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The Southern African Famine and Genetically Modified Food Aid: The Ramifications for the United States and European Union's Trade War

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Abstract

The 2002 southern African famine marked a new phase in the long-standing trade war between the United States and the European Union over genetically modified organisms. This work will explore how the delivery of genetically modified food aid to the region concretized the ontological disparities between the two trading blocs. In addition, I argue that genetically modified crops necessitate not only new development policy, but new ways of theorizing development itself in the light of globalized systems of food production.

JEL codes: F, Z

Keywords: *genetically modified organisms (GMOs); famine; political economy; trade*

I. Introduction

The “ugly and often absurd trade war between the US and EU over GMOs”¹ (Robinson 2002) arose in 1996 as Europe banned the import of U.S. growth hormone-treated beef. The already tense situation between the world's largest agricultural trading blocs was further aggravated in 1999 when Europe imposed a five-year moratorium on the import of genetically modified crops. The decision came at the end of a three-year European public

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1. The science of biotechnology has as many terms as it does skeptics. The synonyms for the process or science of biotechnology include: “genetic modification” and “genetic engineering” or the term “agbiotech.” The products of biotechnology can be referred to as GMOs, transgenic foods, GM foods, genetically engineered (GE) foods, or biotech foods. These terms will be used interchangeably in this work for the sake of variation but all refer to the same process and product. It is interesting to note, however, that the European media prefer the term GMO, while the U.S. media often refer to “genetically improved” crops.

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campaign advocating the need for precaution in the face of the potential long-term risks of agricultural biotechnology. The moratorium was legally justified by the fact that, at that time, the American agricultural system did not have a segregation policy for GM and conventional crops, or mandatory labelling laws for products containing genetically modified organisms or "GMOs." Because European Directive 97/35 demands the labelling of any food with a GMO content greater than 1 percent, this, by extension, requires strict crop segregation measures and traceability mechanisms. The United States had neither, which legitimized the European Union (EU) moratorium. This regulatory dichotomy gained momentum in 2001 as public anti-GM sentiment in Europe reached a crescendo. Because this opposition was frequently expressed as concern over the globalized, corporate control of the food chain, the parallel question of GMOs as a means of hunger alleviation helped propel the trade war to a new level.

If the debate between the two trading blocs over the economic, political, and environmental aspects of GM crops is one story, in late 2002 another plotline emerged. At that time, media reports and non-governmental organizations (NGOs) were suggesting that as many as 15 million people in the southern African nations of Zambia, Zimbabwe, Lesotho, Malawi, Mozambique, Angola, and Swaziland were starving. Despite the fact that the region can typically expect two or three drought events of varying severity per decade, back-to-back years of below average production levels had, by 2002, caused a regional food deficit of 3.3 million tons (Tschirley, et al. 2004). In addition, inefficient grain reserve management, political instability in Zimbabwe, long-term vulnerability among many rural households in the region due to HIV/AIDS, and flawed World Bank advice to Malawi to sell off its grain reserves, among many factors, meant that this potentially manageable situation resulted in hunger for millions (ibid.). The global community was quick to respond with food aid, but by September 19, 2002, a media storm was raging as a *New Scientist* report suggested that as much as 75 percent of the donated maize could be genetically modified (Pearce 2002).

In this paper, I wish to contend that this famine event marked a new phase in the agricultural biotechnology debate. Furthermore, it broadened public fears over the consolidation of global food production which had, until that time, been limited mostly to the developed world. From 2002, the stage was set for a revised debate in which the plight of the globe's disenfranchised could be strategically appropriated by both advocates and opponents of GM. A debate that had once been legitimized by recourse to abstracted scientific "facts" became spatially grounded, invoking people, place, and the morality of hunger as vital resources to justify the discursive stances of both the anti- and pro-GM camps. The transatlantic "ideological crossfire" (Borlaug in Pence 2002: 77) was transposed to southern Africa and, in the process, acquired a newly critical dimension. As a consequence, the EU moratorium on the importation of GMOs became more than just a bilateral issue.

The paper will examine the 2002 famine event in the context of the ongoing trade debate between the EU and United States over the necessity and economic justifications of GMOs. The Third World increasingly represents an emerging frontier in the ongoing discussions over GMOs with huge economic and political salience for the continued viability of agricultural biotechnology. With European import markets effectively closed to GMO exports from the United States (and other GM producing nations) until the fate of the moratorium was decided in 2004, developing nations seemed to offer the potential for much-needed corporate

expansion. As such, the events in southern Africa deserve critical reflection for the way in which they reshaped the relationship between GMOs, Third World hunger, and humanitarian aid in American and European discourses in the context of the ongoing debate between the two trade blocs over the globalized political economy of food.

To explore the contentions outlined above, the paper is organized into five parts. The first examines the 2002 famine event in southern Africa, its background, and international reactions to the call for food aid. The famine marks a transition in the GM debate trajectory from a developed world justification of the necessity of GMOs to calls for biotechnology as a tool of development. The famine will then be contextualized through three perspectives from which it is most frequently discussed: recent falls in biotechnology profits, the population growth debate, and the issues of food aid. Finally, the strategic use of economic famine theory as a discursive tool by GM advocates and opponents in the developed world will be discussed to illustrate how GMOs in the context of Third World hunger mark a profound shift to a moralized understanding of the trade war. As Lambrecht (2001: 293) cogently observes, “feeding the hungry is the Final Argument, the clash that trips the emotions on both sides in the biotechnology debate and keeps them a chasm apart . . . it is a debate that plays out differently around the world.” This ontological disparity legitimized a fundamental bifurcation in the way in which the famine event was taken up as a Trojan horse by both anti- and pro-GM commentators. Therefore, I suggest that critical reflection on the strategic use of famine theory (see Sen 1989, 1999; Arnold 1988) may uncover the mechanisms reproducing and re-legitimizing the current EU–U.S. trade war over GMOs.

2. The EU–U.S. Debate

The “GM debate” is one that is shrouded in a cloak of apparent objectivity but finds its potency—in the eyes of the public at least—through its ability to transcend the confines of scientific fact and enter the far cloudier world of values and ethics. However, facts offer a necessary starting point for any exploration of a rhetorically complex realm. The current debate over GMOs between the United States and EU can be traced back to three central events. First, in 1989, the EU banned the import of U.S. beef containing bovine growth hormones (recombinant bovine growth hormone [rBGH])—six varieties were banned in the EU—despite the United States Department of Agriculture (USDA) Secretary Dan Glickman’s assurances that they posed no health threat. This ruling was judged as going against World Trade Organization (WTO) free trade regulations by the United States and resulted in a well-publicized tribunal in 1997. Second, global biotechnology corporations such as Monsanto were personified and vilified in the late 1990s by the European media, providing anti-GM protestors with a tangible enemy to deploy their words and resources (Boal 2001). And third, in 1999, the EU passed a moratorium on the importation and commercial approval of GM crops pending the development of certain labelling and traceability regulations (Schweiger 2001).

The EU and the United States are currently at loggerheads over the issue of the trade in beef and GM crops. In 1989, the EU banned the import of U.S. beef containing growth hormones due to human health effect fears. The EU lost to the United States at a 1997 WTO dispute resolution panel meeting; the ban was judged as going against General Agreement on Tariffs and Trade (GATT) free trade laws (Millstone and Lang 2003). As a

result, the EU was forced to pay \$100 million annually in fines (Teather 2003). To make matters even more tense, on June 25, 1999, the EU issued a five-year moratorium on GMOs pending further study into their safety (Schweiger 2001, in Tokar 2001). Hailed as a successful culmination of three years of intense lobbying by the public and advocacy groups alike, the moratorium also served to reveal the fissures between the United States and EU, as well as within the EU member states.

The anti-GM sentiment was concretized by Friends of the Earth's denunciation of Monsanto's first shipment of its GM soy to Europe in 1996 (Charles 2001). The shipment was never unloaded because its GM content was unlabelled. The shipment could be legally turned away because it contravened the EU's 1997 mandatory labelling regulations. The effusive personality of the German Greenpeace activist Benny Härlin captured media attention and made Monsanto a household name overnight, thereby sealing the fate of future American GM imports to Europe. As Hart (2002) reveals, U.S. annual maize exports to Europe plunged from 70 million bushels in 1997 to 3 million bushels in 1998. In short, Monsanto, the original developer of Agent Orange, was portrayed as consciously and arrogantly going against European wishes for labelling, and in so doing the biotechnology giant had sealed its own public relations downfall. Charles (2001) reveals that Monsanto engaged in an \$8 billion spending spree in 1998 alone, buying up other biotechnology competitors and seed companies. When the European public became aware of its increasing global dominance of food production, Monsanto became the foil needed to mobilize people behind the anti-GM debate. Monsanto's apparent greed gave the obscure science of biotechnology a corporate personality. A star had been born, and with it the enemy Europe needed to justify its anti-GM stance.

By early 2002, the U.S.–EU trade war was reaching a crescendo, agricultural biotechnology had acquired a corporate persona in Europe, and anti-GM feeling was running high. This merely amplified the situation in the United Kingdom, where there were already marked tensions between the government and those in opposition to GM crops. Indeed, in a 1998 *Daily Telegraph* article, His Royal Highness (HRH) the Prince of Wales publicly denounced biotechnology as taking “mankind into realms that belong to God, and God alone” (cited in Charles 2001). The Consumer's Association, English Nature, the Soil Association, and the Vegetarian Society all added their voices to the increasing outcry. The seemingly relentless takeover of corporate-controlled “Frankenfood”² meant that, “by early 1999, the debate over GM food was as much a part of British culture as royalty and rock and roll” (Lambrecht 2001: 226). The United Kingdom was not the only country to express its anxieties over the possible environmental and health impacts of GMOs. Rural French anti-globalization activist José Bové leapt to notoriety in 1999 for destroying GM maize and rice crops, and also for famously burning down a branch of McDonalds (Henley 2003). The southern African famine event was injected at a time when the European media were particularly attuned to the issues surrounding GMOs in national and global contexts. Amid

2. The origin of the term “Frankenfood” can be traced back to a 1992 letter to the editor of the *New York Times* from Paul Lewis of Newton Center, MA. He wrote, “ever since Mary Shelley's baron rolled his improved human out of the lab, scientists have been bringing just such good things to life. If they want to sell us Frankenfood, perhaps it's time to gather some villagers, light some torches and head to the castle” (available at www.wordspy.com/words/Frankenfood.asp). It is interesting to note that the term has been around for much longer than the recent round of extreme anti-GM sentiment. The term has been variously employed by both sides of the debate.

the media escalation, the exact nature of the famine event is often lost. This should, therefore, be the first point of consideration before moving on to a more detailed discussion of the way in which this event was discursively appropriated by the EU and United States to sustain and justify their own political economic systems of food production and consumption.

3. The 2002 Southern African Famine

With Europe's public opinion concretized into policy, events in southern Africa in 2002 found a receptive audience. Southern Africa typically experiences two or three drought events, of varying severity, per decade. Drought is therefore not unusual, but in the context of significant restructuring of the agricultural sector across the region, which led to greater dependence on relatively drought-intolerant white maize, vulnerability to environmental events increased. According to the Food and Agriculture Organization (FAO), maize production in the region has fluctuated year-on-year by nearly 20 percent over the past thirteen years. However, in four of those years, the fluctuation has exceeded 50 percent, and it is estimated that 75 percent of this variation can be explained by changes in rainfall (Tschirley, et al. 2004). In addition to this temporal variation in rainfall, there are also disparities at an intra-regional scale. For example, north Mozambique is often less affected by drought than the rest of the country, and this discrepancy means that intra-regional trade has long been able to cover production shortfalls (*ibid.*). Agricultural policy in the region is heavily orientated towards maize as a staple crop. Zambia, for example, focuses its fertilizer subsidies and price supports on maize, thus ongoing viability of this crop is central to its economy and trade. Over the past decade, both Mozambique and South Africa have undergone a period of food system reform, which has led to a diversification (mostly to cassava) within the agricultural sector and a decentralization of food distribution and maize milling systems.

By early 2002, two consecutive years of below-average production in the region had produced a regional food deficit of 3.3 million tons. The regional stock levels of 329,000 tons stood at 1.5 million tons below even the lowest level experienced in the previous five years, and 3 million tons less than 2001 (Tschirley, et al. 2004). In April, United Nations (UN) agencies launched an appeal for \$611 million for the region, of which 90 percent would comprise food aid. The World Food Program led interagency cooperation in the region, stating that approximately 13 million people would be facing a severe food crisis over the next nine months. By September, the number affected was estimated at 14.4 million and climbed to 15.5 million three months later. Amid the mounting crisis, a *New Scientist* report entitled "UN is Slipping Modified Food into Aid" (September 19, 2002) revealed that as much as 75 percent of food aid donated under the auspices of the United Nations World Food Program (UNWFP) and United States Agency for International Development (USAID) could be transgenic. It was a report that would propel a humanitarian crisis into an international question of trade and morality.

This situation arose due to the absence of segregation systems for GM/non-GM in the United States and legislation that allows agricultural surpluses to be used as food aid. Although there are long-standing and strong humanitarian aid ties between the United States, EU, and southern Africa, the additional question of GM food aid was a new one. The United States has, since the PL480 (Food for Peace) program of the 1950s, used food

aid as both a foreign policy tool and a means of market creation for domestic agricultural surpluses. However, it should be noted that the proportion of aid in total agricultural exports declined from 25 percent in the mid-1950s to just 3 percent by the late 1970s. This reflects a shift from food aid as surplus disposal to that of foreign policy tool. The sentiment that food aid could have a powerful influential value is echoed in Nixon's Secretary of Agriculture Earl Butz's suggestion "food is a tool. It is a weapon in the US negotiating kit" (cited in Cleaver 1977: 23). These words would resonate powerfully within U.S. food aid policy to South Asia in the wake of the Vietnam War. The EU's preferred strategy at times of famine has been to redistribute food within the region affected (where possible); by contrast the United States has exported domestically-produced maize. Consequently, wide variations in agricultural policies between southern African countries and their lack of intellectual property rights (IPR) legislation for GMOs meant that they were forced to reconsider their attitude towards the food aid.

Zambia's stance is perhaps the most documented. The country's government turned away 100,000 tons of food aid in the latter half of 2002 worth \$6 million (Meldrum 2001) after both an internal inquiry and consultation with European scientists over the potential health effects of GM maize. This seeming affront to the integrity of U.S. agriculture masks a more complex situation. USAID genetically modified maize was being delivered to Africa unmilled (i.e., in kernel form), and the pernicious implications of this omission were not lost on one *Guardian* journalist. As Vidal (2002b) points out, starving people do not eat seeds, they plant them. If GM maize is unmilled, then this justifies fears of potential cross-pollination or "genetic pollution" of non-GM varieties and the organic crops upon which countries like Zambia's European export markets are based. There were also fears that cattle might eat the maize kernels, thereby injecting unknown risks into the food chain. The seemingly altruistic nature of the aid was undermined by the refusal of the United States to mill the maize prior to export (the cost for Zambians to do so: \$25/ton), and the potential for the GM seeds to reduce agricultural biodiversity. The revelations forced the developed world to reassess the nature of the GM debate tout court, both at home and abroad.

It is essential that the situation in southern Africa is grasped within three key contexts: first, the issue of the declining profit margins of biotechnology firms; second, neo-Malthusian debates over population growth; and third, the nature of food aid and the political importance of food security. These frame the strategic uptake of famine theory, permitting advocates and opponents of GMOs to essentially use a single event to reinforce their own positions, while also employing it reflexively to undermine the argument of the opposing side. The confluence of famine and GMOs has not only raised questions in the West about how best to alleviate global hunger, but has also aired the much thornier issue of how to ensure feasible, ethical, and sustainable political economies of food provision on a more local scale.

3.1. *Biotechnology and Falling Profits*

With Monsanto's withdrawal from the United Kingdom in late 2003 after continued opposition to its plans to develop GM wheat (Perrone 2003), the future of biotechnology in western Europe appears limited at best. From optimistic beginnings, biotechnology firms have recently undergone marked losses. Pringle (2003) reveals how Monsanto

suffered a 50 percent drop in share prices in 2002 and reported an 18 percent drop in sales during the first nine months of the fiscal year. As a result, Monsanto boss Hendrik Verfaillie was ousted in late 2002 after the company issued two profit warnings (Brown 2002). Recent corporate losses come at the end of a long and contentious public relations campaign to garner waning support in Europe. Monsanto's revised motto "Food, Health, Hope"TM (Charles 2001) had a cynical reception from staunch GM sceptics, not least within the context of the European media hype that greeted the news of GM food aid to southern Africa. Emotive headlines such as "US Dumping Unsold GM Food on Africa" (Vidal 2002b) had, by late 2002, become a familiar sight to British readers. Monsanto's corporate personality within Europe was not helped by the news that Percy Schmeiser, a Canadian farmer, had been ordered to pay the company up to \$85,000 for illegally planting their patented canola. It did not seem to deter Monsanto, the world's biggest agricultural biotechnology company whose patented seed varieties accounted for 94 percent of global GM acreage in 2000, that Schmeiser had not planted the seed; 40 percent of the surrounding farms were using Monsanto's variety and acquired it through cross-pollination. The case against Schmeiser was quickly equated with corporate greed (Goldsmith 2004).

In the developing world, Monsanto's "Terminator Technology," so called for the way in which the genetically engineered infertile seed locked farmers into annual seed contracts destroying traditional replanting systems, was also undermining the altruistic image Monsanto hoped to cultivate through its new motto (Shiva 2000). Because GM crops are a key constituent of U.S. agricultural earnings, "the debate [was] no longer about science, but about politics" (Carroll 2002). A year after the events in southern Africa, Bill Gates donated \$25 million to the Rockefeller Foundation, one of the principal funding bodies for biotechnology research (Vidal 2003a). The link between the one of the world's most economically powerful men and GM agriculture immediately attracted criticism and praise in equal measure. Not only did it mark the extension of the biotechnological frontier to the developing world, but it also seemed to reinforce those arguing against the further corporate consolidation of the political economy of food. By helping fund biotechnological research in the developing world, Bill Gates was making an explicit statement about the potential benefits the techniques could offer those suffering malnutrition and falling yields—a fact not lost on those cynical of the potentiality offered by agricultural biotechnology.

However, biotechnology as enterprise and industry is changing its tune. From arrogant beginnings, it has been forced to reconsider its corporate image. This marketing tactic has emerged as much out of necessity as invention. The economic necessity of an image makeover is well illustrated by a EU press release from May 2003 detailing the changing origins of EU maize and soybean imports from 1995 to 2002. This clearly states the dramatic loss of market share of U.S. maize exports from 3,325,082 tons in 1995 to 25,934 tons in 2002. This free fall allowed Argentina (who did not produce GM wheat) to increase its EU-bound exports from 528,028 to 1,347,595 tons during the same time period. United States soybeans also experienced a decline of over 4,000,000 tons between 1995 and 2002, while Brazilian exports to the EU increased markedly by over 5,000,000 tons (despite the recent acceptance of some GM varieties). The declining market share of U.S. exports to Europe only reinforces falling profit margins and consumer scepticism. It was in this context of ongoing consumer outcry in Europe over the potential adverse health effects of GMOs; their potential to cross-pollination and the attendant reduction of biodiversity; and a wider combination of anti-American, anti-globalization, and anti-corporate movements

mobilized around the GM issue, that the southern African famine event emerged. Furthermore, in a fact not lost to either the EU or United States, the southern African famine situation also became refigured as a new space of opportunity for biotechnology corporations suffering the economic fallout from lost maize and soybean export markets.

3.2. Population Growth

Second, the famine in southern Africa must also be considered in the context of resurging fears over population growth. The UN estimates that by 2050 there will be an extra 3 billion mouths to feed (cited in Lappé and Bailey 1999), and GM crops are being cast by its advocates as the only way of averting the impending neo-Malthusian catastrophe. The uncertainty surrounding population growth estimates and the question of whether GM crops can substantially increase yields fuel both anti- and pro-GM camps and is of direct relevance to the political and economic arguments employed by each side. Furthermore, the question of feeding a growing population begs the qualitative question regarding equitable food access and distribution policy—a fact often neglected by those advocating GM crops as a technological fix for hunger. Food security is at the root of such concerns and has thus become the new war cry of many biotech firms.

3.3. Food Aid and Food Security

According to the FAO, food security in the developing world rests on ensuring four key indicators: food abundance, guaranteed access, adequate nutrition, and food safety (FAO 2001a). The FAO (cited in Nelson 2001) estimates that 800 million people in the Third World in 1999 were “food insecure”; 70 percent of these people live in rural areas. As long as agriculture remains the primary source of income (for both subsistence and export) and employment in developing countries, as Nelson (2001) points out, it is essential that these nations follow the course of the international GM debate carefully. For most people in the developed world, the GM debate is a normative question about what standards we are prepared to accept as rights-bearing citizens. However, when this debate is transposed to the Third World, it becomes not only an issue of rights, but employment, livelihood, and basic economics. This point is best exemplified by comparison of the United States, United Kingdom, and Zambia. FAO statistics (2001b) reveal that in 2000, roughly 2 percent of the United Kingdom and U.S. population was employed in agriculture. In Zambia this figure was 69 percent. This suggests the scale of the economic (and thus political) importance of agriculture to southern African nations as both employer and source of export earnings. This causes famine to attain significant proportions and means that the introduction of GM crops must be considered within the context of the demands of the export market and the need to maintain employment levels.

When countries cannot ensure food security autonomously, food aid becomes necessary. In 2000, the UNWFP distributed 3.5 million tons of food aid in eighty countries. In the same year, the UNWFP received a total of \$1,694 million in donations. Of this, 47 percent or \$796 million came from the United States, 7 percent or \$118 million from the EU, and \$60 million from the United Kingdom (Millstone and Lang 2003). Indeed, in 2000, 44 percent of bilateral aid was from agricultural surpluses and just 5 percent for development aid. The 1996 EU Food Aid Regulation loosened regulations, thereby allowing Europe to

donate monetary as well as food aid. As Myerson (2000: 49) avers, “you have to grasp these facts as much with your imagination as your calculator.” The issue of food aid and genetic modification is one that exemplifies the belief that food is a form of political power, as Earl Butz was so quick to note over four decades ago. The “mucky world” (Myerson 2000) of food aid has only reinforced the contested nature of GM science and its corporate structure. The question of how to ensure sustainable food security in the face of continued transnational trade disputes has played directly into the hands of both the anti- and pro-GM camps and shall be addressed in more detail later in this work.

4. Reactions and Reactionaries to the Famine

The news that USAID and the UNWFP were delivering GM maize in unmilled kernel form presented the recipient countries with a conundrum. Without well-developed intellectual property rights laws to protect their genetic resources, or indeed any import policy for GMOs, countries were forced to re-evaluate the costs and benefits of the aid. Malawi, Zimbabwe, and Mozambique agreed to accept GM maize only if it was milled due to fears of potential health effects, the loss of biodiversity, and export markets. By contrast, Lesotho and Swaziland, heavily dependent on U.S. trade after the African Growth and Opportunities Act, offered no official stance on the GM maize and thus agreed to accept unmilled maize. However, it was Zambia’s bold rejection of the food aid that caused global cries of support and denunciation in equal measure. An incredulous *New York Times* article (2002) quotes Zambian President Levy Mwanawasa as saying, “I am not prepared to accept that we should use our people as guinea pigs . . . we may be poor and experiencing severe food shortages, but we aren’t ready to expose our people to unknown risks.” They also noted that the president “remained open to conclusive evidence” on the matter, and to this end Zambian scientists were deployed to obtain decisive evidence on the risks of GMOs.

Zambia felt its controversial rejection to be legitimate for five main reasons. First, because the GM maize was unmilled, it could be planted by farmers, thereby creating the possible risk of cross-pollination with non-GM and organic species, thus devaluing the natural resource of biodiversity. Second, in 2001, 30 percent of cereals and 33 percent of oilseeds from sub-Saharan Africa were exported to western Europe (Nelson 2001). By contrast only 0.9 percent of cereals were destined for North American markets. This fact underlines the importance of the European market to the continuing viability of African agriculture. The last vestiges of colonial ties means that, in terms of commodity trade, many African nations are—economically at least—closer to Europe. In addition, the incredible growth in demand for organic produce across Europe has recently allowed Zambia to carve a profitable export market in certified organic products such as honey. Consequently, the future viability of the export market is inescapably beholden to the consumer preferences of western Europe. Third, the president’s concern about using his population as “guinea pigs” demonstrates the wider fears regarding the potential long-term health and environmental effects of GMOs. Zambian scientists consulted with European experts on the health risks of GMOs and concluded that the lack of any definitive evidence proving their safety justified the rejection of the aid, despite the USDA’s assurances that Americans had been eating the same products with no adverse effects since 1996. Fourth, Zambia’s decision to adhere to the European-backed precautionary principle reflects its

anxieties over the difficulty of ensuring against future losses due to GM crops (Paarlberg 2001). Finally, GM crops are designed to be used within large-scale industrial agricultural systems. However, it is evident that with 2.3 tractors per 1,000 people in Zambia compared to over 1,500 in the United States, the arguments that GM crops will be equally viable in both locations starts to show cracks (Millstone and Lang 2003). The cautionary tale of the Green Revolution has been highly influential in this respect; it is consequently worth dwelling briefly on the African experience of this important period of agricultural change.

The 1970 Noble Prize winning Norman Borlaug is often cast as the founding father of the Green Revolution. His pioneering work with high yielding varieties such as wheat and maize helped reverse situations of insufficient food production in many Asian countries. For example, from 1950 to 1995, India's annual wheat harvest rose from 11 to 60 million tons. By 1974 it was self-sufficient in wheat production (Easterbrook 1997). Thanks to many of the hybrid varieties developed during the Green Revolution, global food production has consistently outpaced population growth since the 1960s. Despite this, the Green Revolution largely ignored Africa and its subsistence crops such as cassava. It is estimated that yields in sub-Saharan Africa will have to increase by 3.3 percent annually to keep pace with population growth (Paarlberg 2001). This said, opinion remains divided as to whether biotechnology can provide the tools needed to achieve this growth or whether it will just present Africa with the foundations for future issues of dependency, loss of export markets, and environmental problems.

Zambia's decision to reject U.S. food aid quickly became a touchstone for anti-GM protestors and pro-GM supporters alike. Furthermore, the delay in aid distribution throughout the region that was precipitated by demands for milled maize also served to inflame both sides of the debate. As Sagar et al. (in Ruse and Castle, eds. 2002: 238.) suggest "GM often serves as a lightning rod for expressing disquiet about the apparent future of the world." Zambia and its politics have also come to signify the complex metonymical relationship between biotechnology and wider socioeconomic and political processes, structures, and events. It is true that biotechnology problematizes existing social relations and questions how they intersect with agricultural practice. This is the idea that the moralized debate over biotechnology might not just represent questions of agriculture, but rather reflect the search for stable meanings in a late modern world in constant flux. The issues and fears raised by the famine consequently exemplify the idea of society becoming increasingly "reflexive" (Beck et al. 2003) over normative questions concerning food production and consumption. Genetically modified food and agriculture are also particularly powerful leitmotifs of the "disquiet of the future of the world" as they raise value-saturated ideas about national autonomy and local viability in questions of food production within the global political economy of food. The donation of genetically modified food aid to developing countries means that the famine event must be re-appraised in light of existing theory and how a moralized and economic reworking of such theories has perpetuated the ontological bifurcation between the EU and United States in the GM debate.

5. Famines in Theory and Practice

As Arnold cogently observes, "famines act as a revealing commentary on society's deeper and more enduring difficulties" (1988: 7). Famines may essentially be triggered by

natural causes (e.g., the 2001 drought), but such natural origins expose existing structures of vulnerability and social malaise, which are significant in the case of southern Africa. Amartya Sen's influential work (1981: 40) suggests that famine is "a particularly virulent form of starvation, causing death," yet the matter is more complex than the fact of hunger causing widespread mortality. Famine is "by its very nature, a social phenomenon as it includes the inability of large groups of people to establish command over food in the society in which they live" (Dreze and Sen 1989: 46). The underlying cause may well be natural, but the impact of the famine event is determined largely by social, economic, and political organization, an idea that a growing band of political ecologists are exploring (see Blaikie 1994; Watts 1993, 2000). Sen (1999) proposes that famine does not arise from food shortages per se, or what he terms "food availability decline" (FAD), but rather the ability to access such food or "food entitlement decline" (FED). Famine both results from and causes, according to Sen (1989), "entitlement failure" whereby, in the Marxist sense, the social relations of production are undermined. Access to resources—through socially and legally negotiated rights—that allow command over food and the means of production are diminished, and vulnerability to starvation increases. As a coping mechanism, people are forced to exchange their "endowments" (Dreze and Sen 1989) or their initial ownership rights for food, and thus vulnerability grows still further, and people are left with reduced means to procure further supplies.

"Famines are always divisive phenomenon" because they are a product of "cooperative conflicts" (Dreze and Sen 1989: 48). Their effects further serve to reveal the underlying structural inequalities within and between countries. The recent political ecological work of Mike Davis (2002) is pertinent in this respect because it illuminates the way in which events such as famine are never solely the result of extreme climatic variations, but rather the complex interplay of historical and contemporary structures that condition individual and group situations of vulnerability and risk. Moreover, these political, economic, cultural, and environmental conditions are not geographically isolated, but inextricably linked to (and often magnified by) the functioning of the global economy. Consequently, the famine in southern Africa serves as a critique, not only of the existing national political context, but also international developmental efforts. The critique of national politics was a fact not lost on the U.S. State Department who chose to focus on failures of governance—and in particular the land reform under Mugabe in Zimbabwe—as the underlying cause of the famine. As U.S. Representative Henry Hyde argued before the Senate, "government-sponsored instability, self-destructive economic policies, and the land invasion and confiscation campaign of the Mugabe regime are the chief causes of food shortages, not just for Zimbabwe, but the region as well" (U.S. House 2002: 7). Indeed, as Sen (1999: 20) avers, poverty is as much about "deprivation of basic capabilities" as "merely low income." How these capabilities are negotiated on a local, national, and global scale within national political systems is of essential importance to the well-being, citizenship rights, and freedom (as Sen would contend) of hungry people. This "political ecology of hunger" (De Waal 1989) makes clear that such situations are often used to justify international intervention within the economic or political regimes in question under the banner of development. However, if famine is a commentary on societal failings, it is also socially constructed as narrative, and this is where GM crops have found their powerful discursive niche.

The reality of famine is inextricably linked to its presentation to an audience hungry for potential philanthropic opportunities. Development and famine offer normative narratives about how certain people believe other people should live. How famine is discursively constructed in the West for the West will guide, to a large degree, the attitudes taken towards those countries afflicted by hunger, the images constructed, and resulting developmental policy. This idea underlines the contention that GM represents “applied ethics.” However, rather than being a consistent ethical stance, responses to the southern African famine reveal the strategic use of the disenfranchised by both sides of the debate. Indeed, justifying the future (or lack thereof) of GM in both the developed and developing world now rests heavily on the stereotyped image of the hungry African suffering the consequences of FAD. In this formulation, the role of FED is often overlooked in favor of concentrating on the far simpler treatment-cure equation permitted by an absolute lack of food. It seems that as the global trade in GMOs ebbs and wanes, the concomitant discursive trade in irony only increases.

As biotechnology has penetrated the frontier of the developing world, the debate between the EU and United States has assumed a new role. Kneen (1999) suggests that when biotechnology is applied to the developing world, it turns a political issue into a personal moral imperative. When the story of the famine broke, both the United States and Africa could use the essentialized figure of the starving African to blame the other party for continuing Third World hunger. In the process, the future of GM agriculture in the United States was transposed to the stage of the developing world. For the United States to break the trade barriers imposed by the EU, it had to tactfully employ the rhetorical tool of “pathos” to ignite European consumer guilt. African hunger thus became the perfect public relations campaign for biotechnology corporations struggling to balance the books and persuade a sceptical European populace that genetically modified herbicide-tolerant (GMHT) crops held the potential to increase yields across the African continent and thus reduce food scarcity. As such, what was essentially an economically grounded, WTO-backed trade war between Europe and the United States shifted to testing the rhetorical domain of blame, culpability, and guilt.

With continued European resistance to the cultivation of GMOs within their barricaded shores, the GM-saturated United States employed new tactics in the war of words. In a *Los Angeles Times* article (Chen and Gosselin 2003), President Bush argued that “European governments should join—not hinder—the great cause of ending hunger in Africa.” The president branded opposition to GM as based on “unsound, unscientific fears,” a claim supported by U.S. Trade Representative Robert Zoellick who branded European rhetoric “irresponsible.” President Bush added that “combating famine, poverty and disease lies at the heart of helping set people free” and “will bring greater security to our country.” After the September 11 attacks, the Bush administration has naturalized biotechnology as a route to ensuring food security and, in the process, eliminating the hunger and conflict that act as suspected breeding grounds for terrorists. Yet, such “fallacious discourses on food security,” as Brac de la Perrière and Seuret (2000: 62) branded them even before the southern African situation erupted, reach far deeper than a desire to increase yields and avoid hunger-induced civil strife in developing countries.

Vidal (2002a) cites Wall Street analyst Sergey Vasnetsov as saying “let’s stop pretending we have food shortages. There is hunger, but not food shortages. GM food is for the rich world. The money from GM is in developed countries. The battle is in Europe.”

The argument implicitly relies on the division between those who contend that Africa is suffering FAD (Sen 1999) and those who see the issue as one of FED. The U.S. government is using FAD to legitimize the need for biotechnology in terms of its capacity to raise yields, reduce soil erosion (use of no-till methods), address losses from pests and diseases, and improve agricultural incomes. On the opposing side, European governments and media cite the FED argument to justify their belief that biotechnology is not the panacea touted by the United States. They claim that the problem is not one of absolute food shortages, but rather an underlying issue of structural inequity that leads to unequal access to and distribution of available resources. The solution must therefore be financial as well as food aid. In response, the United States contends that Europe can only legitimately proffer such a line of reasoning because it has more than enough food to feed its own population. The battle continued unabated as the ever-cynical European press swiftly contended that the United States was using famine-stricken Africa as an unofficial dumping ground for the crops it is unable to sell to Europe. This matter still remains unresolved.

However, in spite of its well-fed population, European critics claim that genetically modified herbicide-tolerant crops will not solve hunger, but only offer a “technical fix” to far more complex socioeconomic and political issues. The uptake of GM crops and their associated industrialized models of agriculture could, it is suggested, replace biodiversity with monocultures, undermine the ability of poor farmers to cope during times of natural and social stresses, and thus increase vulnerability to events such as drought (see Shiva 2000). As Lappé and Bailey (in Pence 2002: 166) claim, “planting non-hybrid genetically engineered plants year after year can be very much a form of roulette.” Critics have expressed fears that farmers will be locked into contractual relationships with agrochemical companies and are therefore vulnerable to global price fluctuations for chemical inputs (Shiva 2000). In addition, the lack of effective IRP laws in many developing nations means that there is little economic incentive for biotechnology corporations to invest in local subsistence crops (e.g., yams, cassava, and millet) engineered for improved quality or agronomic traits. Indeed, soy, one of the most common GM crops currently grown, is not a staple in Africa. Moreover, as Lappé and Bailey (1999) attest, 66 percent of U.S. soy is used to feed the country’s cattle, a statistic that puts the argument that GMOs pose no threat to human health in perspective. For many African nations, agricultural export markets must be protected at all costs. To do so, Zambia has turned to Europe to justify its controversial stance on GM crops and in the process suffers criticism from other African nations.

The issue dividing Europe and the United States is cast as one of the applicability of biotechnology to the developing world. However, as social scientists have been quick to point out, the plight of the totemic image of the “developing world” cannot be used as a single war cry to justify the relevance of GM crops to the *entire* developing world. If there are key dissimilarities at the spatial scale of the continent (i.e., *between* continents), the same must also be said of that of the nation (i.e., *within* continents). Although Zambia’s outright refusal to accept U.S. unmilled maize was reported with scorn by some American newspapers, this highly cautious approach must be contrasted with that adopted by the Nigerian government. Haman Adamu (2000), the Nigerian Minister for Agriculture and Rural Development, writes in a *Washington Post* article that “to deny desperate, hungry people the means to control their futures by presuming to know what

is best for them is not only paternalistic but morally wrong.” He argues that “starving people do not have the luxury” of being picky over what they eat. He believes that Africans have a right to biotechnology in spite of continuing European and U.S. arguments that cast them as incapable of using it responsibly, or in Adams’s words, “the misguided notion that we don’t understand the dangers or the future consequences.” Interestingly, both the anti- and pro-GM camps are guilty of the same crime of not only speaking for the developing world farmer and consumer, but also using this act of speaking as the very justificatory foundation for their argument. In this way, the debate is not only unique, but uniquely powerful.

6. Conclusion

The southern African famine event has become naturalized within both anti- and pro-GM discourse such that a single instance of mass starvation can justifiably stand for both sides of the argument. This work has shown that such a strategic use of discourse involving the same essentialized figure for both stances is rhetorically unique. As a result, the debate is notable for its circumlocutory nature rather than its dialectically-driven search for ultimate resolution. The discussion rests on the question of whether GM crops are a panacea for population growth-induced hunger or whether they instead represent a Pandora’s box of unknown dangers. Genetically modified crops necessitate not only new development policy, but new ways of theorizing development itself in the light of globalized systems of food production. As Amartya Sen (1999) suggests, development rests on the achievement of freedom, and this freedom should be both the goal and method of the development process. The question that must be asked of genetically modified foods and their associated agricultural practices is where they fall within this theory.

Haraway (1997: 62) contends that “genetic sciences and politics are at the heart of critical struggles for equality, democracy and the sustainable life.” The debate over the feasibility of biotechnology within the Third World context is couched in terms of international free trade, property rights, and food security. But, it should also be a matter of ensuring environmental and social justice both in the developed and developing worlds. In a debate that has challenged the very foundations of national sovereignty, autonomy, and claims to democracy, the basic necessity of food has often been cast as too pedestrian a concern. Genetic modification has become emblematic of much more than eating. It stands as a synecdochal referent for processes that go far beyond the basic needs of food security. It is easy to wax lyrical about the complex strands of the debate, but words are only of use to those with the power to employ them. Lappé and Bailey (1999: 25) contend that “the coming genetic revolution can be enlightened only if the public understands its implications from its inception.” This is perhaps the crux, for genetic modification is shrouded in a fog of information that repels all but the most determined. The sensational media, especially in the United Kingdom, do little to disperse the uncertainty and ambiguity of information consistently presented as objective scientific fact. However, as Winston (2002: 109) notes, “the protest is not really about the science, although criticising the science has become a key tactic. Rather, the opposition is about values and trust, and when values are the underlying agenda and trust the principle issue, the facts become irrelevant.” As has become clear, values are the rocky foundations upon which the most precarious debates

rest. Without facts to refute the claims made by values and trust, the debate only becomes increasingly self-perpetuating.

Just as GM represents more than food, food is also much more than the herbicide-tolerant GM crops at the root of the debate. All sides of the expanding discursive battleground would do well to recognize that the potential inherent in GM crops is not yet matched by their ability to deliver such promises. To speak of a panacea would indeed be inaccurate. Equally, to talk of a Pandora's box would be to suggest that seeking any solution would only augment existing problems, thereby justifying continued inaction. The aim should be to travel a middle road between the optimism of a proposed panacea and the cautionary cynicism legitimized by the Pandora's box analogy. To do this requires a considered appraisal of the true nature and limits to genetic modification as well as faith that such barriers can be overcome within the dictates of the globalized political economic system of food production and consumption. Yet it still falls to the turbid world of human values to judge how, and if, the limits of the current technology should be exceeded. As long as values remain negotiable and socially defined, achieving the freedom expounded by Amartya Sen for farmers and consumers in the developed and developing world may be beyond the capabilities of even the most determined biotechnologist.

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