

**When our “World View” Collides with Science:
The Price We Pay**

A World Food Prize Lecture
David. P. Lambert¹

The Rotary Club of Des Moines AM
Des Moines, Iowa
Friday, October 18, 2013

Thank you Joe for your kind words, and for the invitation to join you for this special occasion in recognition of your partnership with the World Food Prize.

Rotary has a proud and durable heritage. Also impressive, you are part of **Rotary International**, a worldwide organization that proves every day that it’s one of our most influential humanitarian service organizations. It is humbling to be among you. **Rotarians** wrote the book on service to others. I mentioned to a friend that I would be with you today; he said I would not just be preaching to the choir, but to the co-clergy.

Indeed, your work with special needs children, polio eradication, clean water and sanitation, education and scholarships, and disaster relief - it is an extraordinary record. By any benchmark, Rotary is one of the finest civil society organizations in the world. And I take special pride in sharing with you that my Dad – a Rotarian for 58 years – rarely missed a meeting.

It also strikes me as especially fitting that you are a partner with the **World Food Prize**. Your objectives parallel each other in significant ways – responding to children at risk, poverty and hunger, the environment.

The World Food Prize is not only the **US version of the Nobel Peace Prize for Food and Agriculture**, but its **Borlaug Dialogue** is the finest and most respected policy forum of its kind anywhere in the world – it has been called the Super Bowl of global food security. We have never needed answers more urgently than we do today.

That is why the selection of this year’s **World Food Prize Laureates** is both wise and timely. They are being recognized for their research which has led to new technologies now integral to plant breeding. This in turn has given us crops with greater resilience to adverse environmental conditions, ability to deal with pest and weed pressure, and better yields. These Laureates represent the very **spirit of Norman Borlaug**. I would add that the children of the world now have a brighter and healthier day because of the dedication and perseverance of these and our other Laureates over the past 26 years.

¹ David Lambert is a global food security adviser to universities, the U.S. private sector, governments, U.N. agencies and other international organizations; he formerly served as Counselor to the U.S. Mission to the U.N. Hunger Agencies in Rome. lambertdp@yahoo.com

A word about the Foundation's President, Ambassador **Ken Quinn**. It was my deep honor to serve as Counselor to one of my own heroes, **George McGovern**, then Ambassador to the US Mission to the UN Hunger Agencies in Rome. You may recall that McGovern won the World Food Prize in 2008 for his vision that every child in the developing world should receive a nutritious meal every day.

George McGovern said of Ambassador Quinn: "Whether promoting human rights and democracy, rescuing refugees so they might live in freedom, risking his own life to protect our nation as an American Ambassador countering terrorism, or patiently building the World Food Prize into America's very own Nobel, Ken's story has been a sweeping chronicle of courage, devotion, and generosity."

THE NEXT BORLAUG CENTURY: BIOTECHNOLOGY, SUSTAINABILITY, AND CLIMATE VOLATILITY

Since the 2013 theme of the Borlaug Dialogue is ***The Next Borlaug Century: Biotechnology, Sustainability, and Climate Volatility***, it might be appropriate to touch on each of these issues. Although the different parts of this theme are all closely interconnected let me first take each aspect separately.

Then, I would like to underline why it is so critically important that we defend and support science, even in the face of sometimes more popular "world views". I will close with some thoughts on why we all come to Des Moines – the human dimension of what science is all about in how it serves people.

BIOTECHNOLOGY

Given the extraordinary obstacles we face today in our quest for a world free of hunger and malnutrition, one might expect that the power of science in the form of agricultural biotechnology, with all of its promising solutions, would be a key part of the dialogue. However, in view of determined activist opposition, it is a ***bold and visionary stroke*** that the World Food Prize Foundation brings this issue front and center as a principal theme in this very public debate.

At this point in the development of agbiotech our focus really should be on the extraordinary ***benefits*** offered by this technology – improved nutrition, reduced demand for water, improved yields, fewer plant diseases, reduced GHGs, less soil erosion, reduced use of pesticides, reduced postharvest loss, safer food, and greater choice for consumers. In 2011 alone, global benefits of biotech crops were more than \$15 billion, essentially from better yields and lower input costs.

Unfortunately, much of our energy today is spent rehashing issues of human food safety and environmental safety that could have been put to rest earlier; and all of this compounded by suffocating layers of regulation, both nationally and globally.

Specifically, according to ISAAA, the proven ***record of experience on biotech*** crops is: 17 years of commercialization, with 420 million acres grown, in 28 countries, of which 20 are developing countries, whose growth exceeded the industrial countries.

These biotech crops were grown by 17.3 million farmers of whom 15 million of were poor, small farmers. Beneficial traits from such crops are disease and insect resistance, herbicide tolerance, and nutrition enhancement. Regrettably, progress, especially in Africa, has been slowed by the controversy over safety concerns raised by anti-biotech groups.

Yes, but you may ask: what is the ***track record on human health and environmental safety***? Citing an August 2013 report by the Alliance for a Green Revolution in Africa (AGRA), chaired by former UN Secretary General, and Nobel Laureate, Kofi Annan:

“A recent EU report concludes that more than 130 EU research projects, covering a period of more than 25 years of research and involving more than 500 independent research groups, concur that consuming foods containing ingredients derived from GM crops is no riskier than consuming the same foods containing ingredients from conventional crops (European Commission, 2010). Such well-known organizations as the World Health Organization (WHO, 2010), the U.S. National Academy of Sciences (National Academy of Sciences, 2005), and the European Food Safety Authority (EFSA) have come to the same conclusion.”

This report describes the ***opposition to GM to be “a farce”***, pointing out that *“GM crops have been subject to more testing worldwide than any other new crops, and have been declared as safe as conventionally bred crops by scientific and food safety authorities worldwide.”* Dr. ***Nina Fedoroff***, internationally respected scientist and former president of the American Association for the Advancement of Science, reinforces this view: *“Every serious scientific body that has analyzed the data, including the U. S. National Academy of Sciences and the British Royal Society, has come to the same conclusion.”*

In the same vein, ***Owen Paterson***, UK Minister of the Environment, agrees, and told his Rothamsted Research audience that *“the use of more precise technology and the great regulatory scrutiny probably makes GMOs even safer than conventional plants and food.”*

And to critics who argue that there have been no ***long-term safety studies***, I would just ask: How about the three trillion GM meals that have been eaten over the last 15 years? In other words, literally millions of real-world consumers daily – without a single documented instance of harm. Well past time to rest this case.

On ***regulatory scrutiny***, CropLife International informs us that the average time to bring a biotech crop to market – from discovery to commercial launch - is 13 years. The average cost is \$138 million; \$35 million alone goes to regulatory testing and registration.

Why? Fedoroff’s analysis is that our US framework still regulates biotech like toxic chemicals rather than biological products, and that we fail to understand the difference between hypothetical risk and real risk. She adds that GM products should be regulated based on their characteristics, not on the method by which they have

been modified. No wonder only big companies can afford to develop and commercialize biotech crops.

Environmentalist **Mark Lynas** did not mince words at the recent Oxford Farming Conference: *“Thus desperately-needed agricultural innovation is being strangled by a suffocating avalanche of regulations which are not based on any rational scientific assessment of risk. The risk today is not that anyone will be harmed by GM food, but that millions will be harmed by not having enough food...”*

Some commentators have even expressed the view that if the debate is so acrimonious on GM let's just **drop the research** and get on with other issues. I strongly disagree, and here's why. We inhabit a planet that is getting drier, hotter, thirstier, more crowded, and dramatically more urban. Our global **population** of 1.6 billion in 1900 will surge to 9 billion people in just one more generation, and with essentially no more arable land. And if that is not enough, we must nearly double food production for our next generation. Some might call this a **Biblical Malthusian challenge**.

We need to express ourselves with more **candor in our public debates** about biotechnology. If we yearn for a more romanticized view of farming, or prefer older and more traditional practices, or have concerns about the role of government – then, just say so! Senator Patrick Moynihan famously observed that we are entitled to our opinions, but not to our facts.

Dr. **Anne Glover**, Chief Science Adviser to the President of the European Commission, puts it in perspective: *“Consumers should at least have the choice and those who have other reasons for opposing GM can continue to do so. But don't put it down to science, as the evidence in favor of GM is overwhelming.”*

Let me conclude my biotech comments with this optimistic note from the most respected scientist in India, if not in the world, Dr. **MS Swaminathan**, who also chairs the World Food Prize Laureate Selection Committee. His words recently in *Frontiers in Genetics*: *“I believe that the current concerns of biosafety and the impact of GMOs will give way to an appreciation for the potential benefits that the new genetics can confer on humankind. Agricultural science and genetics together have fed the world and will continue to feed the world.”*

SUSTAINABILITY

It is most fitting that “sustainability”, in other words “agricultural sustainability”, is that part of the Borlaug Dialogue theme that links biotechnology with climate volatility. There is no concept more **indispensible** to the current debate about food security; sustainability is the **central thread** reminding us that all of these issues are interconnected.

Sustainability must be a **hallmark** throughout our entire agricultural system. It tells us not just “what” we are doing to achieve these global food security objectives, but “**how**” we are doing it. So, the **key question**: “Are we meeting the needs of the

present without compromising the ability of future generations to meet their own needs?”

Sustainability has *three essential components* – economic, social, environmental. We also know that policies that proceed under the banner of ‘sustainability’ can at times give us dramatically unintended consequences, with the resulting spirited debate that follows about who are the ‘winners’ and ‘losers’.

The *biofuels* debate is a classic example. USDA Under Secretary Cathie Woteki reminds us that we need to look at long-term challenges – that bio-production is not necessarily in competition with food production, rather ag production is about food, fuel and other bio-products. The challenge is how we do all of that.

Another illustration of the complexity of sustainability involves traits related to biotech. For example, why would there be controversy about scientific advancement to develop a trait urgently needed by the developing world – *virus resistance in cassava*? According to FAO, this major staple food in the developing world provides a basic diet for over half a billion people. Yet, based on their non-science “world view”, a number of governments continue to block its development.

With global food demands doubling in the near future we must increase productivity while at the same time promoting sustainability. Some call this idea “*sustainable intensification*.” Its goal is to increase food production from existing farmland while minimizing pressure on the environment – a tall order, given our population and natural resource challenges.

Although we have yet to reach consensus on what sustainability really means, in my view the most important lesson for policy makers is to keep our focus on the “*outcomes*” for our society, rather than “practices”. *Bill Gates*, speaking at the World Food Prize in 2009, put it this way: “*We support a wide range of agricultural techniques. Some of our group grants do include transgenic approaches, because we believe they have the potential to address farmers’ challenges faster and more efficiently than conventional breeding alone.*” In other words, follow proven science toward whatever works best for beneficiaries.

So, our attention must be on what we are trying to achieve long term in global food security – for children, for women, for all farmers, for our planet. If sustainability is a goal then we should be looking not at “practices”, but at “*outcomes*.”

CLIMATE VOLATILITY / CLIMATE CHANGE

“The stability of whole food systems may be at risk under climate change because of short-term variability in supply.” That sobering analysis is from the eminent *Joachim von Braun*, former Director General of the International Food Policy Research Institute (IFPRI). In his recent report in *Science* von Braun also concludes that “Climate change could potentially interrupt progress toward a world without hunger.”

IFPRI also says that by 2020 climate change will add 20% to the number of malnourished children in Africa. More alarming - impacts of climate change may in fact be worse than what the principal models are telling us today.

In spite of these ominous forecasts, *climate change deniers are making headway*. Professor *Adam Frank*, in *Age of Denial*, reports: In 1989, when “*climate change*” had just entered the public lexicon, 63 percent of Americans understood it was a problem. Almost 25 years later, that proportion is actually a bit lower, at 58 percent.

Frank adds that we are today “*a society ambivalent, even skeptical, about the fruits of science*” and yet “*it is politically effective, and socially acceptable, to deny scientific fact*”. Finally, Frank tells us “*climate deniers...have manufactured doubt about fundamental issues in climate science that were decided scientifically decades ago.*”

Why is it so important to get this right? Because – confirming the new findings of the Intergovernmental Panel on Climate Change (IPCC) - all of the world-class scientists I am noting today agree on *three fundamental points about climate change*: 1) it is real, 2) it is here, and 3) its consequences are and will continue to be devastating:

- *Higher temperatures*, by 2 degrees or more by the end of the century, brought on largely by rising levels of Greenhouse gases (*GHGs*);
- *Rising sea levels* – therefore cropland loss;
- Loss of access to safe *drinking water* - one billion people already affected (WHO)
- Damage to *agricultural ecosystems* – projected to degrade 1/5 of all arable land in the developing world
- Dramatic increase in *human infectious diseases*
- Rise in *diseases of food producing animals*, including those transmissible to humans
- New *plant diseases* and pests – insects already consume 25% of our world’s crops;
- *Lower crop yields*
- Unprecedented and increasingly extreme *weather patterns* – droughts and floods;
- Increasing and continuing *food price volatility*

WHY WE MUST STAND UP FOR SCIENCE OVER “WORLD VIEWS”

What gives the *World Food Prize*, including its Borlaug Dialogue, its special *defining brand*? Paramount is an unyielding commitment to support and defend proven science policies. Because, this commitment is necessary to lead us toward the ultimate goals of our society - a world where children are well nourished, where women are

empowered, where farmers flourish, and where our planet is sustainably protected for the next generation.

The Prize is indeed a *cathedral to science*, and its brand is protected and nurtured by those who understand the critical importance of its principles – *global food and nutrition security champions* like MS Swaminathan, Cynthia Rosenzweig, Gordon Conway, Gebisa Ejeta, Cathie Woteki, Pinstrop Andersen, Catherin Bertini, Calestous Juma, Nina Fedoroff, Monte Jones, Pedro Sanchez, and many others. And, of course, Norman Borlaug.

Look for example at how these scientific principles apply to seeds – the delivery vehicle for the global food supply. Dr. Manjit Misra, who directs Iowa State’s world renowned *Seed Science Center*, reminds us: “*To feed the future, first we must seed the future. That means a science-based and harmonized seed system; otherwise our objective to achieve global food security will continue to be compromised.*” Related, ISU’s *Global Food Security Consortium* – unveiled this week on the margins of the Borlaug Dialogue – is a comprehensive and innovative approach to advance that goal.

Let me be clear. It is ok for us to have our own “*world view*”, the lens through which we look at – and express ourselves – about issues. In fact, it is protected by our First Amendment. We all have our own opinions based on our faith, our biases, our politics, our view of the role of government, our opinion about social policies, our attitude about large institutions, who we choose to be in solidarity with – or against – on any given question. So that’s fine, that’s OK.

But, what is not OK, and where the problem comes, is *when “world views” that run counter to scientific evidence begin to impact public policies*. This is the place where society pays an unacceptable price. Allowing “world views” to shape these policies presents the danger of what has been called a “*postmodern assault on science*”.

This “postmodern” approach seeks to include *all points of view as equally valid* – the result is that it defeats science-based policies, and also slows down or prevents much critical scientific research. And that is even more troubling at this time when US ag research funding is already in crisis.

USDA reports that *ag R&D in this country has declined 26%* in the past decade (incidentally, at the same time investments by China, India, and Brazil have increased dramatically). Quite a paradox, given IFPRI’s recent findings for the European Commission: “*Agricultural research is a good investment: every US\$1 invested in CGIAR research yields approximately \$9 worth of additional food in the developing world.*”

Dr. Anne Glover notes her concern: “*Part of the problem is public perception and the fact that the small minority of scientists who speak out against GM get the same credence in the media as the vast majority of scientists who support GM.*” Glover puts this irony in context: “*not a single piece of scientific evidence*” exists to support claims food produced from GM crops is unsafe. And she adds: “*No other foodstuff has been so thoroughly investigated as GM.*”

I would also call on *international institutions* to be more rigorous and forthright in defending and supporting scientific evidence. Some of these valued organizations worry too much about “perceptions”, “political correctness”, “donor sensitivity” - all at the expense of science. If these influential bodies do not stand up rigorously for science – whether it be on climate change, on the safety and benefits of new technologies, or any other critical policy issue – their *dedicated work* in service to their own beneficiaries will be significantly *compromised*.

Moreover, to the extent that these entities do not engage in *communicating proven scientific facts*, they put at *risk their own relevancy* in the global policy dialogue. As one respected international diplomat recently remarked: “They can lead, they can follow, or they can get out of the way.” Policy officials – especially in developing countries - are anxious for guidance on these issues. Failing to take a stand when the science is settled, will, quite reasonably, be viewed as taking a stand against the science. Evidence is evidence, and what is needed from these institutions is global leadership in the sharing of science-based knowledge.

“WORLD VIEW” OVER SCIENCE: THE PRICE WE PAY

How can we better understand the price we pay? Since the Borlaug Dialogue theme this year includes biotech and climate change, let me cite *a few examples where today “world views” are colliding with science*, at the expense of society, and particularly our next generation:

- An advisory committee in *India* has recommended a *10-year moratorium on field trials of GM crops*. This, in a country with 25% of all the world’s hunger, and which also has – according to UNICEF - 1 in 3 of the entire planet’s malnourished children. This ban will affect the 15 crops under development by Indian scientists for such important traits as resistance to insect, fungus, drought, virus, and salt water.

But, an encouraging footnote: NAAS India, composed of India’s most distinguished scientists, has strongly condemned this action, noting that biotech is the most important technology to take India into the next food and ag revolution. NAAS further noted that “*any ban on research and testing of GM technologies would push our country at least 20 years behind and eventually all of us will have to pay a price for the same.*”

- Let’s go next to *Ireland*, which today is publicly funding the development of a GM *blight-resistant potato*. What a potentially triumphant chapter for a country who suffered the loss of a million of its citizens in the potato famine that began in 1845, a saga powerfully captured in John Kelly’s *The Graves are Walking*. But wait. The Irish Green Party is working hard to promote its “world view” to insure that this much-needed technology never becomes reality.

- The Governments of *Kenya* and *Tanzania* have banned *GM varieties* – *including drought-resistant maize and virus-resistant cassava*- because of supposed “health risks”. Ironically, these foods under development – which have no known health risks – are intended to address the most significant risk the children of Kenya are currently experiencing – extreme malnutrition.
- *North Carolina* has banned its state planners from using *climate data* in their projections of future sea levels. Amazing, in the face of a USGS report published in the journal *Nature Climate Change* in June predicting that the sea level along the coast of that region, which it called a “hotspot,” would rise up to 11.4 inches higher than the global average rise by the end of the 21st century.
- In the *Philippines*, activists – with the encouragement of Greenpeace – recently destroyed a field of GM “*Golden Rice*” enhanced to deliver Vitamin A, the deficiency of which contributes to the deaths of nearly 700,000 children worldwide each year. USAID Administrator *Rajiv Shah’s response*: “*The global community should stand with science – in discovery, testing and regulation – so farmers can make their own informed choices. It’s taken 25 years of ingenuity and perseverance to bring Golden Rice from vision to reality. Who will stand between it and millions of undernourished children?*”
- In *Zambia*, just a decade ago on the verge of a famine, the government refused UN international food aid because the shipments included *GM maize*. Outside interests had made Zambians extremely fearful – to the extent that the government’s non-science “world view” was that the maize was “poison” and would cause all kinds of dread diseases. So, while scores of Zambian citizens were starving daily, the President of Zambia was rejecting these World Food Program shipments. The price we pay.

On the issue of “world view” v. science, *Mark Lynas* told his Oxford audience: “*So my message to the anti-GM lobby... You are entitled to your views. But you must know by now that they are not supported by science. We are coming to a crunch point, and for the sake of both people and the planet, now is the time for you to get out of the way and let the rest of us get on with feeding the world sustainably.*”

Borlaug warned us early on about not listening to science: “*If the naysayers do manage to stop agricultural biotechnology, they might actually precipitate the famines and crises of global biodiversity they have been predicting for nearly 40 years.*”

CLOSING THOUGHTS ON WHY WE ARE HERE

In all of my talks about food and nutrition security I come back to what these issues are really all about – what we have called “*the human face of science.*” We must keep our eye on the ball – science is for a greater purpose; it cannot be separated from our humanity. Science, at its core, is about insuring the wellbeing of people. And, for

that matter, is not the ultimate purpose of agriculture about nutrition, and therefore human health?

We often use the metrics of publications that report new knowledge, or the scientific details of an achievement in genetics. But the real story – the real purpose - is about children delivered from starvation and farm families who can thrive because their crops are improved. We will not achieve these goals if our “world view” continues to impede the progress of science.

We should not forget our goal – to make progress by cutting deeply into these numbers:

- 57,000 Iowa households today experiencing hunger
- 17 million children hungry in America, and one in six Americans struggling with hunger
- 3.1 million children worldwide who die each year from undernutrition (45% of all under age 5 deaths)
- 165 million children stunted in the world who will never have a normal life
- 650 million farmers and their families globally who suffer from hunger
- 40% of our crops on this planet lost after harvest, and never to reach the beneficiary
- Women are half of the world’s farmers, yet they received only 5% of technical assistance to agriculture
- 25,000 of our fellow citizens of the world die a bitter death from this curse each day.

And, most of all, we must not forget that the first **1,000 days** are the most important moment in a child’s development – and that early child nutrition is the linchpin for the success of all of the Millennium Development Goals.

No figure today more inspiringly embraces the intersection of science and humanity – and, I should add, generosity - than does **Dr. Swaminathan**. It is captured in a story. In 1969 Swaminathan appealed to President **Indira Gandhi** to Nominate Borlaug for the Nobel Peace Prize. She pushed back, saying she would jointly nominate Borlaug and Swaminathan, since they worked side-by-side as partners for a decade to insure India’s Green Revolution. Swaminathan said “*No. Borlaug’s gift to us has been saving our country; our gift to Borlaug will be supporting him for the Nobel Peace Prize.*” The rest is history.

Responding to hunger is perhaps the **most basic of all sustainability issues**. As individuals, we care about the world’s hungry for different reasons. For some, hunger may represent a profound moral issue, or a mandate of faith, or a belief that solving this puzzle called hunger will create a more stable world. Whatever the reason, we come to Des Moines to join others who share our passion – and together we try to become part of the solution.

A World Food Prize Lecture - David. P. Lambert

MK Gandhi said, “*The best way to find yourself is to lose yourself in the service of others.*” Clearly he could have been talking about you and your extraordinary record of service, especially to children and those who are suffering. It is always an honor to be in the presence of Rotarians. Thank you for giving me this special moment, and Godspeed in your great work.