trusted personality, wouldn't this change public perspectives?

Mainstream charities like Save the Children and Oxfam use this approach routinely to get public attention and sympathy for poor and starving people. They show graphic images of children covered in flies walking barefoot in mud with their bones protruding to make an impact on viewers that are jaded by horrific scenes of war and disaster. The nutritional deficiencies, Vitamin A, Vitamin E, iron, amino acids etc. that afflict hundreds of millions of people are a legitimate candidate for this kind of shocking reality. Genetic engineering can do a great deal to address many of these deficiencies. At the biotech meeting I attended with Ingo Potrykus recently he explained that he could now produce a rice plant that would deliver Vitamin A, iron, Vitamin E and enhanced amino acids all in one variety of rice. The only catch, he explained, is that under the rules we have adopted internationally to regulate GMOs, it would never be possible to license this rice plant for commercial use, the rules will not allow it. Here we have reached the ability to put a multi-vitamin pill into a grain of rice and we have allowed ourselves to adopt a set of rules that makes it impossible to do so, a bit of a Catch-22 if you ask me.

In conclusion, I call on the biotechnology sector to ramp up its communications program, and to get a lot more aggressive in explaining the issues to the public through the media. Nothing less will turn the tide in the battle for the minds, and hearts, of people around the world.