MARCO ROSAIRE CONRAD-ROSSI ON BIOLOGY FORTIFIED, INC. | AT THE VANGUARD OF THE GREEN GENE MOVEMENT AND BEYOND

April 6, 2014 · *by* knigel · *in* GMOs

Following his previous critique of Vandana Shiva's eco-philosophy, SF guest writer, Marco Rosaire Conrad-Rossi, is back to discuss Biology Fortified, Inc. In this piece, Conrad-Rossi begins discussing Mark Lynas' transformation from GMO critic into advocate, then connects this individual transformation to the ongoing cultural transformation taking place surrounding GMO issues, with Biology Fortified, Inc. at the forefront. Through his own insights, and with descriptions of the Biology Fortified Inc. project, Conrad-Rossi covers a range of topics from misconceptions surrounding GMOs to the problematic arguments of the "Right to Know" campaigns. For those who do not yet know, Biology Fortified Inc. is responsible for the immensely useful GENERA project which collects and shares peer-reviewed GMO studies. Included in those is a second list of

independently-funded research.

Coincidentally, GMO Skepti-Forum on Facebook hosted a **Q&A with Karl Haro von Mogel and Anastasia Bodnar from Biology Fortified, Inc.** in February.

Marco Rosaire Conrad-Rossi is an activist and writer who resides in Olympia, Washington. In the past, he has had articles published in The Humanist Magazine, Z Magazine, Works In Progress, the Peace and Conflict Monitor, and Biofortified.org.

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Biology Fortified, Inc.

At the Vanguard of the Green Gene Movement and Beyond

By: Marco Rosaire Conrad-Rossi

Very few public apologies are done with the intention of redirecting an entire social movement. However, that was exactly what Mark Lynas was hoping for. In January of 2013, Lynas was a guest speaker at the Oxford Farming Conference. The choice of Lynas for the conference was unique. Lynas is an English environmentalist who is known as one of the country's best educators on climate change. But, he was not at the conference to talk about climate change. He was there to talk about GMOs, and not in a way most environmentalists would expect.

As Lynas explains in his speech, fifteen years ago he worked hard to ban GMOs from Europe. He formed alliances with notable organizations like Greenpeace and Friends of the Earth. He pulled crops out of the ground. He warned people of the dangers of biotechnology. He educated people on the connection between biotechnology and multinational corporations. It was—in Lynas' own words—"the most successful campaign I have ever been involved with." There was a problem. It was also the most misguided.

"I want to start with some apologies." Lynas began his speech. "For the record, here and upfront, I apologize for having spent several years ripping up GM crops. I am also sorry that I helped to start the anti-GM movement back in the mid-1990s, and that I thereby assisted in demonizing an important technological option which can be used to benefit the environment. As an environmentalist, and someone who believes that everyone in this world has a right to a healthy and nutritious diet of their choosing, I could not have chosen a more counter-productive path. I now regret it completely."[1]

When GMOs were first introduced to the public twenty years ago they were nearly universally condemned by environmentalists. Overtime this universal condemnation has drifted farther away from the scientific consensus on GM crops. For scientists there is no debate. The GM crops currently available to the public pose no health risks, have benefited the environment, and have bestowed real benefits onto farmers. In this way,

a larger, unified network.

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environmentalists—so united with scientists on climate change—have seen themselves part ways with science.

There is a faction within the environmental movement that is trying to buck this trend. Over the last few years there has emerged a "green gene" movement—a conglomerate of scientists, farmers, and activists who believe that the power of biotechnology can be used to make food more nutritious, aid in ending world hunger, and make agriculture more sustainable. The humanitarian goals of the green gene movement are primary, but underlining these concerns is a broader cultural shift within the environmental movement. Environmentalists have tended to view science and technology with suspicion, seeing it as responsible for creating our industrial society and therefore at the source of our environmental ills. The green gene movement is working to flip this idea on its head. Science and technology are seen as essential tools for solving some of the ecological threats facing the earth, and biotechnology can be a means to move us towards a more sustainable future.

At the vanguard of this movement is the blog *Biofortified.org*. Started on Halloween of 2008, *Biofortified.org* pooled together the work of various scientists who were frustrated by the environmental movement's entire approach to GMOs. Since that time, the blog has blossomed into its own non-profit—Biology Fortified, Inc.—and now includes a plethora of writers on a wide range of topics.

In many ways Karl Haro von Mogel—one of the blogs co-founders and editors—was the perfect person to start *Biofortied.org*. Haro von Mogel is a Ph.D. candidate in Plant Breeding and Plant Genetics at UW-Madison. While at UC Davis Haro von Mogel was a student of acclaimed plant geneticist Dr. Pamela Ronald. If the green gene movement has a founding text it is Ronald's book *Tomorrow's Table: Organic Farming, Genetics and the Future of Food*. Ronald wrote *Tomorrow's Table* with her husband—an organic farmer who once served as president for the California Certified Organic Farmers—and for many environmentalists its thesis is controversial: genetic engineering and organic agriculture practices can work side-by-side. In fact, they must if we are ever to have a sustainable agriculture system.

While most people treat genetic engineering and organic agriculture as worlds apart, the green gene movement is trying to think beyond the polarization. According to Haro von Mogel, the gulf between them constructs a false dichotomy. "I find the whole debate between organic and genetic engineering to be artificial and contrived. Because organic is about the way you grow crops… Genetic engineering is about getting a trait into a crop that you didn't have before. It actually doesn't make sense to me that you couldn't have a genetically engineered crop grow on an organic farm."

Part of the reason that the green gene movement is so concerned with the merging of these two worlds is that organic agriculture—though having some clear ecological benefits—also has some severe ecological problems. Many people assume that organic farms do not use any pesticides, but that is not true. Organic farms can use pesticides on the condition that those pesticides are also organic—meaning that they are derived from natural sources and not produced synthetically. The problem is that many of these pesticides can still have harmful effects on human health and the environment.[2]

- Amelia Jordan's 500 words | The Fear of Exploration on Want to be a Guest Writer?
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Organic farms use more farmland and labor than conventional ones. For niche markets in the developed world the effect of organic agriculture is benign. But, if organic agriculture were to become a global food system, then it would require a massive transformation of ecosystems into usable farmland, and a huge migration of populations back to rural areas. Not only is this transformation unrealistic, but if it were to occur it would have serious consequences for the environment.[3]

Instead of having debates on what type of agriculture—Haro von Mogel argues—it is better to focus on the goals and use whatever means available to reach them. The ideal farming situation is one that produces high crop yields, with limited inputs, and negligible effects on the environment. The overwhelming scientific evidence demonstrates that appropriately using biotechnology moves us in the direction.

One of the most prominent genetically modified crops is insect resistant corn and cotton. All plants develop their own self-defense mechanisms—including their own naturally occurring pesticides. *Bacillus thuringiensis (*or *Bt*) is a bacterium pesticide commonly used in organic agriculture that is harmless to humans—but deadly to caterpillars, moths, and butterflies. Geneticists have managed to create corn and cotton varieties that produces *Bacillus thuringiensis* as one of the crop's natural defense mechanisms. The result has been a dramatic decrease in pesticide use to the benefit of both farmers and the environment. According to a 2002 article published in the journal *Science*, the introduction of *Bt* cotton in China led to the elimination of 150 million pounds of pesticides in a single year.[4] And, because farmers were able to maintain high yields with fewer inputs, this reduction in pesticides eventually translates into a higher income. This has been especially the true for poor farmers in India.

Contrary to the claims of GMO opponents like Vandana Shiva the introduction of *Bt* cotton did not led to a mass suicide of Indian farmers, nor did it rise after it became widely used. A 2009 report from the *International Food Policy Research Institute* confirmed that while the tragedy of farmer suicide dates back to the mid-1990s, genetically modified cotton was not planted in India until 2002; unless *Bt* cotton also contains modified time-travel genes the claim that it is responsible for the epidemic of farmer suicides is just plain wrong.[5] If anything, the use of *Bt* cotton has helped Indian farmers. A 2012 study from the *National Academy of Sciences* found that *Bt* cotton caused on average a fifty percent gains in profit among small farmers in India.[6] The second major commercialized crop is herbicide resistant soybeans, rape seed, and alfalfa. The story behind herbicide resistant crops has been more mixed, but its benefits still outweigh its risks. The herbicide resistant crops were developed by Monsanto, and are intended to be use in collaboration with the herbicide glyphosate, or better known by its brand name Round-up. Essentially, once the crops are planted glyphosate can be sprayed throughout the area—killing rival weeds, but leaving the desired crop unharmed. The introduction of herbicide resistant crops has led to an increase in glyphosate use, but it's important to see this in context. While it is true that glyphosate has increased, it is also true that its increase has led to a decline in other herbicides—many of which are far more ecologically problematic. In the terms of herbicides, glyphosate is relatively benign. Its toxicity classification with the EPA is Level III (on I-IV scale with IV being lowest potential for toxicity and I being the highest).[7] To put that into perspective, consider the pesticide rotenone. Rotenone—which is used in

organic agriculture because it is naturally derived—can be classified as high as Level I and considered hazardous to marine life[8] and has been linked to Parkinson's disease among farmers.[9] In addition to this benefit, the use of glyphosate for weed control means that farmers don't have to till their soil. This keeps carbon in the ground, thus helping to offsetting the effects of climate change, and makes the soil better at holding moisture.[10]

Of course most people who chose to avoid GMOs do so not only because of the possible environmental consequences. There are also potential health consequences. The problem is no serious scientific evidence has ever shown the dangers of eating GMOs. According to Haro von Mogel, the science on this is quite solid.

When asked about the health risks of genetically modified crops Haro von Mogel talks about the GENERA project. GENERA—which stands for GENetic Engineering Risk Atlas—is a database on the *Biofortified* blog that allows the public easy access to the scientific literature on genetic engineering. When the database was created *Biofortified.org* had 350 peer-reviewed articles analyzing the safety of genetically engineered crops. Now, they have over 600.[11]

The broad scientific consensus on the safety of genetically modified crops flies in the face of the rhetoric of many of its opponents. For example, Jeffrey Smith—founder of the *Institute for Responsible Technology****[12]***—has reached a somewhat celebrity status in the food movement for warning people of the dangers GMOs. Smith has authored three books on GMOs and has appeared as an expert on GMOs for the *Dr. Oz Show*, *The Huffington Post*, and even *DemocracyNow!* When Haro von Mogel was asked about Jeffrey Smith's work, he reads a list from Smith's website on the various diseases that Smith claims are caused by GMOs: "allergies, inflammatory bowel disease, autism, asthma, cancer, smaller testicles, liver disease, smaller size and obesity, autoimmune disease, pancreatic disorders, Alzheimer's, diabetes, kidney disease, infertility and increased twin births, and he recently added that eating genetically engineered crops could make you more susceptible to AIDS." Haro von Mogel's point is clear. Smith will associate GMOs to any all diseases regardless of the scientific evidence or even logical consistency.

Smith's frequency to associate any and all diseases with GMOs is not his only problem. According to Haro von Mogel Smith often coaches people in using a "feed not lead" strategy when talking about GMOs. Meaning, Smith describes an animal or person consuming a GM crop, then describes a horrible incident happening soon after, and then leaves it ambiguous to the audience if consuming the GM crop actually caused the horrible incident. The strategy scares up concern around GMOs while leaving the presenter off the hook for actually having to justify the science behind the connection. "It's a rhetorical strategy that he engages in" Haro von Mogel explains, "to try to get people worried about genetically modified crops that doesn't fit with what we understand about the science."

The broad scientific consensus on the safety of GMOs puts the current efforts to label them in another light. While not being opposed to labeling GMO foods per se, Haro von Mogel has been very critical of labeling proposals like proposition 37 in California and

the more recent initiative 522 in Washington. The reason is that these the labeling schemes appear to be more aimed at misleading consumers than informing them. For example, Washington's initiative 522 would have required that genetically modified foods are labeled on the front of the product—suggesting that the fact that the product was created through genetic engineering is more important than the federally mandated nutrition information.[13] According to Haro von Mogel, that is a problem. "If there is going to be a labeling scheme the goal should be to inform people about the characteristics of what they are eating, but not in a way that is designed to alert you like something is supposedly wrong."

For many in favor of mandatory GMO labeling this argument seems counterintuitive. How could more information lead to less educated consumers? The reason is that labeling schemes don't exist in a vacuum. Any food labeling scheme must reasonably interact with other labeling schemes (i.e. GMO vs. organic), and be designed in such a way that it informs consumers rather than advertises to them. The mandatory labeling schemes favored by the various "right to know" movements just don't do that. They are written in such a way as to make it extremely difficult for grocers to carry products with GMOs. In this way, they function more as a soft ban than an actual means for educating the public.

Environmental issues and public health have tended to dominate the debate on GMOs, but most opposed to biotechnology will freely admit that isn't their only concern. For many people biotechnology is associated with the power of large corporations. Many agree with the green energy experts Amory and Hunter Lovins that "Genetically engineered crops were created not because they're productive but because they're patentable. Their economic value is oriented not toward helping subsistence farmers to feed themselves but toward feeding more livestock for the already overfed rich."[14]

Amory and Hunter Lovins may be widely recognized as important figures in the renewable energy movement, but they have it wrong when it comes to US patent laws. Plant patents have existed since 1930 when Congress passed the Plant Patent Act as part of the Smoot-Hawley Tariff. Since then hybrid seeds—commonly used in organic agriculture—have been sold to farmers with many of the same restrictions and penalties that seeds developed through genetic engineering currently have. Nearly the entire hybrid seed market for organic produce is dominated by large corporations and their seed varieties—like GMOs—are protected by patents. One of the largest organic seed companies in the world—Seeds of Change—is own by Mars Inc., the same company made famous by selling candy bars.[15] Ironically, everyday people buy organic produce made from seeds sold by Seeds of Change under the belief that they are supporting healthy eating habits and small businesses, only to have their dollars trickle back to a large multinational corporation which made its fortune by selling people junk food.

The only genuine ways to prevent large corporations from monopolizing the food supply is to encourage greater competition in the food market, and a greater portion of the agriculture economy under public control. Unfortunately, the actions of the anti-GMO movement have worked against—not towards—these goals. The fear around GMO crops has inspired an extremely burdensome regulatory system. Far from being opposed to these regulations, the largest biotechnology companies appear to support

them. The reason is because the regulations for GM crops are so expensive that only the largest corporations can afford to manage them. It is an obvious danger that the green gene movement is aware of. “If we set things up so that only the big companies and China can afford to put genetically engineer crops through the regulations,” Haro von Mogel warns “then they are the ones who are going to own it.”

In the complex politics of biotechnology the green gene movement walks a fine line. It tries to be independent; critical of any special interest whether it is large corporations or environmentalists; it claims logical and science is the best way to understand the natural world, while at the same time attempts to awaken our emotions to ecological problems. Fundamentally, it encourages a break from a naturalistic ecology which sees environmentalism as maintaining the planet as a pristine reserve untouched by humans, and offers a more humanistic or modernist environmentalism that envisions an intertwining of the natural world with modern technologies. Mostly though, it is a movement about dialogue. Haro von Mogel’s sees his main missions as being a diplomat for science that gets opposing sides to talk to each other. When asked what he thinks people can do to change the polarized debates on GMOs, he makes a plea for understanding. “Don’t assume the other person is uncaring. I hear a lot from someone who is pro-biotech say something about someone who is anti-biotech that they just want the third world to starve. And others will say the anti-biotech with the pro-biotech you just want to rule the third world like a totalitarian regime. Neither of which is true, both probably want the best for people in this world. They just disagree with the exact path of getting there.”

Is Haro von Mogel’s hope for a mutually respectful discussion on GMOs possible? It’s hard to say. Nevertheless, the green gene movement provides a unique and underappreciated perspective. Sustainable agriculture is thought of as standing on three legs: economic, social, and environmental. The green gene movement seeks to add a fourth leg—the leg of science and reason—in the hopes that the table of agriculture that we all dine from will be even more secure. It’s a perspective that anyone who is concerned with the humanity’s diet and the future of the planet should consider.

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5 Responses

Mischa Popoff *April 9, 2014 at 11:57 am* · Log in to reply. →

A mutually respectful discussion on GMOs will become possible only when anti-GMO organic activists admit that there is no such thing as contamination of an organic crop by GMOs. ‘Til then, the organic movement will persist in defining itself on being vehemently anti-GMO to the near-exclusion of all else that it once stood for.

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Vanguard of the Green Gene Movement and Beyond – Skepti-Forum | plantlawyer *April 9, 2014 at 4:54 pm ·*

[…] Marco Rosaire Conrad-Rossi on Biology Fortified, Inc. | At the Vanguard of the Green Gene Movement a…. […]

AgoraForvm *September 1, 2014 at 5:55 am* · Log in to reply. →

If GMOs are so wonderful, why the resistance to labeling? If GMOs are the life-giving, beneficial organisms that their creators say they are, the industry should be trumpeting them, not fighting to hide them.

Knigel Holmes *September 1, 2014 at 6:17 am* · Log in to reply. →

Hi there, thanks for your comment. You can find several labeling discussions from our GMO Skepti-Forum Facebook group through our Wiki here: http://wiki.skeptiforum.org/wiki/GMO_Skepti-Forum_Threads#Business.2C_Regulation.2C_Labeling

There, you'll find a diversity of views, giving you more depth to the labeling issue.

The Culinary Modernist Reader | Volume Seven | Biology Fortified | Food and Farm Discussion Lab *June 9, 2015 at 1:26 pm ·*

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