REVOLUTION FROM THE AISLE? ANTI-BIOTECHNOLOGY ACTIVISM AND THE POLITICS OF AGRIFOOD RESTRUCTURING

by

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ABSTRACT

Genetic engineering as scientific practice and a package of social relations has deeply marked the global political economy. Yet, the future of agricultural applications is uncertain. In the United States, the global leader in GE production, the industry's dominance is challenged by a growing opposition movement intent on slowing commercial introductions, increasing regulation and shifting decision-making power from biotechnology corporations to citizens.

Geographers and agrifood scholars herald this movement as a critical point of resistance to the forces of political economic change. Indeed, to the extent that activists question corporate power, neoliberalization and agricultural industrialization they can play a crucial role in determining social, economic and environmental relations within and outside the food system. However, at present, there has been little assessment of the significance of contemporary tactics, strategies and practices.

This project offers the first systematic examination of the movement in California, a centre of research and development and grassroots activism. Using case studies of GE Free Sonoma and the Non-GMO Project, I document the history, effect and potential of organized campaigns and the everyday practices of rank-and-file volunteers. I argue that although the movement developed as a way to oppose the environmental and social injustices of neoliberalization, it also reproduces problematic social and economic cleavages and neoliberal rationalities.

In the first section, I trace the development of California's GE Free movement and the implications of GE Free Sonoma's campaign discourse. I then explore the unorganized tactics of the group's volunteers through the concept of *everyday resistance.* The discussion pays particular attention to the complexity and increasing use of consumer and market-focused activism. I argue

that "voting with your dollar" can be a neoliberal conceit or a possible route to alternative economies. Activism simply needs to step out of the supermarket aisle. The second section continues this examination of market tactics and assesses the consequences of the Non-GMO Project's proposed Non-GMO certification. After reviewing the group's history, I discuss the economic, regulatory and biological obstacles to negative labelling. Ultimately, this study is intended as both a critical challenge to activism and a resource to strengthen radical agrifood politics.

Keywords: agricultural biotechnology; genetically engineered crops; genetically engineered food; GMO; neoliberalism; consumer activism; alternative food movement; GE Free; Non GMO Project; everyday resistance; third party certification; labelling; California

Subject Terms: Food --Biotechnology --Social aspects; Agricultural biotechnology – Social aspects; Genetic engineering – Social aspects; Food -- Social aspects -- United States; Alternative Agriculture United States

For my parents, who never cease to inspire

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INTRODUCTION

When Stanley Cohen and Herbert Boyer developed the first transgenic plant in 1973, they could not anticipate that their achievement would be at the centre of one of the 21st century's most important social struggles (Schurman, Munro 2003). Nor could the pair foresee the monumental changes their discovery would bring about. In the years since, the agricultural biotechnology industry has revolutionized understandings of property, the conditions of global trade and the practice of academic science. Patent laws created to protect commercially-valuable genetically engineered (GE) products and propel the industry have institutionalized new international regulations, magnified trends towards corporate ownership of farms, dislocated growers from land and agricultural inputs and turned neighbours into spies and seed farmers into criminals. [1] Open-air field trials and widespread commercial introductions of GE crops have contaminated millions of tons of food stocks, highlighting the vulnerability of contemporary food systems. Transgenesis complicates 19th century biological theory and brings environmental ethics to the dinner table. Most important, these philosophical, ecological and political economic changes motivate a global challenge to neoliberalization and the privatization, commodification and re-regulation it entails.

[1] The term "grower" is generally reserved for individuals producing directly for the market, whereas "farmer" refers more broadly to any agricultural producer and generally connotes a degree of self-provision. I use the terms interchangeably because informants did not distinguish between the terms and, more important, the moniker "farmer" is increasingly used by alternative food actors regardless of whether individuals are more appropriately titled "grower" (McWilliams 1976, Walker 2004).

While genetic engineering (GE) as scientific practice and a package of social relations is here to stay, the future of agricultural applications is uncertain. Just over ten years after the introduction of CalGene's infamous FlavSavr® tomato (1994), public support has declined dramatically and the industry faces an unsteady financial climate. While the public applauded the FlavSavr®, more recent attempts to commercialize GE alfalfa, wheat and plums failed in the face of consumer and grower opposition. In the United States, the centre of biotechnology research and development and the global leader in GE production, rising opposition from both an organized network of activist groups and individual citizens challenges the industry's dominance.

Geographers and agrifood scholars herald this budding social movement as a critical point of resistance to the forces of global political economic change. For example, Gavin Bridge, Phil McManus and Terry Marsden (2003, p. 170) argue that it is one "of the most significant challenges to the state in recent times," and Fredrick Buttel (2003, p. 152) calls it the "Achilles' Heel" of globalization and WTO negotiations. Less sanguine appraisals note mounting international debate and loss of investor and manufacturer confidence spurred by opposition activities. In Scott Prudham's (2005, p. 137) words, anti-biotechnology activism threatens "the ultimate legitimacy of the entire project of producing GE [commodities]," and Rachel Schurman and William Munro (2003, p. 126) argue that public reaction to the technology has reduced the industry's "velocity, possibly altered its trajectory and created a great deal of uncertainty for life science firms."

With such high hopes for opposition, it is time for an assessment, evaluation and understanding of current activism and its intersection with extant political economic structures within and outside the foodscape. This text is an attempt to do just that. I

consider the political economic significance of contemporary activism against genetically engineered foods and crops in Northern California, the centre of both biotechnology investment, and resistance to it, in the United States.

While there is no consensus on the definition of agricultural biotechnology, in the following text I use the term to denote the practice of manipulating an organism's genetic structure through recombinant DNA (rDNA) technology. Such methods, also known as genetic engineering are been applied to both plants and animals used in food, feed and fibre production. For my purposes, I confine my arguments to the former. I also make occasional reference to "pharm" plants, engineered to produce industrial or medical substances.

It is important to avoid the terms GMO or genetically modified organism, except regarding "Non-GMO" certification or food. Although GMO is popularly equated with GE, the two terms are not completely compatible. GE refers specifically to products created through rDNA processes, while GMO denotes any organism modified through human intervention, including traditional plant breeding. As will become clear in this manuscript, the distinction is important because the FDA prohibits the use of the term GMO and recommends agricultural biotechnology or genetic engineering. Proponents of the technology have capitalized on the slippage in GMO to argue that the technology is just an extension of existing breeding techniques, all of which involve phenotypic and genotypic manipulation (Fedoroff, Brown 2004).

My analysis herein centres on case studies of two groups: GE Free Sonoma and The Non-GMO Project. The first group exemplifies the territorial politics that has emerged coincident with the spread of GE crops: using legislative moratoria, ordinances and

resolutions, GE Free groups across North America and Western Europe attempt to exclude a range of genetically engineered products from specific spaces. The umbrella organization, BioDemocracy Alliance (BDA) loosely coordinates North American GE Free groups. BDA is officially administered by the Organic Consumers' Association, which highlights the strong relationship between territorial groups and the movement to protect organic agriculture from contamination by GE traits.[2] Currently, GE Free activity is centred in California and New England, although groups exist in British Columbia, the Yukon, and Michigan. Although Californian groups number less than their counterparts in New England, the movement provoked the ire of biotechnology firms in unprecedented ways. Efforts like GE Free Sonoma spurred a massive counter-offensive by the industry and dramatically altering the political terrain. GE Free Sonoma was at the centre of this fight and the campaign was the most contentious to date in North America.

The second group, Berkeley-based, The Non-GMO Project (NGMOP), is spearheading the drive to create a new Non-GMO label and market – a tactic characteristic of the broader alternative food movement. The NGMOP comes on the heels of successful organic and Fair Trade projects in the United States and launched its Standard and certification process in summer 2008. Although a handful of similar 3rd party labelling project exist across North America, the natural food market has thrown its weight behind the NGMOP and the project is poised to become the continent's leading certification scheme.

These case studies - two dominant tactics of American anti-biotechnology activism - highlight the divergent foci of efforts to resist GE crops: policy-making and re-

[2] The European movement is tightly coordinated under GMO Free Europe. As of April 2007, when the group held its 3rd Annual Conference at the European Parliament, 230 regions and over 4200 municipalities had declared themselves "GMO-Free".

regulation on one hand, and market incentives on the other. The difference between group strategies is noteworthy; however, consumption is a predominant tactic at the level of rank-and-file activists. Shopping GE free is personal statement of opposition and a way to live out the politics expressed by moratoria. Thus, while this work is not an explicit comparison of the groups, the two case studies provide a broad perspective on the diversity and implications of consumer activism within the anti-biotechnology movement. Moreover, while the two case study groups adopt remarkably different strategies and tactics, the activities of each build on and facilitate those of the other. Thus, my purpose is to explore the movement's strategic toolkit as a whole, including the different strategies and tactics of organizers and those that activists practice day in and day out. What might work and work the tactics do.

The following discussion places the American movement within a larger resistance to the neoliberalization of Western political economies. I explore many of the ways activists are confronting corporate power, re-regulation and the public's loss of political voice. For the purposes of this dissertation, I define an activist as any individual acting in deliberate opposition to agricultural biotechnology. I distinguish between organizers - individuals who set groups' goals and structure activities - and rank-and-file activists, volunteers largely taking direction and acting according to pre-determined tactics. The distinction plays an important role in structuring the forthcoming critique.

While I am hopeful that activism will have an effect, I also challenge current practices and strategic choices in this realm. My arguments implicate the movement in the reproduction of problematic social and economic cleavages, and question the extent to which activism truly opposes neoliberal trends. However, it is not enough simply to

critique. Thus, I endeavour to highlight the manifold changes even the simplest protest can engender. I explain the motivations and logics underlying strategies in an attempt to provide a sympathetic reading of grassroots activism.

The explosion of popular and scholarly books and articles on food, food systems and food consumption speaks to the increasingly common belief that agricultural production is the key to social and ecological transformation. For example, John Robbins's bestselling book, *The Food Revolution,* tempts readers with the subtitle, *How your diet can help save you life and our world.* Echoing this sentiment, Michael Pollan (2006, p. 25) writes, "how and what we eat determines to a great extent the use we make of the world – and what is to become of it." Even Julie Guthman (2004, p. 185) ends her groundbreaking analysis of California's organic industry with a less triumphant but optimistic view of the power of Community Supported Agriculture to open "an economic space where social divisions can be eroded."

In this new agrarian-materialism, Brillat Savarin's legendary aphorism, "tell me what you eat and I will tell you what you are" replaces Marx's postulate, "life is not determined by consciousness, but consciousness by life" (Marx 1978, p. 154). By this logic, if what we eat is produced in socially just and ecologically sustainable ways than we, and by extension society, will be just and sustainable.[3] Along with positioning anti-biotechnology activism within the broader anti-globalization movement, the second purpose of this dissertation is to examine this logic and explore how performing alternative foodways can instil new economic and social relations. Ultimately, I ask

[3] I am aware of the debate surrounding the concept of sustainability. I use the term in this dissertation in accordance with popular understandings that sustainable processes do not undermine their own existence by degrading the integrity of ecological or social systems. In agro-ecology such processes generally include the use of renewable resources such as compost, polyculture, drip irrigation or dry farming, minimizing external inputs and maximizing wages to labour.

whether the agrifood system can be a means through which to revolutionize the political economy. That is, can we eat and buy our way to a better world?

In answering these questions, I draw on a range of theorists, including Antonio Gramsci, Louis Althusser and James Scott. I wrestle particularly with the concept of hegemony and the possibility of using consumption as a counter-hegemonic practice. These theoretical concerns are woven throughout the text and clarified where relevant. To frame and understand the proceeding discussion, however, it is important to review current scholarly understandings of neoliberalization and its intersection with biotechnology and the political economy of agriculture in the 21st century.

Neoliberalization and the Political Economy of Biotechnology

As a package political and economic theory, neoliberalism holds that free markets, individual liberties and private property rights are the most efficient means of optimizing human wellbeing. The state's role is to facilitate and support market development and establish policing, military and diplomatic functions to protect economic investment. Interventions, such as subsidies, regulation and public ownership distort the market and reduce the efficient distribution of benefits (Harvey 2005). In political economic practice, this theory is used to legitimize the privatization of public resources and services, the roll-back of public expenditures and the elimination of social and environmental regulations seen as barriers to business (Allen, Guthman 2006, McCarthy, Prudham 2004, Peck 2004). Internationally, neoliberal rationality underwrites regulatory "harmonization" that leads, in many cases, to a global "race to the bottom", and the extension of US-style policies to its trading partners. At the level of the individual, neoliberalization shifts the realm of political engagement from electoral and legislative

politics to consumption and market manipulation. Individual responsibility and rational, self-interested free choice become the means of safeguarding the rights and liberties of citizens and ensuring social and environmental justice (McCarthy 2006, Harvey 2005).

As a theory and political rhetoric, neoliberalism promises to justly redistribute incomes and opportunities between citizens and countries, increase national revenues by reorganizing economies according to the dictates of comparative advantage, ensure freedom (whatever we take this to mean) and individual liberty, and optimize delivery of social welfare services by opening them to competition. In essence, neoliberal pundits argue that freeing the market from constraints and creating new markets where none exist will solve the social, environmental and political economic problems that plague the contemporary world.

Neoliberalism is not living up to its promises. For nations subject to IMF or World Bank restructuring, neoliberalization brings them squarely into competition with much larger and more developed European, North American and East Asian economies (McAfee 2008). Weakening barriers to trade and foreign investment reinforce the position of the world's poorest countries and further entrench many in the cycle of commodity production (McAfee 2008, Harvey 2005, Freidberg 2004a). For North American food manufacturers and farmers, these newly opened boarders may offer the opportunity to reduce costs of production; however, they also erode the protection once afforded by the state. Domestic commodity producers must compete with cheaper imports from countries with less stringent environmental or social protections (McAfee 2008).

Consumers are also short-changed by neoliberalization. The root causes of recent food scares, mass-production and the pressure for ever-shorter production times are only magnified by extending North American agricultural methods and the capitalist market system worldwide. Moreover, observers fear that the type of trade liberalization inaugurated at the Uruguay round of World Trade Organization (WTO) negotiation will heighten food safety concerns and worsen agriculture's environmental impact by weakening national and international safeguards (Morgan, Marsden & Murdoch 2006).[4]

As noted above, neoliberalization shifts the target of political intervention from the state to the market. "Vote with your dollar" is arguably the 21st century's leading political motto. George W. Bush's repeated call for Americans to "go shopping" to fight terrorism and stave off recession in the post-9/11 economy epitomize consumption's currency in the contemporary United States. Similar injunctions, of course, existed during the industrial revolution. However, whereas consumption was largely the purview of white women and the upper classes in the 19th and 20th centuries (Bowlby 1985), the call to consume now extends to all members of the social body. Moreover, shopping is no longer just a tool of social distinction, but also of social change.

Consumption is neither a sustainable means by which to run an economy, nor a way to foster psychological and material satisfaction. As McGowan (2004, p. 34) argues, the perpetual commandment to enjoy that underwrites the hyper-consuming subject creates a "pathological narcissism" that eviscerates enjoyment and leaves the subject perpetually

[4] The Uruguay Round of negotiation created the WTO from the General Agreement on Tariffs and Trade (GATT) and simultaneously expanded its power from liberalizing tariffs to policing a range of domestic policies, including food safety and standardization, environmental protections, labour law and intellectual property rights.

dissatisfied. Thus, telling citizens to buy their way to environmental or food safety may contradict the principles for which items are bought.

Consumption is also a limited tool of political mobilization (Allen et al. 2003). Alternative food markets[5] and the associated social movements give many individuals a new sense of power and foster greater awareness of political economic and agro-ecological processes. Consumption as a political strategy is thus ambiguous: at once furthering problematic neoliberal logics and providing an easy way to politicize the public and potentially reform the capitalist system. This tension runs through the following chapters and is the kernel from which the entire project springs. At present, it is imperative to begin with the understanding that shopping does not escape the confines of the current political economy and can reinforce its dominance.

An increasingly influential corporate sector accompanied the last four decades of neoliberalization. By exerting fiscal and financial pressure on states, a global class of CEOs, creditors and financiers have been given control over policing and constructing socio-economic and environmental relations (Harvey 2005). This pressure compounds the rise of lobbying as the central means of political decision-making and the institutionalization of neoliberal ideologies, by both formal and informal means (Schweikhardt, Browne 2001). Consequently, corporate agendas are central in determining regulatory structure at an international, national and state scale.

[5] I acknowledge that the distinction between "alternative" and "conventional" markets is tenuous. In the following discussion I use alternative to denote systems that attempt in some way to solve problems of the dominant or conventional system. The latter is characterized in North America by, among other things, mass production of standardized commodities, a focus on production efficiency over the taste or nutritional value of raw crops, reliance by farmers on purchased machinery and synthetic agricultural chemicals, and long-distance transportation and the hub-and-spoke distribution networks. As even a cursory review of organic agriculture today makes clear, the line between conventional and alternative is blurry. Yet, to the extent that organics, Fair Trade and Non-GMO production differs from one or more of these characteristics they can be considered "alternative". As Allen et al. (2003) argue, however, this of course, does not necessarily make them oppositional to the conventional system.

Along with the rise of corporate power are a dramatic disempowerment of democratic institutions and a hollowing-out of citizenship (Henson 2002). Nevertheless, neoliberalizations have not proceeded unchallenged. The political economic changes of the last three decades open new spaces for resistance. For example, environmental activists successfully promote their agenda in states weakened by neoliberal reforms and previous attempts to enclose common resources and deregulate the environment incite citizen concern and unite diverse interest groups into a powerful opposition movement (McCarthy 2005, Perreault, Martin 2005, Robbins, Luginbuhl 2005, McKenna 2000). While it is certainly true that over the last generation the mass of the American public has "often willingly voted against their own material interest" (Harvey 2005, p. 199), I, like Harvey, am encouraged by evidence from around the world that suggests a potential "resurgence of popular social democratic or even populist anti-neoliberal politics." A new form of "revolutionary" politics is emerging that eschews attempts to commander the state apparatus, focusing instead on mobilizing and reconstructing civil society and empowering groups marginalized by political economic change. As Harvey (2005, p. 200-201) explains, these new social movements work to "de-link" from the processes of neoliberal globalization and "reclaim the commons" from corporate actors (see also McCarthy 2005). Tactics vary from groups working through conventional political parties, such as Brazil's Workers Party, to others seeking to live out alternative models of social and ecological relationships, to still others forging alliances across traditional divides and shaming the agents of neoliberalization (Robbins, Luginbuhl 2005, Mudu 2004, Brenner, Theodore 2002). The widening scope of resistance is evidenced by World

Social Forum, which provides a space for constructing and strengthening solidarity between groups.

Anti-biotechnology groups are noteworthy members of this growing global social movement. As noted above, Buttel (1999, 2003) argues that disputes over the institutionalization of US-style regulations for biotechnology are the "Achilles' heel" of neoliberal globalization. A powerful alliance between Northern and Southern nongovernmental organizations and European governments emerged to capitalize on the "chink in the neoliberal armor" opened by the ethical, ecological, and socio-economic implications of GE crops (McAfee 2003a, p. 217, see also Goven 2006, McMichael 2000).

It is clear from the works cited above that agricultural biotechnology is at the centre of struggles over neoliberalization at the global scale. The role of GE foods and crops in efforts to resist national and sub-national neoliberalizations, however, is left unexplored. The following discussion fills this gap and suggests that GE crops are equally important elements of opposition within North America. In the United States, opposition to "free trade" and the rampant privatization and enclosure of once common goods has galvanized environmental and social justice organizations. In particular, groups, such as GE Free Sonoma focus on GE foods and crops to mobilize resistance against neoliberalization. While their goals are not always consistent with discursive practice, they have nonetheless spurred different political economic practices and turned many people into committed grassroots activists. These ulterior motives, however, render critical discussion of the increasing use of consumer activism imperative.

Three additional issues are worth noting regarding neoliberalization. First, neoliberalism is not a single "thing", nor is neoliberal theory "rolled out" in the same fashion across space and time. Rather, neoliberalization - the working out of neoliberal theory – involves a great deal of negotiation. Neoliberal projects mutate as they confront existing social and political economic landscapes. My analysis, therefore, answers Castree's call that scholars forego attempts to ferret out the ills perpetrated by a single "hegemonic", "global", and "powerful" object and become comfortable with the disjuncture between neoliberal theory and practice (Castree 2006, p. 5). Indeed, as illustrated both theoretically and empirically, neoliberalism is only one ingredient in an overdetermined social landscape (McCarthy 2006, Prudham 2005, Larner 2003, Peck 2001, McKenna 2000). Contemporary political economic change is aptly understood as the result of an "articulation between certain neoliberal policies and a raft of other social and natural phenomena" (Castree 2006, p. 4).

The "perplexing amorphousness" (Peck 2004, p. 394) of neoliberalization results not just from extant socio-economic structures, but also from the strategic use of neoliberal logics by the actors involved in political economic change. Harvey (2006, p. 149) notes that neoliberalism plays an ambiguous role in the struggle between the corporate class and the rest of us, working "more as a system of justification and legitimation for whatever had to be done to restore class power" than a determining economic doctrine.[6] The ideal-type is not just constrained; the actors involved in any given struggle choose certain components and produce hybrid tactics that serve their

[6] Since 2001, in particular, we have seen a return to deficit financing in the United States to buttress both militarism and consumerism (Harvey 2005, p. 152). Other divergences abound, such as the farm bloc's - an association of rural banks, real estate operators and agribusinesses – recent defence of income supports and price guarantees in the 2007 Farm Bill (Morgan, Marsden & Murdoch 2006).

interests. Re-conceptualizing neoliberalism as a discursive and material tool refocuses attention on the interests of actors involved. In this vein, the following chapters do not explicate actual, existing neoliberalisms but rather highlight the ways biotechnology interests and their opponents mobilize and contest neoliberal ideology.

The second issue that deserves attention is that neoliberalization proceeds as much through a roll back of state services as it does through a "roll-out" of new forms of regulation, both public and private, that stabilize the new order (Peck, Tickell 2002). In other words, market-based activism is as much produced by neoliberalization as it is productive of the neoliberal order. For example, certification and labels fill the gap left by de-regulation and free-market rationality by transferring environmental and social regulation from the state to consumer choice (Brown, Getz 2008, Guthman 2007). I take these charges seriously and though I do not condemn rank-and-file activists or the organizers of the nascent Non-GMO certification project, I argue in chapters 4, 5 and 6 that a new label will do more to concentrate power in the agrifood sector and deepen socio-economic cleavages than halt the introduction of genetically engineered foods.

Implicating alternative food activism in neoliberalization suggests that neoliberalism advances as much through overt regulatory change as it does through the everyday actions of individuals. Consequently, to understand these processes we must also understand the creep of ideology. We must examine the ways daily practice is informed by free-market rationality and how even the activists purporting to resist neoliberalization can and do facilitate its reproduction. This is a central goal of my work and a question I address repeatedly but in different ways throughout.

The third important issue is that neoliberalization significantly changes the terrain on which social movements agitate. On one hand, industry-focused state agendas, de-regulation and the increasing importance of lobbying all close opportunities for activists to intervene in public policy (Schweikhardt, Browne 2001). Moreover, as Guldbrandsen and Holland (2001) point out in the case of environmentalism, the competition for scarce state or private funds curtails radical forms of activism and encourages groups with tactics coincident with neoliberal agendas. While this new context does not absolve activists of responsibility for perpetuating neoliberalism, it does merit consideration in any assessment of contemporary tactics. Thus, chapters 3 and 4 explore the motivations and context underlying the choice of alternative consumption and certification as tactics used to resist agricultural biotechnology.

Geography, Biotechnology and the Process of Neoliberalization

A substantial geographic and sociological literature explores the issues surrounding the production, introduction and commercialization of GE products (Gibbs, Cocklin & Dibden 2008, Marsden 2008, Greenhough, Roe 2006, Bridge, McManus & Marsden 2003, Brooks 2005, Kloppenburg 2005, Buttel 2003, 1999, Goodman 2003, Goodman, Buttel 1998, Wilkinson 1990). Scholars have been particularly quick to highlight the intersection between American and European biotechnology firms and neoliberalization across North America and the globe. For example, many note the prominent position and preferential treatment of corporate biotechnology firms in North America (Prudham, Morris 2006, Kloppenburg 2005, Brand, Gorg 2003, Flitner 2003, MacMillan 2003,). Indeed, administrations in the United States and California promote the industry's development and the commercialization of genetically engineered foods and crops.

Neoliberal logic animates these pro-biotech agendas. For example, as I detail elsewhere (Roff 2008), US companies and state officials trot out the negative effect of regulations on trade and rebuff pressure to develop rigorous scientific assessment and labelling requirements.

American agricultural biotechnology regulation also illustrates the use of "voluntarist, neo-corporatist regulatory frameworks involving non-binding standards and rules" and "self-regulation" characteristic of the neoliberal era (McCarthy, Prudham 2004, p. 276). Assessment occurs under the Coordinated Framework on Biotechnology, a cooperative effort of the US Department of Agriculture (USDA), the Federal Food and Drug Administration (FDA) and the Environmental Protection Agency (EPA). Under this system, the USDA's Animal and Plant Health Inspection Service (APHIS) evaluates the risk that GE organisms will become a pest, in particular their susceptibility to weediness and their potential impact on sexually compatible species (APHIS 2006). The EPA is responsible for assessing the toxicity, residue levels and environmental impact of plant-incorporated-pesticides, such as *Bacillus thuringiensis* (Bt). The FDA regulates the health and safety of biotechnology products destined for human and animal consumption. The agency does not distinguish GE and conventional products, and therefore does not require additional assessments of engineered foods. In many cases, agricultural products were grandfathered in under the "generally recognized as safe" (GRAS) provision or moved quickly through the assessment process under the guise that they are "substantially equivalent" to existing varieties.

The patchwork of agencies and legislation governing agricultural biotechnology appears to contradict the federal government's ongoing push to de-regulate industry.

However, the creation of the weak and convoluted Framework was demanded by biotechnology interests in an effort to bolster consumer confidence (Eichenwald, Kolata & Petersen 2001). Henry Miller, founding director of the FDA's Office of Biotechnology, reflected on the industry's power in 2001: "U.S. government agencies have done exactly what big agribusiness has asked them to do and told them to do" (Miller in Eichenwald, Kolata & Petersen 2001, p. 1). As a result, authority is split between existing agencies and the Framework is based on voluntary disclosure of scientific assessments, self-policing and minimal public awareness of test sites or commercial introductions (Ferrara 2001). The regulatory climate is shifting somewhat in the wake of the StarLink and LLRice 601 debacles, in which unapproved GE varieties of corn and rice, respectively, contaminated the human food supply. Yet, federal and state governments remain reluctant to hamper the industry with "undue" regulations for fear of losing investment or jeopardizing their own research and development projects.

Scholars also implicate the biotechnology industry in promulgating US-style legislation across the globe and using free trade institutions, such as the WTO and NAFTA, to open foreign markets to their products (McAfee 2008, Jasanoff 2006, Murphy, Yanacopulos 2005, Bowring 2003, Buttel 1999, Barben 1998). Import restrictions, labelling requirements and health and safety standards hamper the flow of goods around the world and cede political power to opposition groups. Thus, under the guise of regulatory harmonization, the increasingly concentrated chemical-seed-biotechnology complex influenced the US federal government's use of WTO provisions to open unfriendly economies to its products (most notably in the EU) and amend the *Codex Alimentarius* to accept the adventitious presence of GE material in food and feed

products. Adventitious presence (AP) refers to the unintentional presence of trace amounts of GE material in non-GE food products. AP can occur through cross-fertilization, unchecked volunteer GE plants in agricultural fields, post-harvest mixing of seeds and grains or ingredient mixing in processing. Allowing AP in the *Codex* - which sets out international food safety standards - is a tremendous blow to the anti-biotechnology movement as it entrenches the United States' approach to oversight and food safety, which is notably weaker than other major agricultural economies. The addition also depoliticizes genetic contamination and undermines efforts to reduce gene flow by strengthening containment practices and scientific assessment.

Patents on genetically engineered products and the extension of intellectual property protections through the WTO are a point of particular contention in academic and activist circles (Prudham 2007, Kloppenburg 2005, McAfee 2003a, Burrows 2001, Wilson 2001). In the United States, the intellectual-property regime that has grown up around biotechnology is a driving factor in the consolidation and concentration of the industry (Boyd 2003). Faced with long lags between research investment and commercialization, biotechnology firms must stake their territory to preserve profits. However, with so much tied up in proprietary licensing, companies are acquiring competitors for their patents and buying seed firms to maximize profit from sales of GE products. These strong monopolistic currents in the sector bring the problem of "free" markets to the forefront and, as Boyd (2003) argues, highlight the need for stronger enforcement of antitrust laws.

In the scientific realm, patents on living organisms and their constituent parts and the roll-back of state funding are redrawing the line between public and private research

and strengthening corporate control of academic science (Prudham 2003, Kevles 1998, Goodman, Redclift 1991, Kenney et al. 1982). The shift from basic to applied science and the near elimination of public plant breeding has disastrous implications for academic and rural communities (Kloppenburg 2005). For farmers, the new intellectual-property regime renders them vulnerable to litigation from patent owners. The further privatization of agricultural inputs is also worsening farmer debt and adding to the rural depopulation unleashed by the 1980s farm crisis (Kloppenburg 2005, Goodman, Sorj & Wilkinson 1987).

Court rulings upholding industry patents also shape understandings of private property and the rights of property owners. Whereas previous conceptualizations held an owner responsible for the damage caused by their property – as for example when a firm pollutes a community waterway – owners of patents on genetically engineered organisms are not responsible for contamination caused by their products. Rather, the damaged party is criminally liable for theft. This highly preferential treatment of industry shifts the balance of power in contemporary society to multi-national corporations with the ability to buy life itself. As Prudham (2007) argues, patents on living organisms constitute a new wave of accumulation by dispossession. They illustrate, in his words, a "naked hubris" and the "multi-faceted theft" of the world's collective resources for the sole purpose of corporate profits (Prudham 2007, p. 414). Simultaneously privatizing and commodifying genes, intellectual property rights create a new space through which capital can readily circulate. In the process, they extend the scale and scope of capitalist relations and subject new environmental features to exploitation in expansionary markets.

Alongside critiques of the social and economic processes advancing with agricultural biotechnology, geographers and agrifood scholars engage in a second, closely related discussion centring on the discursive strategies used in support or opposition to the industry (McAfee 2008, Levidow, Murphy & Carr 2007, Brooks 2005, McAfee 2003b, Schurman, Munro 2003, Buttel 1998, Levidow 2001, Buttel 2000). These works are generally pessimistic and regard the industry's claims that the technology will relieve global hunger and malnutrition as "self-service" rhetoric (Bridge, McManus & Marsden 2003, McAfee 2003b).

While geographers have done much to expose the problematic effects of the biotechnology economy and the advance of neoliberalization, there has been almost no detailed study of the opposition. In particular, the literature is silent in regards to activist tactics and the ways that activists are themselves implicated in the advancement of neoliberalization. Geographers have not yet grappled with the multiple ways by which anti-biotechnology activists at once contest and stabilize current socio-economic structures. There has been even less assessment of the multiple ways activists resist neoliberalization and the biotechnology industry. Nor is there any critical analysis of the interaction between tactics.

These silences are crucial. If the technology can be redirected towards socially and ecological beneficial ends then scholars and activists must think carefully of the unintended consequences of actions and the ways in which tactics reinforce and limit the movement's overall success. The following chapters attempt to fill these gaps by explicitly examining the impact of opposition tactics on modes of political engagement and political economic and social structures. I pay particular attention to the effect of

consumer resistance and its potential to buttress progressive social change and undermine the creative and policy-focused resistances within the larger anti-biotechnology movement. In doing so, I add a new dimension to the discussion of the intersection between neoliberalism and agricultural biotechnology. My analysis complicates understandings of neoliberalism as a uniquely corporate (and state-sponsored) project and highlights how deeply its logics penetrate everyday life.

The Study

This study draws on an intensive, social scientific examination of the politics of anti-biotechnology activism in northern California. The observations, analyses and critiques are based on a combination of participant observation, archival research and in-depth semi-structured interviews with four sets of actors from three different levels of movement activity. As noted above, the analysis centres on case studies of two prominent opposition groups in California: GE Free Sonoma and the Non GMO Project. As a methodology, case studies are fraught. On the one hand, they allow research to explore the details and particularities that shape social movements. On the other, it is important to question their generalizability. My purpose is not to suggest that these examples are representative of anti-biotechnology politics in any strict sense. Rather, both have had defining effects on the trajectory of the American opposition and insofar as the types of consumer activism they illustrate conform broadly to those used throughout the agrifood and environmental movement, they are useful entry points into understanding the potentials and limitations of contemporary efforts. Therefore, analysis can strengthen a range of progressive social action.

With so much action developing across the United States, it is important to specify why I chose to study only two groups. Studying consumption requires careful attention to the minutiae of daily practice and the ways that resistance is enacted. Moreover, to the extent that GE Free activism is shaped by the local political and agricultural context, I believed that only a detailed examination of case particularities could appropriately explicate the motivations behind tactics and strategies. I originally set out to compare two GE Free groups, Sonoma and Alameda. However, I found when I entered the field that GE Free Alameda had disbanded and I was unable to reach the group's volunteers and organizers. Somewhat luckily, over the course of my fieldwork the Non GMO Project emerged as the continent's leading third party certification initiative. With limited time and resources, my time was best spent documenting events and exploring the potential of what was quickly becoming a crucial moment in American anti-biotechnology politics. A comparison consumer of politics across GE Free groups within and outside California, as well as a further examination of the ways consumption across the entire movement is warranted in the future. This project is a starting point for such an analysis and begins the detailed critique of anti-biotechnology politics currently lacking from both the geographic and agrifoods literatures.

The project emerged from a personal discomfort with contemporary food system activism, particularly the rise of alternative food markets and their use as tools of revolutionary change. As I delved deeper into the politics of organic agriculture and other seemingly progressive food movements, I began to question the ramifications of my own purchasing decisions. What structures am I perpetuating and confronting when I approach

a farmers' market stall? Does it really matter what products I choose in a supermarket? Is the aisle a space of revolutionary change? Is my wallet a tool?

Concurrent with my own private ponderings, geographers and agrifood scholars were asking similar questions in newspapers and academic journals across North America and Western Europe. In the last decade, a lively and emotionally charged literature emerged examining everything from agro-ecological practices (Pollan 2006, Guthman 2004, Allen et al. 2003), to the political economy of food manufacturing and retailing (Morgan, Marsden & Murdoch 2006, Pollan 2006, Busch, Bain 2004, Cook 2004, Freidberg 2004b, 2003, Marsden 2004, Le Heron, Hayward 2002, Lockie 2002, Crewe, Gregson 1998), to the promises of local food systems and short supply chains (Seyfang 2006, Hinrichs 2003, Winter 2003Marsden, Banks & Bristow 2000), to the limits and possibility of third party certification (Brown, Getz 2008, Guthman 2007, Getz, Shreck 2006, Mutersbaugh, Klooster 2005, Hudson, Hudson 2003, Guthman 2003a, Gereffi, Garcia-Johnson & Sasser 2001). The collective insights of this work inform much of the following discussion and I review them in detail where relevant. What they share with each other and with my own approach is a refusal to wholly accept or dismiss consumer and food system activism. I wrestle with this tension in this project and it plagues me still. My findings suggest that anti-biotechnology activism as careful consumption or overt engagement with policy-making, *is* affecting the American agrifood economy. However, the effects are contradictory - propelling progressive change and reinforcing the status quo at the same time.

As I mention periodically in this text, there is little consensus regarding the food safety and environmental effects of GE foods and crops. However, there is a mounting

body of evidence linking the biotechnology complex to political economic changes wreaking havoc on social welfare, rural livelihoods, environmental quality and food safety. Like many of my informants, I appreciate the potential of this revolutionary technology; it is the means by which it is introduced and the political economic context in which it exists that makes me wary. This work is not, therefore, a critical evaluation of agricultural biotechnology *per se,* or a condemnation of genetically engineered foods.[7] Rather, it is an investigation into the methods by which social movement organizers and rank-and-file activists are challenging the technology and the political economic change in which it is embedded.

I do not profess to be a disinterested observer of either the biotechnology industry or the anti-biotechnology movement. As is clear in the following pages, I am cautiously critical of the both. I believe genetic engineering might have its place in both food and fibre production in the future, but at present I am unconvinced that it brings social and ecological benefits. On the contrary, by increasing the cost of seeds and further entrenching a dependency on upstream agribusiness, agricultural biotechnology may be the final blow to rural and farming livelihoods.

It breaks my heart to see foreclosure and sale signs at farm-gates. I understand this emotion's ideological lineage and its place in my life. Yet, I cannot, nor do I want to look uncaringly at the contemporary farmscape. Simply put, the issues I discuss in the following pages matter to me. I am opposed to agricultural biotechnology and the political economic system proliferated by the multinational agrifood corporations that

[7] For such works see Smith (2003), Bowring (2003) or Tokar (2001), Kloppenburg (2005).

profit from GE crops. My cautious opposition is informed by years of research and was deepened by the knowledge gained from my informants.

This is not to say that I believe the movement is without problems. Indeed, the bulk of this manuscript wrestles with the contradictions and limitations of contemporary resistances. The purpose is to provide constructive critique to the movement in the United States and around the world.

Thus, I am not disinterested. This does mean that I am biased. I share critical scholars' suspicion of "objective fact" and impartial analysis, and believe that no assessment, however presented, is unmarked by the writer's perspective. I endeavour to communicate my informants' words, perspectives and practices faithfully, but the story I choose to tell is undoubtedly shaped by my experience and understanding. On the one hand, some readers may believe this limits the text's "truthfulness" or "accuracy". I admit that my story is not the story that everyone would tell. It is supported by the evidence and it is my attempt to examine the potential of anti-biotechnology activism. On the other hand, sharing activists' concerns and engaging directly with groups I studied gave me privileged insight. My informants undoubtedly shared stories and opinions they would have kept from less committed researchers. I was often privy to frank displays of emotion and concern and I am eternally thankful for the trust given me by activists with whom I worked.

Data Collection

Case Study 1: GE Free Sonoma

The first part of this study involved compiling survey and interview data from two sets of actors involved in California's GE Free movement: (1) organizers of GE Free Sonoma

and Californians for GE Free Agriculture, and (2) rank and file members of GE Free Sonoma. The interviews took place between August 2006 and December 2006 during which time I lived in Santa Rosa, California. These primary interviews are complemented by a series of formal and informal conversations with leading anti-biotechnology activists and organizers from across the United States and Canada.

This first interview dataset includes 12 organizers and 30 rank-and-file activists. It is important to note that the interviewees are not a random sample. The interviews are illustrative but not necessarily representative of American anti-biotechnology politics. I targeted organizers directly and I use their insights to discuss the motivations and structure of California's movement. I spoke with movement leaders from a variety of states including, California, Oregon, Maine, New York and Iowa. Interviews ranged in length from 30 minutes to two hours and covered movement strategies, tactics and organizers' motivations and experiences.

I initially attempted to contact every major group opposing agricultural biotechnology. I sought interviews through an introductory email in which I outlined my project and the interview topics. This effort elicited limited results. Many groups were wary to discuss tactics and strategies with an "outsider", particularly one from academia. Still, I managed to speak with 8 groups, and representatives provided detailed information about the history, context and practices of struggle in their regions.

I conducted interviews with California groups in person and the rest over the telephone. When requested, I sent interviewees a copy of the interview schedule in advance (Appendix 1). The majority of informants I contacted by telephone requested not

to be audio recorded; thus I took notes and reflected on the conversation in my field journal.

I recorded four lengthy interviews with representatives of GE-Free Sonoma and Californians for GE Free Agriculture, and the Family Farmers' Alliance – the central group opposing the moratorium in Sonoma. After each interview, I wrote detailed comments in my field journal and noted issues and documents to pursue in future. I returned to the informants for clarification and further questions when necessary.

Contacting rank-and-file volunteers was facilitated by a list of 43 participants given to me by one of GE-Free Sonoma's organizers. The majority of respondents had held managerial positions in the organization. As involved and highly engaged members, these informants provided a glimpse into the everyday practices of committed activists and crucial knowledge of the public's reaction to the GE Free movement through their experience petitioning, phone-banking and tabling at farmers' markets.

I made initial contact with volunteers with an introductory phone call. I described my project, myself and my previous contact with the GE Free movement. I tried to reach everyone on the list and successfully interviewed 30 (70% of list). When I had email addresses I followed unsuccessful phone calls with short written introductions, and when necessary I made three or four separate requests to each individual over the course of the six-month period.

Interviews took place in a variety of places: walking through a local park, at coffee shops, in restaurants, outside Whole Foods (a prominent natural food supermarket in the region), and in activists' houses or offices. While I preferred to meet in person, time and convenience made this impossible for some informants. I conducted six interviews over

the telephone, and one individual supplied a written response. Telephone and in-person conversations ranged in length from 25 minutes to just over an hour and focused on the following (Appendix 2): (a) experiences of entrance into the movement and participation; (b) perceptions of genetically engineered foods and agricultural biotechnology; (c) consumption behaviour; (d) general food activism and visions of ideal food systems; (e) shopping/procurement activities and responsibility for food within the home.

Interviewees' gender distribution roughly follows that of the movement as a whole: 22 of the 30 informants were female (Table 1). This is unsurprising given the dominance of women in environmental and food activism (DeLind 1999) in North America, however, it does merit at least a partial explanation. Scholars suggest numerous possible factors driving the disproportionate number of female activists.

Table 1: Rank-and-File Activists

	Age	Gender	Place of formative years	Occupation
1	60	F	New York & California (Alameda Co.)	Homemaker
2	63	F	Texas	Rental /investment manager
3	67	M	Michigan	Medical biology technician (retired)
4	27	F	Kansas	Teacher
5	52	F	Michigan	Freelance journalist and library technician
6	59	F	California (Northern)	Sales: Nikon science supplies (retired)
7	57	F	California (Contra Costa Co.)	Registered nurse
8	50	F	California (Santa Clara Co.)	NGO communications director
9	50	F	California (Southern)	Nutritional consultant
10	61	F	North Dakota	Landscape contractor
11	49	F	Malta	Bookkeeper
12	51	F	Texas	Housecleaner / pharmaceutical chemist (retired)
13	55	F	California (Sonoma Co.)	Radiologist technician

	Age	Gender	Place of formative years	Occupation
14	27	M	California (Sonoma Co.)	Insurance agent
15	51	F	Boston	Bookkeeper
16	56	M	California (Marin Co.)	Meteorologist/ environmental consultant
17	34	F	California (Los Altos)	College instructor
18	45	M	North Virginia	NGO Development director
19	46	M	Connecticut	Social Worker
20	56	M	California (Sacramento Co.)	Political consultant
21	51	F	California (Los Angeles Co.)	Childcare provider
22	37	F	California (Sonoma Co.)	Chef
23	35	M	California (Sonoma Co.)	Marketing
24	37	F	California (Mendocino Co.)	Marketing, Bio-diesel firm
25	36	M	Washington	Computer consultant / President, Bio-diesel Coop
26	25	F	California (Contra Costa Co.)	Produce clerk
27	40	F	California (Los Angeles Co.)	Lab supervisor, winery
28	42	F	New York	Organic winery owner / film maker
29	26	F	California (Los Angeles Co.)	Environmental political organizer
30	36	F	California (Sonoma Co.)	College instructor

Ecofemist arguments suggest that women's biological and psychological characteristics are innately closer to nature than men. Coincident with this, feminists argue that women and nature share a subordinate position in patriarchal society and thus women are more attuned to ecological exploitation than men (Merchant 1980). Others argue that female gender roles that emphasize nurturing, care giving and reproduction, predispose women to social and environmental concerns, whereas masculine role that emphasize rationality, abstraction and emotional restraint limit men's participation in social movements, and in

some analyses, their ability to recognize environmental problems or empathize with marginalized groups (Somma, Tolleson-Rinehart 1997).

In a similar vein, feminist development theorists contend that differential access to and responsibility for nature means that women and men experience the environment differently (Rocheleau, Thomas-Slayter & Wangari 1996). Consequently, women perceive and worry about different issues than men. Food production and the tasks associated with procuring and preparing meals is exemplary (Sach 1996).

Ecofeminist perspectives such as these are criticized for reproducing biological determinism and naturalizing and essentializing women (DeLind 1999). However, it is impossible to understand women's prominence in environmental and food movements without recourse to broader social and political economic context, and in this particular case, to the specific context of anti-biotechnology activism. As noted, food is gendered. While masculine foods and food practices exist (Julier, Lindenfeld 2005) the bulk of responsibility for shopping and preparation falls to women (Counihan, Kaplan 1998, Kaplan 1980). Women are also more concerned with the health and nutrition of foods (Bisogni et al. 2002, Fagerli, Wandel 1999, Counihan 1992). Whether this concern is biologically driven or socially constructed, the fact remains that women are overwhelmingly responsible for overseeing the diet of spouses, children and themselves. Examining participation in a Michigan Community Supported Agriculture (CSA), DeLind (1999) argues that the gendered nature of food politics derives directly from these responsibilities. The CSA, in her words, is "a social and physical space within which relationships of everyday life, practical gender concerns that relate to women's life positions and experiences, can be variously expressed" (DeLind 1999, p.198).

Compounding this broad social division of labour, as I discuss in chapter 1, anti-biotechnology activism, and indeed, alternative food activism in general, is deliberately framed as a female concern. Pictures of women and children dominate campaign literature and slogans often note the need to protect children's health. With this is mind, it is not surprising that women comprise a larger portion of rank-and-file activists and consequently my research sample.

Participants ranged in age from 25 to 67, with the average activist approximately 45 years old. Every informant but one "homemaker" was or was formally employed in a white-collar job. Although I did not ask informants to self-identify with a racial group, everyone I interviewed in person appeared white. This is not surprising. The alternative food movement is a predominantly white movement (Slocum 2007) and in 2005, the majority (78%) of Sonoma's residents self-identified as white (U.S. Census Bureau 2007, online).

I supplemented these interviews with participant observation in Sonoma County between August 2006 and July 2007. Living in Santa Rosa, Sonoma's capital and approximate geographic centre, afforded the opportunity to become directly involved in many activities. I spent a great deal of time in Sebastopol where I developed close friendships with residents, food activists and some interviewees. I participated in countless dinners, parties and other social gatherings and documented individuals' daily lives. I also shopped and travelled with a few informants and spoke with them at great length about their gastronomic habits. I have returned frequently to Sonoma since December 2006 and continue to note the GE Free movement's impact on the community and the ways the effort has informed everyday food practice in the region.

Case Study 2: The Non-GMO Project

I conducted interviews with the organizers of my second case study, The Non-GMO Project, in a similar fashion as those with GE Free Sonoma. I made initial contact via email and then made three separate trips to Berkeley in August and November 2006 and July 2007. I also maintained regular email contact with organizers and received updates over the year. The first interview took place at my primary informant's workplace and subsequent meetings occurred with a group of individuals involved in the NGMOP at informal dinners. The initial interview was audio recorded but subsequent meetings were not. In these cases, I made use of detailed field notes written after our conversations.

To supplement and corroborate information provided by informants, I documented the evolution of the group's website and publicity material from 2005 to 2008. I read, printed and filed the text and visual images over the years, with particular emphasis on the NGMOP's framing and the shifts in the Non-GMO Standard's criteria.

Manufacturers

To complement my explorations of the Non-GMO Project, I conducted structured interviews with 43 American food manufacturers - a category which I define as any firm producing end-products either for direct sale or under contract to other private labels – and 4 grocers. Sampling was opportunistic; I contacted firms with a range of revenues, distribution size, and product-type and from both the conventional and natural food markets. To generate the research sample, I made repeated trips to grocery stores (Capers, Vancouver BC; Save On Foods, Burnaby, BC, Andy's, Sebastopol, CA, Whole Foods, Sebastopol & Petaluma, CA, Ralph's, Riverside, CA) and compiled a list of products

carrying some form of Non-GMO claim. I supplemented this list with a Google search of food companies with policies or statements regarding genetic engineering.

In total, the population of "Non-GMO" companies included over 100 firms, the majority of which are prominent players in the natural food market. I contacted each firm over the telephone or, where phone numbers were unavailable, via email or online customer service forms. On contact, I explained my project and asked to speak to the appropriate official. As with rank-and-file activists, I attempted to reach company representatives three or four times. Table 2 outlines the basic characteristics of my sample. Twenty of the sampled manufacturers do not currently label their products, while 23 make some sort of statement on packaging. The majority of companies produce "bakery" items, such as cookies, breads or crackers. The rest spread evenly across product categories.

Since I also wanted to speak to conventional manufacturers and those not participating in the emerging non-GMO market, I wrote letters to the 25 largest food manufacturers in the United States.[8] I enclosed a copy of the interview schedule (Appendix 3) and consent form. Four companies wrote back: one agreed to participate; three provided statements and information regarding their policy on genetically engineered ingredients.

[8] I initially tried to call company representatives but quickly discovered this was impossible for many reasons. I had insufficient information about the companies to determine with whom to speak. The phone numbers listed on websites and packaging routed me to a central customer service phone-bank. The representatives were generally helpful with my product questions, but could not direct me to the appropriate person or divulge company information.

Table 2: Manufacturer Characteristics

Product Type	
Bakery	15
Snack Food	6
Convenience Meal	5
Oil & Condiment	4
Tofu/ Meat Substitute	4
Yogurt/Soy Dairy	2
Diverse	2
Beverage	2
Rice	2
Baby Food	1

Company Size by Employee Number*	
1 to 25	17
26 to 50	4
51 to 100	10
101 to 150	3
151 to 200	4
201 +	4

* Data note available for 1 company

Non-GMO Label & Label Type*	
No Label	20
Front Panel	5
Ingredient List	6
Back/Side Panel	11

* Location of label unavailable for 1 labelled company

Organic Production Lines	
100% Organic	17
Some Organic	21
No Organic	5

I conducted 16 interviews in person with manufacturers in British Columbia, Washington, Oregon and California. The remaining 31 occurred over the telephone and one company supplied written responses. Representatives of three additional companies spoke with me but refused a full interview. I audio recorded all the interview but these three and that supplied in written form.

Interviews covered a range of topics including (Appendix 4): (1) general company information, (2) motivation for policies on genetically engineered ingredients, (3) reasons for labelling or not labelling products as Non-GMO, (4) interactions with consumers and anti-biotechnology activists, (4) obstacles to Non-GMO certification, (5) production,

sourcing and segregation practices, (6) respondents' assessment of the transition to Non-GMO production, and (7) general perceptions of genetically engineered food.

Supplementary Data Collection

In addition to the interviews with leading activists and organizers from both case studies, my analysis is informed by participant observation. As an activist-academic, I believe strongly in giving back to those with whom I am working. I volunteered with both GE Free Sonoma and the Non-GMO Project during my field research. In Sonoma, I contacted participants and supporters and updated the group's volunteer database. In Berkeley, I contacted retailers across the Southeast of the United States and asked for their endorsement and participation.

In November 2006, I had the opportunity to accompany Percy Schmeiser and Ignacio Chapela on a speaking tour of northern California.[9] The tour, organized by a leading GE Free activist in the region, introduced me to prominent members of GE Free Mendocino and Environmental Commons as well as a range of individuals interested in anti-biotechnology activism in Mendocino and Sonoma Counties. These meetings and the three days I spent involved in the daily activities of mounting the tour gave me important

[9] Mr. Schmeiser and Dr. Chapela are prominent figures in the anti-biotechnology community. Both directly confronted the power of biotechnology interests in recent years and make frequent public appearances to recount their stories. Mr. Schmeiser is a Canadian canola farmer sued by Monsanto for allegedly illegally growing proprietary seeds. In March 2008, Schmeiser successfully ended his nine year fight with the company, winning an out of courts settlement in which Monsanto agreed to pay for the removal of volunteer GE canola from the farmer's property.

Dr. Chapela became world renowned for ignoring the University of California, Berkeley pressure not to publish his findings of the presence of GE corn in Mexico – findings that violated the country's prohibition on GE cultivation. Chapela was subsequently denied tenure and forced out of the University. With international support he eventually overturned the institution's decision and was re-instated in Berkeley's Department of Environmental Science, Policy and Management. He is now a leading critic of the University's ties to the biotechnology industry.

insight into the politics of grassroots mobilizing and alternative food activism in Northern California.

Another body of data includes newspaper articles on the GE Free Campaign, Non-GMO Project and other Californian anti-biotechnology issues and campaign materials such as fliers, "talking points", videos and press releases. I collected these from local media sources, in grocery stores, libraries and restaurants, from group websites, through Google and LexisNexis searches, and *The Non-GMO Report* – a growing trade journal for Non-GMO companies. Informants also provided a significant number. These "gifts" were crucial discussion points and activists accompanied them with anecdotes about how and where they used the documents - insights that are invaluable to the following analysis.

Data Analysis

After completing the interviews, I transcribed the texts and uploaded them to the qualitative data analysis software package Nvivo, to code according to thematic content. Appendices 5, 6 & 7 outline coding categories used to sort and analyze each set of interviews. I mapped out initial categories based on my field notes, interview schedule and the topics I planned to discuss. As I proceeded through the interviews, however, new categories emerged. I returned to previous interviews and re-coded responses based on these new categories. The majority of sub-categories emerged organically from interview texts.

I read the excerpts and manually noted trends within each category and/or subcategory. I also compared statements included in each category and noted inconsistencies in informant responses and areas where individuals provided multiple

answers to the same question. These inconsistencies and multiplications muddy the data but do not invalidate responses. Rather, they reinforce the need for careful and nuanced interpretation of interview texts.

I then printed and filed the excerpt sets according to their categorical relationship and drew on different lists according to the requirements of the writing process. Because I used coding largely to index my data and highlight major trends, I allowed categories to overlap somewhat. For example, a few excerpts coded under "visions of the future food system" were also included in "portrayals of farming".

I created spreadsheets for both the manufacturer and rank-and-file activist interviews to record quantitative and categorical responses not amenable to qualitative analysis. For rank-and-file interviews, I used this database to sort results based, among other things, on age and gender, shopping/food procurement behaviour, length of time involved in alternative food movements. For manufacturer interviews, I examined results based on product type, organic status and location of label (if used).

Even though publicly available materials inform this text and a thorough detective would likely identify some of my informants, I follow the strict confidentiality agreement laid out before each interview. I do not reveal personal or company names and have made every effort to avoid identifying references. I have omitted details that I was asked not to reveal despite their relevance to anti-biotechnology politics.

Table 3: Summary of Case Studies

	GE Free Sonoma	Non-GMO Project
Strategy	"GE Free Zone" – legislative moratorium on GE crops	Non-GMO label
Field site	Sonoma	Berkeley
Data	• Interviews with organizers (GE Free Sonoma and others) • Interviews with rank-and-file activists • Newspaper & journal articles • Participant observation (in community and as group volunteer)	• Interviews with organizers • Website/campaign documentation • Non-GMO Standard drafts • Interviews with manufacturers • Participant observation
Informants	12 organizers 30 rank-and-file activists	1 organizer 2 volunteers 43 manufacturers 4 grocers
Chapters	1 to 3	4 to 6

The Landscape of Resistance

Few analyses document the development of the organized movement against agricultural biotechnology in the United States. Some scholars place its inception in the mid-1980s with the establishment of Jeremy Rifkin's "Pure Food Campaign" (Lambrecht 2001); others argue that real action did not begin until almost a decade later (Buttel 2003, Schurman, Munro 2003, Cummings, Lilliston 2000). What is clear is that organized opposition has burgeoned since the mid-1990s. As of 2007, more than 60 groups actively oppose genetically engineered foods and crops and many more are concerned with the issue.

Anti-biotechnology activism is not geographically uniform. Groups concentrate along the west coast, in New England, Hawaii and Washington D.C. There are also growing farmers' movements in Midwestern and the Southern States, spurred by the

privatization of seed stocks and increasing contamination of commercial rice, corn and soy crop.

California is arguably the centre of US opposition activities. The state is home to a large proportion of groups, including The True Food Network and The Center for Food Safety. Strategic engagements run the gamut from the policy approach of Californians for GE Free Agriculture, to consumer boycotts and ballot initiatives. California is also home to a significant number of US food companies purporting to sell non-GMO products. Most important, though, the state's successful GE Free movement has caused important regulatory, discursive and financial shifts in the biotechnology economy.

The concentration of groups in Northern California is unsurprising. As Warren Belasco (1993) notes in his path-breaking history of the US alternative food movement, California has always played a pivotal role in the development of "counter cuisines." The San Francisco Bay area, which includes Sonoma County and Berkeley, is a hot spot for counter-culture activity and continues to be the centre of the Organic and Slow Foods initiatives (Guthman 2004).[10]

Like many things Californian, engagement with biotechnology is "exceptional" (McWilliams 1976). Along with widespread opposition, as of 2005 California was home to the largest number of American biotechnology firms in the United States (374 of 1415), attracted 40% of the country's biotechnology investment and the state's university system remains intimately and intensively involved with the industry in research and development (BIO 2007, Zhang, Patel 2005). As of 2006 at least 750 000 acres of GE crops were growing in California, representing 2% of agricultural land (CFS 2006).

[10] Although based in Brooklyn, New York, Slow Foods USA's 2006 board of directors is largely California-based. Currently, of the 11 members, 5 reside in the state, 4 of which live in or around the San Francisco Bay area (Slow Foods USA, http://www.slowfoodusa.org/about/index.html).

Moreover, the state ranks fifth in the nation in the number of scientific and commercial field trials, with 1376 approved and 45 awaiting approval since 1987 (ISB 2008).

California is also the leading agricultural economy in the United States, and has been for fifty years (Guthman 2004). In 2005, revenues reached $31.7 billion in direct farm sales, more than $9 billion of which derived from export markets (CDFA 2006). The majority of investment is in high-valued and specialty fruits and vegetables, and the state produces over 50% of the nation's nuts, fruits and vegetables.

With the next generation of GE crops purportedly focused on fresh produce, opposition in the state is particularly troublesome to the biotechnology industry. Attracting the state's growers is paramount to its future financial success. Biotechnology interests, including researchers at the University of California, confront rising public concerns with promises of disease-resistant grapes and cancer-fighting citrus.

Field site: Sonoma County

With its rolling hills of grapevines, apple orchards, redwoods and oak pasture and its surf-wrecked coastline, Sonoma county is the quintessential northern California of postcards and tourist brochures. The county ranks 30th in the state in size, and 17th in population, with a 2006 estimate of 466 891 (ERS 2007). The majority of residents live in and around the cities of Santa Rosa, Petaluma and Sonoma, and although the county prides itself as San Francisco's rural and agricultural hinterland the population is quite urban. The region was once the site of 1960s counter-culture "back-to-the-land" communes and experimental organic farms, but is quickly merging with suburban San Francisco; thousands of Sonoma residents commute an hour and a half into the city each

day. Urban growth continues apace and cookie-cutter developments dot the landscape between sprawling estates and boutique wineries.

As is clearly visible as one strolls through Sonoma and Santa Rosa's café-lined plazas or drives along the country roads that wind through the hills the county is white and wealthy. The population is relatively racially homogenous with 78.7% self-identifying as white, 22% as Hispanic or Latino and 4.1% as Asian (U.S. Census Bureau 2007). Median household income in 2004 was $53 645, exceeding that of California as a whole by $4000, and the percentage of people living under the poverty line was 8.4 compared to a state average of 13.2 (U.S. Census Bureau 2007). These numbers, of course, do not include the thousands of undocumented and/or seasonal agricultural laborers that move through the area during the year, however, they are an indication of the county's relative wealth.

The county's racial and socio-economic characteristics are consequential to this study and the success of anti-biotechnology activism. Alternative foods and the spaces in which they exist are white (Slocum 2007). Organics, in particular, as a package of discursive and cultural symbols and an agrifood political economy is constructed specifically for white, urban and "yuppie" consumers (Guthman 2003a, Lockie 2002, Belasco 1993). It is arguable that the hyper-concern for the provenance and "quality" of food - so called foodieism - is a prominent mark of middle-class and elite distinction in the 21st century. Thus, both the 1960s "hippie" and "counter-cuisine" and the new wave of classed food concerns inform alternative food activism and consumption in the county.

The population's relative wealth provides access to types of resistances unavailable to poorer individuals. While this privilege is important and complicates the discussion

herein it does not necessarily follow that "elite" interventions either increase the cost of food or that their impacts are inconsequential. It is certainly true that the everyday resistances in Sonoma are geographically, socio-economically and historically contingent, but this does not mean they have nothing to teach us about reconfiguring political economies. What it does mean is that we need to pay attention to the particularities that enable certain types of resistance and be careful to account for income- and place-dependency.

Agriculture and agrifood-related business make up a large part of Sonoma County's economy. In 2005 441,555 acres of land produced commercial harvests, representing 44% of the county's area (Danehy, Farrell 2007). A year later, agricultural production amounted to over $590,617,800. The region is known for its award-winning wines and, indeed, the industry dominates the landscape and the government's economic agenda. In 2006, Sonoma vineyards produced 10% of California's grape crop and brought in $430,496,900 (73% of Sonoma's total agricultural production) (Correia, Smith 2007). Other major agricultural products include silage hay, apples, milk, cattle and sheep.

Organic and other "alternative" producers are prominent in Sonoma's agricultural economy. In 2006 there were 226 operators registered under the National Organic Program, including 773 field sites and 12,000 acres (Correia, Smith 2007). The total land devoted to organic production is actually much higher: pasture for meat and milk production is excluded from these numbers, and in all Californian counties many growers practicing organic methods are uncertified (Guthman 2004).

Complementing organic production are manifold small-scale and specialty farms, which produce everything from goat's milk and cheese to rare varieties of heirloom

apples. Food manufacturers in the region are similarly "alternative". Sonoma county and its neighbours Marin and Napa, are home to some of the United States' leading natural food companies and grocery shelves are dotted with artisan and "local" breads, cheeses, olives, and jams (and wine, of course!).

With such a strong "alternative" food presence, it is not surprising that opposition to agricultural biotechnology was particularly fierce in Sonoma. The debate around GE Free Sonoma's proposed moratorium on genetically engineered crops was the most contentious in the state. The struggle pitted the local organic and alternative agriculture community against the Farm Bureau, and reinforced the divide between the relatively conservative "Eastcounty" and the notoriously liberal and counter-culture "Westcounty". When I arrived in Santa Rosa in July 2006, this spatial and ideological division was clear. The frequency of GE Free bumper stickers, pins and posters was significantly less the further east I travelled. Nevertheless, no matter where I went, the group's vestiges were still visible even two years later.

As I learned over the course of my six-month stay in Sonoma, anti-biotechnology politics are stamped into residents' collective memory, and activism still bubbles under what, at first glance, appears a relatively calm surface. For the anti-biotechnology movement the GE Free Sonoma campaign was a watershed. It split the opposition, redirecting energies at once towards state policy-making and dispersed consumer actions. For many of Sonoma's residents, it opened the food system to critical and constant examination and reoriented some towards extant and emerging "alternative" economies. It was with this history and the region's socio-economic and agricultural particularities in mind that I embarked on this project. No other area and few other groups are a better lens

through which to understand, analyze and experience the politics of opposition to agricultural biotechnology in the United States.

Field site: Berkeley

San Francisco's quirky, counter-culture Mecca, Berkeley, touts itself as a "city with a small population and a big reputation" (City of Berkeley 2008). Indeed, as home to the flag-ship campus of the University of California and the site of some of the most ardent expressions of US radicalism, including the civil rights, anti-Vietnam and socialist mobilizations of 1960s and 70s (Sheppard 2005), Berkeley looms large in popular consciousness. It is at once a space of cutting-edge scholarship, avant-garde social and artistic expression and a hotbed of community, environmental and political activism. This city across the bay is particularly important for the alternative food movement and thus the analysis herein. Drawing on the energies of the 1960s, Berkeley incubated the beginnings of the organic, whole foods and back-to-the-land movements from which much of contemporary food and environmental activism stems. It was one of the birthplaces of the "natural food store" and concept of food justice (Belasco 1993) – not to mention organic mesclun and the associated high-priced, "organic" restaurant (Guthman 2003a). Today, while many of the leading activist groups are headquartered in Washington DC or the elsewhere, Berkeley and the neighbouring cities of Oakland and San Francisco remain prominent organizing sites.

The city is crucial to the anti-biotechnology movement. For example, the University of California at Berkeley is a leading participant in biotechnology research and development and has strong financial ties to leading corporations. The institution also became infamous in 2003 when it unsuccessfully attempted to prevent Dr. Ignacio

Chapela from publishing his discovery of trace GE contamination in Mexican corn landraces and as a direct result refused him tenure.[11] More important though, is the confluence of social justice activism, environmentalism, and wealth that mark Berkeley's character. Concern for food quality runs high in the city and is expressed in a plethora of natural food stores, organic restaurants and farmers' markets. The Natural Grocery Company, the Non-GMO Project's first headquarters, developed from the 1970s food radicalism and is noted as one of the first establishments in the area.

Like Sonoma, Berkeley is largely white and wealthy – two characteristics that undoubtedly inform the area's food culture. In 2006, Alameda County as a whole had a population of 1,457,426, of which roughly 46% self-identified as white, 26% Asian, 21% Hispanic and 13% Black (American Community Survey 2006a). Berkeley had a population of 106,230, of which 61.3% of residents were white, 18.6% Asian, 12.5% Hispanic and 9.8% Black (American Community Survey 2006b). Family incomes were (and remain) quite high, in part because of the concentration of white-collar and professional employment: 77% of Alameda's residents are private wage or salary workers and the University of California is the area's largest employer. Berkeley's median family income in 2006 was $87,033 - $28,507 over the US national median – while Alameda's was $78,494 (American Community Survey 2006a, American Community Survey 2006b).

While the Non-GMO Project is no longer run out of a grocery stockroom on Berkeley's quiet Gilman Street, the city is a crucial setting for the following stories. Berkeley's culinary and agrifood culture set the stage for the NGMOP to emerge and

[11] Dr. Chapela subsequently received tenure in 2005 after a lengthy legal suit against the University.

gave organizers the consumer support necessary to push the Natural Grocery Company to spearhead the effort. Moreover, many of my informants in Sonoma originally came to the Bay area and Berkeley because of its counter-culture reputation. Their politics and practices are facilitated by and productive of what has become known as California cuisine – that is a concern for the quality, provenance and presentation of foods. Thus, Berkeley is important because it is a magnet and source for progressive thinking and a symbol of a particular package of gastronomic and agricultural sensibilities.

The Dissertation

The first section of this dissertation explores the history, strategies and influence of my first case study, GE Free Sonoma. Chapter 1 draws on interviews with the group's organizers as well as conversations with anti-biotechnology activists across the US to document the historical and contemporary context of anti-biotechnology politics in Sonoma and California more broadly. Specifically, the chapter sets the stage by detailing GE Free Sonoma's emergence and activities from 1999 to 2005 and exploring the motivations behind the campaign. I place the group within a much larger movement opposing neoliberalization, and critically evaluate the discursive frames used to garner support in this purportedly revolutionary effort. I describe not only what organizers are fighting for, but also the implications of their reliance on common sense conceptions of nature, farming and women and children to mobilize the public.

Chapters 2 and 3 turn to the everyday practices of GE Free Sonoma's rank-and-file volunteers and examine opposition outside structured campaigning. This discussion signals the multiple layers of activism in California, the importance of distinguishing organized from everyday opposition and the possibilities of fomenting agrifood change

by disorganized methods. Chapter 2 lays the theoretical groundwork for the discussion of rank-and-file practices by introducing Scott's concepts of *everyday resistance* and *hegemony* and reviewing their relevance to the study of alternative food activism. Chapter 3 describes three dominant types of everyday resistance activities in Sonoma – consumption, the denial of dominant common sense, and education - and explores the potential of each to create alternative social relations and economic structures.

The second section of this dissertation, chapters 4, 5 and 6, assess the history and potential of the Non-GMO Project. This case study explores a different type of consumer activism to that discussed in section 1 – third party certification and alternative food labels. Again, the section begins with a focus on organizers' perspectives and practices. Specifically, chapter 4 counters the increasingly prevalent view in the agrifood literature that the only action available to activists under neoliberalization is third party certification. Tracing the NGMOP's history, I argue that the neoliberal context in which agricultural biotechnology is regulated directed organizers towards market mechanisms, but the choice to create a label resulted from the confluence of specific people and a specific series of events or opportunities. Thus, while I agree certification is problematic, it is not the only option available to organizers at this present juncture, nor should its failings discredit all market mechanisms. I end the chapter with review of some of the powerful ways activists have and could used economic pressure to alter the trajectory of agricultural biotechnology.

Chapter 5 and 6 examine the NGMOP's potential to curb agricultural biotechnology and reduce the prevalence of GE food. I focus particularly on manufactures' views of Non-GMO foods and the obstacles they currently face in their efforts to develop a market

for such products. My point in chapter 5 is that irrespective of the theoretical and ideological challenges posed by third party certification, the benefits of a Non-GMO label are significantly impeded by the use of private certifiers, the difficulty of giving "Non-GMO" value, and, particularly, the Federal Food and Drug Agency's hostility to labelling of any form. Chapter 6 continues this discussion and presents perhaps the single biggest obstacle: the current inability to exclude GE traits from non-GE crops. Reviewing the dominant forms of genetic contamination, I argue that nature presents a problem to the NGMOP, which threatens the possibility of widespread agroecological change.

In the concluding chapter, I review the major insights offered by this project. Speculating on the intersection between anti-biotechnology activism, neoliberalization and the future of the North American foodscape, I argue that the movement can instigate alternative socio-economic realities. However, the current focus on consumption must be interrogated. Eating and shopping differently can bring about important changes if we think outside the supermarket aisle. This final chapter also highlights the importance of distinguishing rank-and-file or disorganized, everyday activism from organized campaigning and relationship between success at one scale and failure at another. I end by suggesting some tentative steps forward along the path to a more ecologically and socially just agricultural and political economic system.

CASE STUDY 1: GE FREE SONOMA

CHAPTER 1: COMMON SENSE FOR UNCOMMON GOALS?

> The consequences of the vote are tremendous for the economic and agricultural future of this county. Do people want to stand up for biological diversity or let two (GMO-producing) companies steamroll them?
>
> (GE Free Sonoma in Johnson 2005a)

> I think it is perhaps the most significant ballot initiative that voters will have ever had the chance of voting on in Sonoma County.
>
> (Sonoma County Farm Bureau in Benefield 2005)

The geography and agrifood literature characterizes the development of an organized anti-biotechnology movement in the United States as a reaction to specific changes in the agrifood landscape since the 1980s: privatization of agronomic research and development (Buttel 2005); enclosure of genetic resources (particularly in the Third World) (Kloppenburg 2005, Goodman, Redclift 1991); and deregulation of food and environmental safety (Frewer 2003). An alternative view limits opposition to concerns over the technology's environmental impacts and moral or ethical arguments about "tinkering with nature" (Brooks 2005, Dreezens et al. 2005, Macnaghten 2004, Pascalev 2003). As the range of interpretations indicates, pinning down a single reason for why opposition exists is difficult. The short-lived debate between Fredrick Buttel (2000) and Melanie DuPuis (2000) is illustrative. Both authors reviewed the character and significance of public opposition to Monsanto's recombined bovine growth hormone

(rBGH) in dairy production, but came to strikingly different conclusions.[12] Buttel sees the movement as a reaction to the technology's impacts on animal welfare and the questionable need for a new yield-enhancing technology in the midst of an international farm crisis. DuPuis attributes the rise of the organic, non-rBGH dairy industry to a "not-in-my-body" politics focused on the health effects of food biotechnology. While it is important to note that Buttel and DuPuis are working at different movement scales (movement leadership vs. consumers), it is striking that they understand opposition as reaction to dominant socio-agronomic technologies. Anti-biotechnology activism would appear to be a prototypical single-issue movement and activists have little to say about broader political economic structures. The movement's goals are one-dimensional: stop the technology or at the very least slow its implementation. Worse still, official and industry interpretations attribute opposition to economic protectionism or irrational anti-technology agendas (Cook 2005, Wynne 2003).

Postone (2006) cautions against limiting understandings of social activism to opposing specific top-down changes or reactions to single-issues or events. Doing so, he argues, risks, on the one hand, obscuring the extent of its radical or revolutionary character by suggesting that social movements' simply react to or defend against changes over which they have no control – that is they perpetually battle against Goliath to maintain the status quo instead of working towards their own transformative visions.

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12 rBGH is marketed by Monsanto under the trademark "Prosilac" and also known as recombined Bovine somatotropin. The hormone, functionally similar to the human growth hormone taken by athletes to improve performance, is injected into cows to increase milk production. Mounting scientific evidence links consumption of milk from cows injected with rBGH with higher incidence of breast, colon and prostate cancer in humans (Smith 2003). More important, prior to commercialization, the US General Accounting Office (GAO) warned that rBGH raised the rates of mastitis in dairy cattle, resulting in unacceptably high levels of antibiotics in US milk. The office recommended the FDA withhold approval until researchers evaluated the risks of increased antibiotic use (GAO 1992). To date rBGH is banned in Japan, Australia, New Zealand and Canada, however it remains common in the US conventional milk sector.

Opposition groups are thus concerned with fighting fires and *preventing* action rather then constructing and *performing* viable alternatives. On the other hand, interpreting activism as a reaction to a single object or process undermines interventions by masking both their broad political economic source and their potentially wide-ranging material and ideological consequences. As Postone (2006) illustrates in the case of Al-Qaeda's attacks on the World Trade Center, action cannot be divorced from the larger political contexts. 9/11 was not merely a reaction to American imperialism, but a response to the marginalization brought about by a fifty-year transition in the global political economy from Fordist to neoliberal capitalism. Moreover, the event's effects range from global geopolitics to the daily consumption practices of citizens in the United States and abroad.

What Postone (2006) suggests is more then simply placing social movements like anti- biotechnology in historical context. He suggests that we examine political protest as embedded in material and ideological webs with significance beyond the immediate moment or direct field of action. In this chapter, I place GE Free Sonoma in the larger struggle against neoliberalization and corporate power (Harvey 2005). I explore what activists fight for (not merely against), and the tactics used to manoeuvre political economic and social structures in that direction. The first two sections relay the GE-Free campaign's story recounted to me by two of the group's primary organizers and other prominent members of the US anti-biotechnology movement. While I draw occasionally from interviews with rank-and-file volunteers, I focus on the campaign's ultimate goals and thus concentrate on leaders' motivations. Taking this history as a starting point, in the third section, I examine the apparent contradiction between GE Free Sonoma's public face and the broader goals of movement leadership. I explore the gender, environmental

and agrarian discourses that formed the group's core media message. The common sense understandings mobilized in each case implicate the movement in the reproduction of ideologies that support the emergence of agricultural biotechnology and undermine the power of opposition arguments. The fourth section turns to the material consequences of GE Free Sonoma's discursive strategies. I argue that groups opposed to the moratorium successfully capitalized on the GE Free's framing and limited the discussion to two irresolvable issues: (1) who can legitimately speak for family farmers; and (2) the potential benefits of biotechnology as a class of bio-medical practices.

Listening and re-listening to the group's story, I was continually shocked by descriptions of the anti-biotechnology movement as "one front in a war", a "skirmish" or "a step along the way." These descriptions signal both broader goals than I expected, and complexity of "victory". I conclude, therefore, with a brief review of success the campaign achieved and speculate about the long-term repercussions of adopting common sense understandings.

I) Getting Going

Anti-biotechnology activism has a long history in California. Like the wider US movement, groups like Californians for GE Free Agriculture trace their history to the 1999 anti-WTO protests in Seattle. In the lead up to the Seattle events, twenty-seven groups from across the country met at the Commonweal Conference Center in Bolinas, California - a secluded (and reclusive) community 30 miles north of San Francisco - to discuss appropriate ways to confront the growing power of multinational agribusiness firms. The resulting *Pacific Declaration* is a foundational document for anti-

biotechnology activism in the western world. The *Declaration*, which is signed by over 60 national organizations, including The Institute for Agriculture and Trade Policy, Food First!, Natural Resource Defence Council, and the American Corn Growers Association, demands the federal government uphold American democracy - the "constitutionally guaranteed protections of life and liberty" – and "suspend any further introduction of genetically engineered organisms". The Commonweal meeting was the first time organizers sat down to coordinate a "comprehensive" oppositional strategy.[13]

The energy generated in Bolinas magnified in California when the FDA announced plans to hold public consultation on its proposed labelling regulation in Oakland, an eastern suburb of San Francisco. The meeting, on 13 December 1999, was one of three organized in the US (the others were in Washington, D.C. and Chicago). The official purpose was to "share [the Agency's] current approach", "solicit views" from the public and "gather information to be used to assess the most appropriate means of providing information [on packaging] ... about bioengineered products in the food supply" (FDA, 2001). While purportedly hosted to discuss public concerns and demands, consultation was limited. For example, speakers had only minutes to testify and had to submit comments in advance for review. The meeting focused on explaining the Agency's decision to restrict labelling requirements. One informant quipped, "They [the public consultations] were a real charade. It was classic, '[the] decision has been made, here's the public meeting'....It was impossible to articulate a critique."[14] Nevertheless, like Bolinas, Oakland provided a gathering place for activists from across the West Coast at which they could develop strategies for intervention. Bay Area groups in particular

[13] Personal Interview, GE Free Sonoma Organizer A, 13 September 2006
[14] Ibid

forged strong links and soon thereafter established the Californians for GE Free Agriculture coalition to organize and distribute resources state-wide.[15]

In the years following Oakland and Bolinas, a few local groups popped up across northern California. These groups followed the lead of the emerging New England movement and called for county-level moratoria on the cultivation of genetically engineered crops in the absence of stronger scientific and regulatory oversight. Seeing an opportunity to deepen intervention and increase support for their cause, Californians for GE Free Agriculture, which had worked on policy changes since 2000, offered to organize, train and promote these efforts. The group's website became (and remains) a leading clearinghouse of news and activist materials.

Political action remained limited until the spring of 2004 when GMO-Free Mendocino "jumped on the issue" and "rushed" their moratorium proposition onto the March election ballot.[16] Other groups contemplating initiatives had been waiting until the political climate was ripe, which they estimated would not be until 2006 or 2008. However, with 57 percent of the vote, Mendocino's victory fuelled activists' confidence across the state who subsequently launched GE Free campaigns in 13 other counties. Els Cooprider, Mendocino's organizer, reflected on the massive surge in anti-biotechnology actions: "This is the beginning of a revolution" (Cooprider in Somers 2004, p. A-1).

Moratoria are a unique intervention. Unlike consumer campaigns, which work on individual purchasing practices, GE Free Zones directly eliminate economic opportunities for the producers of biotechnology. Moreover, the production of "GE-Free maps" (Figure

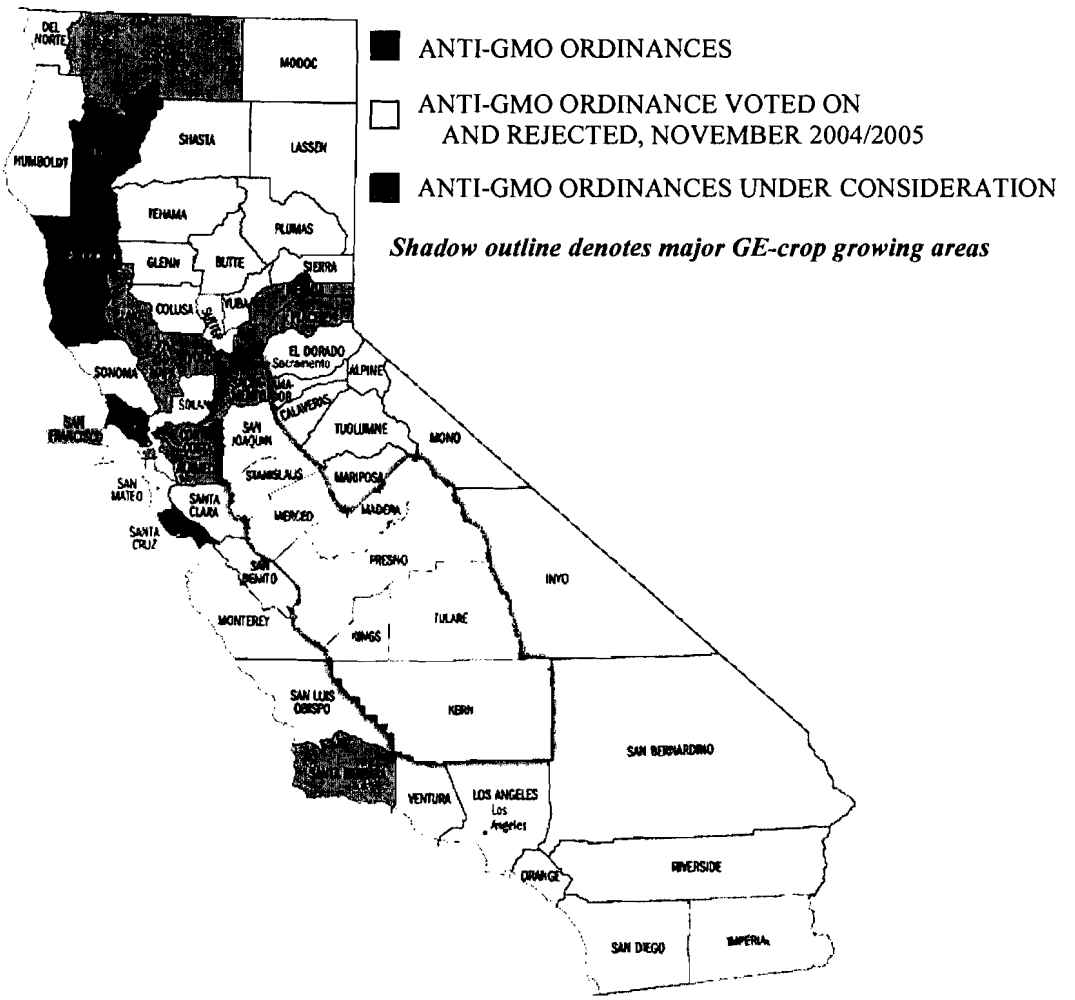
[15] Cal GE Free members include California Certified Organic Farmers, the Center for Environmental Health, The Center for Food Safety, Community Alliance with Family Farmers, the Ecological Farming Association, Occidental Arts and Ecology Center and the True Food Network. For more information, see www.calgefree.org. Personal Interview, Californians for GE Free Agriculture Organizer, 3 August 2006

[16] Personal Interview, GE Free Sonoma Organizer B, 16 August 2006

1) by either the technology's supporters or its opponents etches opposition to biotechnology onto political maps, thereby providing visible evidence of the anti-biotechnology movement's existence and success.

Figure 1: Californian Initiatives on GE Crops, June 2006

Note: From University of California, Berkeley Division of Agriculture and Natural Resources Biotechnology Workgroup. Copyright 2006. Reprinted with permission.



The revolution faltered and only Marin, Trinity and Santa Cruz counties, and the municipalities of Pointe Arena and Arcata, successfully limited GE cultivation. Measures in San Luis Obispo, Butte and Humboldt counties were defeated at the ballot box.[17]

Mendocino's victory did not inspire all Californian activists. The county's primary agricultural products are marijuana, wine grapes and timber (in that order) and without a prominent GE crop, the moratorium is largely symbolic. As Joe Panetta, president of Biocom, a San Diego-based biotechnology trade group, said shortly after the Mendocino's Measure H passed:

> I don't care what goes on in Mendocino. They can get high on marijuana, sit around eating organic food and all be thinking that somehow they're living healthier lives than the rest of us. I think it's a joke. (Panetta in Somers 2004, p. A-1)

Compounding its limited economic impact, the moratorium primed the opposition for future initiatives. In the words of one informant:

> That [Mendocino's victory] sort of opened the flood gates on this. It sort of woke the sleeping dog - the biotech industry - that up till now had been ignoring grassroots efforts around this. Suddenly they'd lost the first binding countywide initiative and it was a permanent moratorium with no exceptions. That got them to sit up and pay attention.[18]

Indeed, within days of Mendocino's victory the biotechnology industry met in Sacramento and launched a "Measure H Working Group" to assuage legislators' worries and "stem the anti-biotech momentum" (Lau, Lee 2004). The outcome was a series of "preemption" bills granting states sole jurisdiction over seed and nursery stock regulation (see Roff 2008). Reflecting on these events, other informants with whom I spoke stated bluntly that they wished GMO-Free Mendocino had not acted so quickly because it

[17] The Humboldt Green Genes forfeited the ballot measure due to improper language. On the eve of the election, the group called on supporters to vote no.

[18] Personal Interview, GE Free Sonoma, Organizer B

spurred the biotech industry and its supporters to conduct a "comprehensive analysis" and provided the space and time for the development of "counter tactics".[19] In particular, supporters mobilized their own "grassroots" campaigns, which helped disconnect the issue from its larger (inter)national political economic context and reframed the debate as a matter of local farmers' rights. I return to this discursive mobilization of farming. For now, what is important is that although Mendocino's victory encouraged the anti-biotechnology movement, it also altered the terrain on which Californian groups agitated.

With the ground suddenly changed, Sonoma activists shortened the timeline for their own initiative, and began gathering signatures for the November 2005 special election. Running a campaign in Sonoma is dramatically different from one in Mendocino. To begin, the county is crucial terrain for biotechnology advocates. James Hoare, writing for Heartland Institute's *Environmental News*, called Sonoma's effort, "one of the most nationally important county ballot initiatives in recent memory" (Hoare 2005). He went on to note its importance to both anti-biotechnology activism and industry advocates: "Because Sonoma County is largely urban yet has a strong agricultural presence, the county is seen as a broadly representative bellwether for other California counties." He foretold that if defeated, the Sonoma initiative (Measure M) would discourage similar efforts across the state. Hoare's comments also point to Sonoma's geographic uniqueness. The county is larger in both population and territorial extent than any county in which moratoria had been proposed to that point. Moreover, unlike Mendocino, GE crops are cultivated in the area. The existence of active GE corn production for dairy silage means the direct loss of market potential for biotechnology

[19] Personal Interview, Californians for GE Free Agriculture, 3 August 2006

firms. Thus, it is unsurprising that the struggle became the site of some of the most divisive grassroots campaigning the county had ever seen. Media reports at the time called it a "bitter", "high stakes, politically charged campaign" that was "deeply dividing" the population (Doyle 2005, Johnson 2005b). In the end, the initiative had a dubious distinction as one of the most expensive ballot fights ever, with over $880 000 spent (Rose 2005).

For GE Free Sonoma, the county's importance meant that it was imperative that residents not be "blindsided" and that all local stakeholders (including the Farm Bureau) have input.[20] Moreover, whereas Mendocino completely banned all GE products, organizers in Sonoma believed that such a dramatic move was unnecessary. They did not want to eliminate the biotechnology, only to slow its advance in agriculture and ensure stronger oversight:

> We thought about who is it we're after? We don't want to hurt farmers. We don't want to hurt small local businesses. This is really about saying no to the patent holders of these crops and animals. And that's who it was targeted at....[T]he main goal is number 1 to prevent and to protect the ag[riculture] that's here from contamination. But also, number 2, to send a message that we are rejecting this technology, at least for the time being, and to pressure the state to start taking some oversight.[21]

Organizers spent months discussing the issue with farmers, food manufacturers, scientists and attorneys to ensure the ordinance reflected a "sophisticated" and "less extreme" position than Mendocino.[22] They carefully crafted language that would be restrictive enough to matter to biotechnology firms, without impeding beneficial technology applications or creating undue hardship for local farmers.

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[20] Personal Interview, GE Free Sonoma, Organizer B

[21] Ibid.

[22] Ibid.

After months of reflection, meetings and review, GE Free Sonoma released the proposed Measure M in June 2004. The Measure, the *Sonoma County Genetically Engineered Organism Nuisance Abatement Ordinance,* called for a ten year moratorium on "the raising, growing, propagation, cultivation, sale or distribution of most genetically engineered organisms" within the county. To safeguard and gain local business and scientific community support, GE Free Sonoma explicitly exempted the sale or use of imported GE products (e.g. GE food in supermarkets), and allowed medical and agricultural research so long as it was contained within BSL-3-Ag level facilities, those meeting the USDA's second highest containment protocol.[23] Measure M also allowed the Board of Supervisors to exempt any product it deemed beneficial to the county's agricultural community. The ten-year sunset clause was a direct response to grape-growers' desire for Pierce's Disease-resistant GE stocks should they be developed. At present, observers suggest that such products will not be available for at least another decade. Anyone caught violating the Ordinance would be responsible for the administrative and abatement costs of their actions and fined $1000 for each incident.

GE Free Sonoma volunteers then began the arduous task of collecting the 20 000 signatures necessary for a place on the November 2005 ballot. The group launched a formidable mobilization effort. Five-hundred volunteers stood outside grocery stores, staffed booths at farmers' markets and festivals, and knocked on as many doors as possible. The efforts were not in vain. By January 2005 the group had over 45 000 signatures, shattering the county's previous record of 33 000, and more than doubling the

[23] BSL-3 Ag facilities (Biosafety Level 3) are generally used for trials of elements that could potentially cause lethal disease. These labs are fully contained, with limited or no ventilation to the outdoors.

required number. Faced with such an enormous level of support, the Board of Supervisors added Measure M to the ballot.

II) Bigger Issues

Many depictions of anti-biotechnology activism characterize it as a reaction to the environmental, socio-economic or health effects of genetically engineered products (Guthman 2003b, Schurman, Munro 2003, Buttel 2000, DuPuis 2000). The goal is to eliminate GE foods and crops from an individual's diet or from the agrifood landscape; it is supposedly not about the political economic structures that underlie industrial and productivist agriculture and stabilize broader social relations. This is an inaccurate picture of anti-biotechnology activism, at least that in California. While the organizers of GE Free Sonoma are certainly wary of genetic engineering, they are far more concerned with privatization, deregulation, and increasing corporate power. In the words of one informant: "It's not about Monsanto....They're just an exemplary problem. They're not THE PROBLEM."[24] Ultimately organizers hope to "cultivate democratic literacy" and change the public's understanding of "how much power they actually have"[25] to push agriculture and the political economy in more sustainable directions.

By the time GE Free Sonoma launched its official campaign in July 2005, activists in the county had accumulated over a decade of experience and organizational capital. Biotechnology was of particular interest to many of the county's existing food and agriculture organizations, but concerns regarding corporate consolidation, loss of democratic control and the privatization of public science united activists from big box

[24] Personal Interview, GE Free Sonoma Organizer A
[25] Ibid

retailer opposition to urban sprawl prevention to labour rights advocacy. Even agrifood groups fear the neoliberal political economic changes unfolding with biotechnology more than with the health and safety implications of genetically engineered foods. In the words of one informant, "genetic engineering is a symptom, not a problem, in our analysis."[26] It is a symptom, like weakening labour laws and inner city food deserts, of an era of neoliberal deregulation and a much longer rise of agribusiness power. A second informant explained the movement's ultimate interests as "challenging and delegitimizing corporate power and the corporate use of power in the public realm":

> Underlying a lot of the other issues...we're struggling with is ... too much power - legal, social and economic power - in the hands of corporations. And part of the problem is that they've been granted personhood under our legal system – largely through a fluke - and they've been allowed to participate in our electoral system; they've been allowed to gain control over our public media. Basically they've usurped the commons of our democracy for private gain. And part of the challenge is to reverse that process.[27]

Clearly, organizers do indeed have their eyes focused on much longer-term goals than restricting agricultural biotechnology in Sonoma. Measure M was just one of many in a wider push to establish alternative socio-economic and political systems in which the balance of power rests in the hands of citizens, not corporate interests:

> Genetic engineering gave us an opportunity to bring together people concerned about public health and food safety, your average mother, [and] certainly the environmental community .... This was not asking people to trade off driving for saving the environment. It [biotechnology] was singularly corporate driven; the crudest form of corporate consolidation.... It raises the question better than any issue. The fundamental question behind all these symptoms, the question of private or public decision-making about everything: Are we a democracy?[28]

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[26] Ibid

[27] Personal Interview, GE Free Sonoma, Organizer B

[28] Personal Interview, GE Free Sonoma, Organizer A

In other words, the GE Free campaign was one way of challenging county residents (and their political representatives) to rethink the role of citizenship in the contemporary American democracy. In so doing, it was a way of "shifting consciousness" and confronting:

> [O]ne of the basic stories in our culture about who has power and how things happen.... It [GE Free Sonoma] says 'corporate personhood isn't real; it's a fiction. What's *real* is the power *we* have when we organize together as a community. *We* are power and only if we give away our power and collude with something else will that [corporate control] happen. And I think that in a subtle way it [GE Free Sonoma] challenges that even deeper story about how much power we have as people in the world.[29]

Contrary to the single-issue characterization, anti-biotechnology activism is as much about slowing the technology's spread as it is about questioning democratic citizenship and challenging the fundamental assumptions driving the current system.

In addition to attempting to reconfigure material and ideological realities, GE Free Sonoma is part of an emergent attempt by activists to shift American environmentalism from pursuing single issues to controlling the institutions of political economic relations. Two of my informants noted independently that this is a significant departure from the last three decades of activism. The majority of interventions to date sought to minimize the harms of industrial production by regulating behaviour. Agrifood and farm labour activists have fought, for example, for restrictions on pesticide use and environmentalists demanded riparian buffer zones or caps on carbon dioxide emissions. According to GE Free Sonoma while regulatory interventions are helpful, they ultimately fail because they are concerned with minimizing outward effects of production, not the underlying structures allowing problems to arise in the first place:

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[29] Personal Interview, GE Free Sonoma, Organizer B

> The strategy we've been pursuing for the last thirty years, the big environmental groups, and the public advocacy groups and stuff like that...has largely failed. ... We win a few small skirmishes but we're losing the war. [W]hen you regulate something you legitimize it. When you tell a corporation 'You can pollute our river but only in so many parts per million,' then you end up ...arguing about how many parts per million, and the fact that they're allowed to pollute is a given. You've legitimized it; you've normalized it; you've basically sent out the message to the public, to the community that it's okay for corporations to poison our air, our water, our food, our land, we just have to control how much.[30]

Echoing this sentiment, my second informant stated, "We're losing. It [regulation] doesn't work. It really colludes with their [corporations'] misbehaviour. The way to fight this is not regulation."[31] He went on to argue against large, nationally based organizations and policy-focused campaigns:

> The way to fight this is to challenge the basic premise that they're [corporations] allowed to do this; to challenge their legitimacy; to challenge their right to carry on their activity in our communities. And that pretty much only works at a grassroots level. You can't get Congress to do this. They're too bought. It's hard to even get a state legislature to do it. But you can go to a community, especially a rural community, and say "Who gave them the right to poison our wells? ... Who gave them the right to plant genetically engineered crops in our community without testing, without controls, without oversight?" And that's a different tact altogether.... The basic message is: we don't accept their right to do this. We, the people, are sovereign, this is our community, this is our government, this is our *commons* and we don't accept that they can do this - that they can destroy it for private profit.[32]

Such statements illustrate a concerted desire to step out of the customary position of social activism – David up against an all-powerful Goliath - and move beyond reactive politics towards an overt control of social change. The GE Free Sonoma campaign exemplifies Postone's (2006) caution not to reduce social movements to their immediate targets. GE Free Sonoma is a reaction, not merely to genetic engineering, but to

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[30] Personal Interview, GE Free Sonoma, Organizer B

[31] Personal Interview, GE Free Sonoma, Organizer A

[32] Ibid

neoliberal deregulation, corporate consolidation, and the hollowing out of environmental and social justice activism over the last thirty years (Guldbrandsen, Holland 2001).

Organizers are opposed to the introduction of genetically engineered crops given current scientific understanding. They are particularly concerned with the effects of contamination and cross-pollination on wild and domestic relatives of genetically engineered crops. One informant noted the threat that the introduction of GE grapes or canola to the area poses to the County's grape growers and California's endemic grape varieties. In his view, the technology is too unpredictable to allow into agricultural environments unchecked. It smacks of modernist hubris:

> I mean they're [biotechnology firms] acting like genetic knowledge is where it was in the 60s or 70s. When we thought one sequence equals one trait. We know that's not the case. ... And [we] know you take the same sequence and put it in a slightly different location, you code for a whole different set of traits. And that's not predictable. That as much as anything makes me really wary. You know, I believe in the precautionary principle. And I believe in an extra measure of precautionary principle when you're dealing with this level of scientific and technical arrogance. These guys don't know what they're doing and they don't want to admit that. Even to themselves.[33]

Organizers are not particularly concerned about the health effects of GE foods. In fact, only a few people I spoke with were opposed to the technology outright. Most noted their admiration for the potential of genetic engineering, particularly in medical research:

> The technology itself is fascinating. And I know enough about it to know that ... it will be with us for a while. The next rounds of marker assisted breeding, for example, are really interesting....My opposition to genetic engineering in agriculture is that the traits are literally willy nilly being placed in there without understanding the outcome; with nobody having any sense of what the long term evolutionary impact is.[34]

Such concerns fit with the movement's broader purpose. At issue are the level of scientific understanding, technological precision and the private and secretive

[33] Personal Interview, GE Free Sonoma, Organizer A
[34] Ibid

introduction of products into agrifood systems – issues that can challenge neoliberal structures underlying the political economy of agricultural biotechnology.

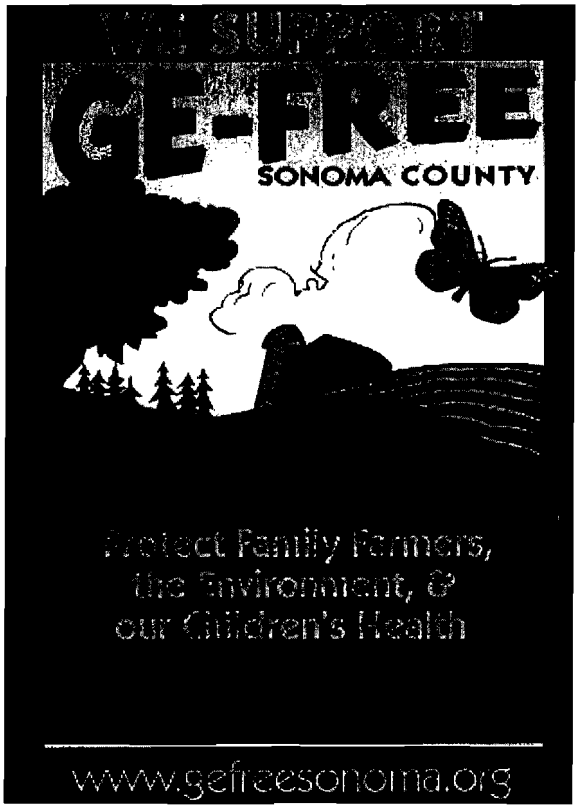
III) Making the Public Case

> Forty-five thousand Sonoma County citizens signed the petition that put this initiative on the ballot in November 2005. In supporting the GE-Free initiative, our community is clearly united in maintaining the independence of our family farmers, our beautiful environment and our children's health.
>
> (GE Free Sonoma in Horner 2005)

Even though organizers used the movement to confront deregulation and corporate power, GE Free Sonoma's public face drew on many of the standard tropes of food and environmental activism. Campaign materials stressed the importance of preserving "family farms", the "beautiful" Sonoma environment and "children's health". These arguments narrow the movement to a reaction against specific concerns of genetically engineered foods and crops – they say nothing about changing political practice, understandings of power and citizenship or challenging the basic rights of corporations. Using the group's primary poster as an entry point (Figure 2), the following section explores how organizers attempted to garner support from Sonoma County residents. I am specifically interested in how farmers, pastoral and pristine nature, and women and children were harnessed to this task. These are not, of course, the only arguments used in support of the Measure M. Coincident with organizers' concerns, campaign materials noted the lack of multi-generational studies, the weakness of federal and state oversight and the importance of democratic control of technological change. In truth, however, there was comparatively little public discussion of corporate control or the balance of power in American society.

Figure 2: GE Free Sonoma Principle Poster

Note: From GE Free Sonoma. Copyright 2005. Reprinted with permission.



Measure M's text does include detailed arguments concerning the constitutional rights and powers of citizens, communities and county governments and the "Arguments For Measure M" outlined in the official voter's package make quick reference to the ability of "chemical corporations" to release "unlabelled" GE organisms "into our food supply". Yet, these claims are overshadowed by standard environmental, gender and agrarian discourses, expressed in statements such as: "Our children should not be used as guinea pigs"; "Genetic contamination is forever"; "Genetic crop contamination can put small farmers out of business"; and most important, the oft reproduced salutary phrase, "Join us to protect our farms, our environment and our children's health from the risks of genetic contamination" (Smart Voter 2005). My aim in the following is to problematize,

without discounting, the relationship between organizers' political economic goals and their public use of dominant environmental, agricultural and gender narratives.

Before going further, it is important to note that a professional survey conducted by Evans and McDonough Company Inc. (2005) informed much of the discursive framing. The survey, constructed and financed by GE Free Sonoma, focused on ballot language and the relative success of a range of statements in turning "no" votes into "yeses". Of the statements that made respondents more likely to vote yes on the moratoria, the top three were, "There is no long-term testing on the safety of genetic engineering" (39% more likely), "Children shouldn't be guinea pigs" (37% more likely), and "GE crops harm ecosystems" (35% more likely). None of the framing statements provided in the survey discusses broad political economic structures and none refers to the political power structures, privatization or industry-academic relations privately vilified by organizers. In many ways, organizers limited the public's capacity to understand and resist biotechnology as an instance of a larger problem from the beginning.

Protecting Sonoma's Farmers

GE Free Sonoma's organizers spent many hours deciding how to "brand" the campaign.[35] Their goal was to present positive images and messages that county residents would easily recognize. The resulting poster (Figure 2) - parts of which also grace the group's website, bumper stickers and pins - represents Sonoma as the intersection between pastoral nature, populated by row crops and apple orchards and the wild, dark nature of redwood forests. The landscape rolls gently away from the viewer, whose eyes come to

[35] Personal Interview, GE Free Sonoma, Organizer B

rest on a calm summer sky. To the right flutters a single monarch butterfly– arguably, the anti-biotechnology movement's mascot. The apple tree, limbs flush with fruit, couples with the large, yellow "GE-Free" title to evoke nostalgic images of the region's history as a centre of fruit production. When I asked why the group had chosen to highlight the apple, - a species that has yet to be genetically engineered, one organizer told me, "We think of ourselves as an apple growing region.... [The image is] universally positive."[36] Even the bright font mimics the labels that adorned the millions of fruit crates shipped out of the county in the first half of the 20th century. The image situates the movement as emergent from and protective of the county's unique socio-economic and ecological history.

Farming and family farmers are central to this framing. A single red-walled barn and silo at the image's focal point assures viewers that this landscape is not the industrial, large-scale agriculture of California's Central Valley. The poster's call to "Protect *Family* Farmers" (emphasis added) helps readers who are not yet convinced. Indeed, whether or not Measure M would benefit local growers was a pivot around which much of the public debate circulated. Supporters argued that the initiative would safeguard the county's burgeoning organic sector and its reputation as "clean and green" (Bay 2005). Lou Preston, a prominent organic farmer and owner of the Preston of Dry Creek Winery, promoted the campaign to Sacramento Bee writer Jim Wasserman (2005a):

> Sonoma County is at the cusp of a newer movement of healthy foods. Young people especially have family farms; they're doing cheese, doing meats, doing wonderful things at the farmers' markets. It's vibrant. It's creative. If we take a stand of allowing GMOs, it's going to diminish our reputation.

[36] Ibid

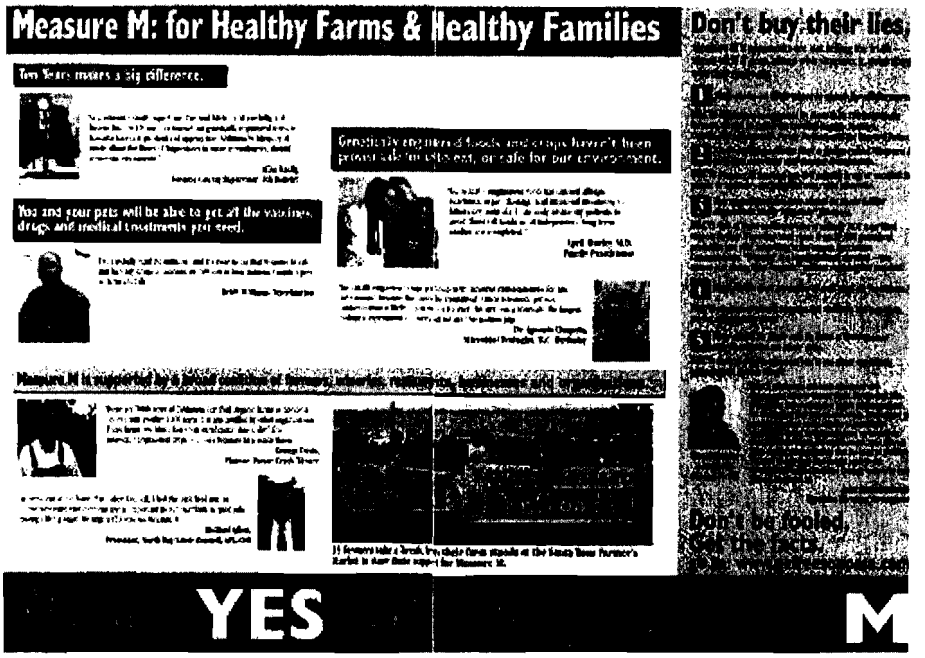
The threat was not just to reputation. GE crops, supporters argued, would inevitably contaminate organic fields, destroying this lucrative market niche. A final mailer sent out by the "Yes on M" campaign (Figure 3) quoted George Davis, owner of Porter Creek Vineyard:

> There are 7000 acres of California Certified Organic farms in Sonoma County, and another 1000 acres that are certified by other organizations. These farms will likely lose their certification due to drift from genetically engineered crops – unless Measure M protects them.

Measure M, therefore, was not just an important effort to preserve family farms, it was essential to preserving *organic* family farms.

Figure 3: GE Free Sonoma Final Flyer

Note: From GE Free Sonoma. Copyright 2005. Reprinted with permission.



Groups opposed to the moratorium capitalized on this framing, releasing their own version of the "facts." Under the auspices of the Family Farmers Alliance (FFA), the California and Sonoma County Farm Bureaus, the Sonoma County Grape Growers Association, Western United Dairymen, Sonoma-Marin Cattlemen & Cattlewomen,

among others argued that Measure M would severely jeopardize local growers by eliminating yield-enhancing technology, putting them at a competitive disadvantage. In a press release the FFA called the initiative a "poorly planned and unfunded mandate on the County that, if enacted, could devastate local Family Farmers" (FFA 2005a). The California Healthy Foods Coalition (CHFC), a coalition of 31 of the state's agricultural interest groups (primarily county Farm Bureaus), reiterated this message in a second press release:

> If family farmers didn't welcome innovation and new farming practices, we could not feed the world, nor could we survive economically. There is no justification for restricting family farmers' ability to utilize the kind of breakthroughs and ingenuity we celebrate in every other facet of life. In a world of camera phones and Palm Pilots, why should farmers be made to use the outdated equivalents of 8-track tapes and carbon paper? (CHFC 2005)

The benefit of GE technology to grape growers was particularly controversial. Despite GE Free Sonoma's careful consideration of the needs of this multi-million dollar industry, the FFA and CHFC argued that Measure M subjected vineyards to the threat of Pierce's disease, a bacterial infection transmitted by the glassy winged sharpshooter that devastated wine production further south. Accordingly, moratoria "prevent local grape growers from using new tools that could help prevent the catastrophe that would ensue if a Sharp Shooter outbreak occurred" (FFA 2005b).

In essence, focusing on whether genetically engineered crops benefit family farming reduced the debate to two issues characteristic of the broader alternative agriculture movement: (1) the relative importance of a farmer's right to freely choose which technology they employ and their right to protect the value of their property from the effects of others; and (2) the relative ability of organic and conventional growers to

speak for the best interests of the agricultural community (and thus the entire community).

By late October 2005, the latter was a central object of debate. In their final mailed flyer, GE Free Sonoma highlighted the "lies" circulated by the opposition (Figure 3). The group vehemently denied the FFA's claim to speak for all farmers, noting that Measure M had the full support of California Certified Organic Farmers, Community Alliance with Family Farmers and the Farmers Union, three esteemed organizations active in the region. The group placed a colourful photo of 35 local growers holding "Yes on M" banner with the caption: "35 farmers take a break from the farm stands at the Santa Rosa Farmers' market to show their support for Measure M." Not only was the agricultural community NOT united against the measure, but the greatest support came from farmers' market participants and organic growers — the small-scale, local producers characteristic of contemporary visions of family farmers (Guthman 2004). Second, GE Free Sonoma challenged the claim by "two opposition leaders... to be organic farmers." They bluntly noted that one was "NOT a certified organic grower" and the "other used more than 21 000 pounds of pesticides last year."

Focusing on which side could better speak for family farmers, and whether the voices of those for which they spoke were organic, GE Free organizers mobilized (perhaps unconsciously) a resurgent agrarian populism that conflates social justice and ecological sustainability with scale (Guthman 2004). Their arguments turn on the belief that small scale, family-owned and operated, and ecologically-complex farms are the source of the nation's moral and environmental strength, and thereby the legitimate object of protection.

Agrarian populism is deeply rooted in American culture. Whether it is myth (Peterson 1990), discourse (Dixon, Hapke 2003), philosophy (Thompson 1990), or vision (Guthman 2004), agrarianism rests on a perception that a patchwork of small farms is the material basis of sound democratic and moral practice. Growing out of the political philosophy of Thomas Jefferson and his contemporaries, agrarianism glorifies the hardworking, propertied yeoman farmer and his nuclear farm family. As Jefferson wrote to John Lay in 1785:

> Cultivators of the earth are the most valuable citizens. They are the most vigorous, the most independent, the most virtuous, and they are tied to their country, and wedded to its liberty and interests, by the most lasting bond. (in Berry 1997, p. 143)

Farmers are "wedded" to their country through private land ownership and labour. Unlike urban merchants and trades-people, agriculturalists cannot move their capital in times of crisis but must weather political and economic hardships. Thus, farmers are expected to be inherently conservative, share the long-term interests of the nation, and be less inclined towards short-term goals and radical institutional reforms (Thompson 1990). Working the land also produces the democratic values necessary of virtuous American subjects. Farmers, separated from their neighbours by miles of field, must struggle independently with only themselves and their families for support (Fink 1992). Rural life, therefore, breeds the independence and self-reliance necessary for a strong republican democracy.

The recent wave of agrarian populism buttressing the organic and alternative agriculture movement ties private ownership and stewardship. Only those individuals who own their land have the incentive and long-term ability to take the care necessary for ecological sustainability (Guthman 2004). Scale is important here. Not all farms and all

farmers are environmental stewards. Industrial and corporate farming do not qualify. These farmers, as Berry (1997, p. 45) argues, have lost their way, "forsaken the values of husbandry and assumed those of finance and technology." The turn from stewardship to economic rationality drives the concentration of ever larger farming units, replaces farmers' eyes, mouths and hands with machines and chemicals and increases the simplification of crop types – all assumed to lead to ecological degradation. In essence, sustainability is only possible with small, diversified units overseen by a watchful and caring steward. New agrarianism is about preserving biodiverse, local and small-scale farms, preventing further industrialization and corporatization of the food supply (Guthman 2004). The best way to do so is to preserve the family farm – a spatially ill-defined productive unit managed by a single family (and an indeterminate number of hired labourers).

The notion of struggle is a fundamental, but under-appreciated element of agrarianism, new and old. As Peterson (1990) notes, agrarianism is inseparable from the frontier myth that continues to animate American culture. Agriculture is, quite literally, at the edge of civilization. In Von Thunean terms, it bounds cities and stretches as far from urban life as economy and topography will allow. The extent of settled agricultural land was the mark of progress on the American frontier, and the farm signalled and enacted the colonial march across the continent. In this view, the farm is the pastoral garden that settlers carved out of savage wilderness. It provides a "mystical state where life exists in "tranquillity, peace and contentment" (Peterson 1990, p. 11-12). Calls to preserve the family farm are also calls to protect the mark of American civilization and the hope that there are still ways to escape modernity.

Between wilderness and the city, farmers are affected by consumer and political whims on one side, and those of "Mother Nature" on the other. In this space, farmers must perpetually confront forces beyond their control, but over which they must prevail for the good of the nation. Sacrifice is thus essential to the profession. When successful, farmers are the quintessential American heroes; when they fail, they are the pathetic hero for whom many have grieved (cf. Berry 1997). Franklin Roosevelt expressed this agrarian heroism after touring the parched American West in the summer of 1939: "No cracked earth, no blistering sun, no burning wind, no grass-hoppers are a permanent match for the indomitable American farmers" (quoted in Peterson 1990, p. 14). As this litany of environmental ills suggests, farmers are always acted upon by nature, the state or corporations, in more recent versions of this story. They are the unwitting heroes (or victims) in the great American drama, making their efforts all the more virtuous.

It is not surprising, then, that speaking for family farmers, and particularly organic family farmers, was crucial in Sonoma. Farmers are at once the source of the nation's long-term well-being and the underdogs, perpetually confronted by forces beyond their control. Harnessing this voice, GE Free Sonoma and the Family Farmers Alliance could advance their claims in the interest of the nation and that of the environment. Whether or not this was a conscious effort is of little consequence for the moment; the bitter media struggle is enough to illustrate the resonance of agrarian populism in the minds of both organizers and the general public.

Drawing on the region's extant agrarian populism was easy for anti-biotechnology activists. Yet, doing so is problematic, particularly as it does not alter existing common sense. Agrarian arguments challenge industrial agricultural models but they do not

question broader political economic structures and power relations in the 21st century United States. Nor do they open the agrarianism's moral and political assumptions and silences to debate.

Agrarianism might mobilize opposition to the biotechnology industry, but a moratorium to defend the "family farm" privileges a particular normative landscape vision and perpetuates environmental and spatial injustice. Alternative agriculture is arguably a white project, emerging and deriving much creative energy from white communities in large (and Western) urban settings (Guthman 2003a, Lockie 2002, Belasco 1993). It focuses attention on industrial agriculture's environmental and rural problems and ignores questions of distributional and employment justice. Agrarian populism is largely silent on the conditions of agricultural labourers and the allocation of economic and nutritional benefits of production across social groups. The solutions it proffers – small, diverse farms, farmers markets and CSAs – are not necessarily solutions to food security and may exacerbate inequality by increasing the entitlements necessary to access food. Moreover, as Rachel Slocum (2007) argues, direct marketing venues are white spaces regardless of the colour of bodies within them. Their existence reproduces a certain agricultural and economic structure desired by white bodies therefore further excluding brown ones from social and political economic power. Furthermore, the racialized character of these spaces may intersect with their moral loading to further stigmatize poor non-white (and white) communities who for financial reasons or for simply a lack of comfort in the space do not participate. So whose rights and perspectives does the moratorium protect?

Agrarian discourse also contradicts calls for rational and democratic control of technological change. As I just noted, arguments about family farms speak to and for a limited segment of society. More crucially though, instead of asking individuals to consider the impacts of agricultural biotechnology and the state of the 21st century agri-economy carefully, agrarianism plays the common sense that organic is "green" and family is "good". Moreover, genetic engineering is portrayed as a singular, negative project limited to large-scale industrial production, not as a technology resulting from a particular political economic history. In essence, GE crops are incompatible with the family farm. Are they? My purpose here is not to answer this question, in part because it depends on the social and material context of these crops. Rather, it is to suggest that in begging this question, agrarian discourse shifts discussion from the technology as a package of political economic practice to common sense judgements of agricultural models. This is a political move incommensurate to questions of corporate control and the structures that stifle democratic participation in policy-making. The initiative gave individuals the chance to vote on the presence of GE crops in Sonoma, but it did not increase the population's political, ecological, agricultural or technological literacy. Rather agrarianism makes political campaigns about justifying the moral worth of "alternative" and "conventional" or "small" and "big" agricultural forms. Thus, such arguments shifted the political discussion to a popularity contest between farming types. Citizens did not really vote for or against GE, but for or against family farming.

In addition, the conflation of populist ideals with organic agriculture obscures the industrialization and conventionalization of organics (Guthman 2004). Perpetuating this connection may reinforce the industrial logics that allow biotechnology to emerge and

thrive. Moreover, the image of the lone, male family farmers out there on the edge of civilization, battling the elements and now the state and corporations, does a great disservice to social justice. As Brown and Getz (forthcoming) argue, agrarian populism hides the role of hired and mostly seasonal farm labour in alternative agriculture. Mobilizing the family farmer mystique reinforces the marginalization of migrants by ignoring the issue and focusing attention on agro-ecology, food quality and rural development.

Protecting Sonoma's Nature

Protecting the county's environment from genetically engineered crops was the second major discursive tactic mobilized by GE Free Sonoma to garner support for the moratorium. In press releases and campaign fliers, the group reiterated the standard arguments of anti-biotechnology activism, stressing that GE crops would inevitably harm the region's "natural" health. Organizers recognized, however, the scientific and strategic limitations of mobilizing the public using strictly ecological arguments. Genetic engineering is a relatively young technology and much of the current understanding of the interactions between GE crops and "wild" ecosystems comes from scientific conjecture, laboratory assays or limited field trial data. Even if this were not the case, organizers agree it is not enough to explain the effects of gene flow, species loss or endogenous pesticide production; to make people care about agricultural biotechnology they have to make them understand these effects as urgent and imminent threats to Western environmental ideologies. Thus, while many of the environmental arguments mobilized by anti-biotechnology activists in Sonoma (and beyond) rest on sound scientific studies or reasoning, they carry with them the moral overtones of the broader

American environmental movement. Specifically, nature is an ordered, external moral guide, which protects the integrity of the human species and a standard against which to judge human action (Cronon 1995a).

In this section, I use three snapshots to problematize the common senses of nature that informed the campaign. First, the group's definition of genetic engineering suggests an ordering of nature according to Linnaean taxonomy. Agricultural biotechnology is a violent trespass of species categories and natural laws. Second, the group's arguments about genetic contamination portray a desire to maintain an unspoiled state of nature – a pure, moral counterpoint for human decadence (Williams 1980). Third, I return to the campaign's iconography and discuss the political significance of the monarch butterfly and the sense of nature as innocent and fragile portrayed by its use. My point in highlighting these discursive tactics is that drawing on common sense understandings of nature contradicts organizers' political economic goals and impeded Measure M's success. The group's environmental discourse reinforces normative understandings of "pristine" nature, extracts humans from the environment, and perpetuates genetic and ecological reductionisms that expose the group to accusation of ludditism, ignore cutting-edge science and reproduce a Western environmentalism inculcated in racial, gender and colonial exploitation.

Genetic Engineering – Violating Categories

Few of us would question the distinction between a cow and a tree or a fish and a tomato. Moreover, many would comfortably accept a fundamental difference between that same tree and tomato. The system of kingdoms, classes, orders, genera and species known as Linnaean taxonomy infuses popular culture, and becomes particularly contentious when

challenges to biological boundaries emerge. Indeed, a great deal of environmentalism involves policing the borders between "natural" categories (Kosek 2006).

Genetic engineering and genomics defy rigid taxonomic categories, allowing humans to move material between and within organisms regardless of species or kingdom. It is unsurprising then that arguments that humans are trespassing into nature's domain are standard fare in the anti-biotechnology debate. More than a decade-worth of consumer surveys illustrates the prominence of such moral arguments. Survey respondents consistently condemn agricultural biotechnology as "tampering", "messing", "meddling" or "interfering" with the natural order (Cook 2005, Macnaghten 2004, Grove-White et al. 1997). For some, as Price Charles wrote in 1998, manipulating species at a genetic level "takes us into areas that should be left to God" (Prince of Wales 1998). For others, GE technology attempts to evade nature's authority, and is thus doomed to destroy itself or the environment on which humans depend.

GE Free Sonoma's organizers were not ignorant of these perceptions but saw them as important discursive strategies. For example, despite the rarity of transgenic GE products, the group focused its definition of genetic engineering on transgenesis - the transfer of genes between species – and particularly mixing between kingdoms:

> Genetic engineering (GE) is a new process in which genes are removed from one organism (human, plant, animal, bacteria or virus), then inserted into another organism. This haphazard and unpredictable technology differs fundamentally from traditional plant breeding because it forces the exchange of genes across species barriers in ways that never occur in plants and animals in nature. For example, biotech corporations have engineered fish genes into tomatoes; spider genes into goats; jellyfish and mice genes into potatoes; and even human genes into rice and pigs. (GE Free Sonoma 2005a)

By ignoring the more common biotechnology applications that multiply, reverse or delete genes within a single organism or species, the definition elides applications that might evoke less public concern (Bowring 2003). Instead, it focuses attention on practices that violate popular conceptions of impervious species categories and particularly stark delineations between animals and plants and humans and animals.

Moreover, the group's definition of genetic engineering not only suggests GE crops and animals are unnatural because they are mixed, but that genetic engineering is a violent intrusion into nature that "forces the exchange of genes across species barriers." As such it "differs fundamentally" from "natural" reproduction and could "never occur" without human intervention. At issue are not just GE products, but the technology's contravention of "natural law" and the scientific arrogance it illustrates.

While it is important to note that GE Free Sonoma's organizers purposefully avoided the "Frankenfoods" discourse that dominates anti-biotechnology politics, evoking fish-tomatoes and mouse-potatoes is functionally comparable. These organisms and the scientific hubris of their "unnatural" production parallel Shelly's story and draw on the same cultural perceptions of monsters. In the original tale, the product of human intervention threatened social harmony; from this new variant we can add a threat to nature's harmony (Cook 2005).

So what if GE products are "unnatural"? What does this definition infer? At the very least, it assumes an ontological distinction between nature and society; that the products of human invention exist outside nature and in many ways in conflict with nature (Castree 2001a, Cronon 1995a). Implicit in this categorization are judgements about what is good and bad or normal and abnormal. The connotation of unnatural with

something corrupted or in need of remediation is common sense in Western culture (Castree 2001a). Invoking GE crops as monstrous and GE practice as something that "never occur[s] in plants and animals in nature", condemns the technology on moral not just ecological grounds.

However, in practice the distinction between the natural and the unnatural in GE Free Sonoma's discourse is fuzzy. As an agricultural issue, crop biotechnology belies claims that non-GE products are elements of pristine nature and thus the obvious object of protection. The definition must make some forms of intervention morally acceptable. Thus, "traditional plant breeding" is tolerable because breeders mimic natural reproduction and act in accordance with Linnaean taxonomy. This discursive move is not without precedent. Writing about the history of "nature" in Western culture, Raymond Williams (1980) highlights the profound implications of Darwinian thought. Evolution, he argues, gave nature a history and a "historical force" (Williams 1980, p. 74); It was no longer the static backdrop for the human drama, but an ongoing drama of its own in which Mother Nature was the "selective breeder". With this new perspective on nature, breeding, while still a method of "intervening" and "controlling" natural history, was reconceptualised as a natural process; hence the idea, shared by both sides in the biotechnology debate, that modification (whether traditional or genetic) is simply "giving nature a helping hand."

In sum, in defining genetic engineering as transgenesis GE Free Sonoma taps into existing common senses and condemns GE practice as scientific hubris. GE products become monstrous violations of categorical distinctions and GE nature is incommensurate with real, good, untouched nature.

Genetic Contamination – Nature Lost Forever

Growing GE plants for experimental or commercial purposes renders Sonoma's environment vulnerable to genetic contamination through cross-pollination or seed flow. In addition to framing genetic engineering and its products as disobeying natural categories and processes, GE Free Sonoma framed GE crops as a source of ecological contagion and thus a threat to nature's purity. Take for example the following three statements from the campaign's main flyer:

> We need to protect the extraordinary diversity of Sonoma County's ecosystems from irreversible genetic contamination by related GE plants, fish or trees.
>
> If introduced, GE crops will inevitably contaminate both nearby crops and related native plant species… and will irreversibly harm our Sonoma County environment.
>
> Once our farmers and environment become contaminated by GE plant and fish varieties we will never, ever have a GE-Free county. There is no turning back. There is far too much risk, and very little gain. (GE Free Sonoma, 2005)

Two things are immediately apparent. First, contamination is inevitable. It is independent of geography and agroecological practice; it is about time and not space. Thus, protection is not a matter of adjusting material practice, but of preventing the moment of introduction. Second, the effects of contamination are geographically and ecologically specific. GE crops threaten *Sonoma's* nature – its "extraordinary diversity" and constellation of "native plants species." In essence, GE nature threatens to replace a local nature that occurs nowhere else.

Given the long history of agriculture and logging in the county notions that GE crops threaten a pristine environment would appear to be difficult to sustain. However, the emphasis on Sonoma's uniqueness begs this question and suggests that there remains

a unique biological reality external to human presence - the ecological core of Sonoma county.

A third aspect GE Free Sonoma emphasized is the particular nature of genetic pollution and ecological change that results. An organizer explained to Jim Wasserman of the *Sacramento Bee*: "Once it's out there you can't recall it. This is not like a defective product you take back. It's not like chemical contamination. This is biological contamination that lasts forever" (Wasserman 2005b). Again, contamination is an issue of time. It is irreversible. Introducing GE crops is a biblical fall, throwing Sonoma's residents out of their West-coast garden.

The accuracy of these statements is not my interest here. There are reasons to be concerned about gene flow between GE and non-GE crops. I am interested though in the assumptions about nature that allow such statements to do their political work. The dominant conception is of nature as an external and pure object we must protect from human harm (Braun 2002, Cronon 1995a). The fear is no longer a violation of categories and laws, but the irreversible loss of pristine nature. Genetic contamination is far more dangerous than traditional forms of chemical pollution against which environmentalists are used to battling. Chemical contamination is reversible (eventually); engineered genes, however, alter the very essence of natural objects, bringing them irreversibly into the social realm. Moreover, while chemical pollution requires continual human intervention, GE hybrids are able to self-reproduce and spread the problem across time and space. Thus, genetic engineering threatens to destroy all nature, not just that of engineered plants and animals.

Underlying these arguments is the sense that a genetically engineered nature is fraudulent and corrupted (remember the definition of this monstrous nature and the violence of its production). A genetically engineered landscape is no longer the pristine backdrop for human action, nor can it be a place of respite from urban life (Cronon 1995a). It will be forever touched by human hands. This fear is particularly crucial in Sonoma county, which promotes itself as a place of pastoral calm.[37] Given the immediacy and inevitability of GE contamination, protecting nature requires spatial exclusion.

Fluttering Monarchs – Delicate and Complex Nature

The monarch butterfly is widely used by anti-biotechnology activists to symbolize the threats of genetic engineering and vulnerability of nature (Schurman, Munro 2003) GE Free Sonoma is no exception. The insect graces the group's posters, buttons and bumper stickers (Figure 4) and concern for its fate was important for mobilizing the public to support Measure M.

[37] County government advertisements, which focus on the area's unique beauty and "scenic coastlines" (Sonoma County 2008, online) are illustrative here as is the tourism bureau's website that sells the region as "Quaint towns. Crashing surf. Luxurious spas. Towering redwoods. Mystical rivers" (Sonoma County Tourism 2008, online).

Figure 4: GE Free Sonoma Button and Bumper Sticker

Note: From RJ Roff, 2006

The monarch owes much of its fame in biotechnology circles to a one-page "scientific correspondence" published in a 20 May1999 edition of the prestigious journal *Nature.* The authors, John E. Losey, Linda S. Rayor, and Maureen E. Carter, reported preliminary findings of an experiment to test the effects of engineered Bt corn pollen (*Bacillus Thuringiensis*) on non-target Lepidoptera species. Bt corn is engineered to ward off the European corn borer, a moth caterpillar that costs US farmers upwards of $1 billion USD annually (Ostlie, Hutchison & Hellmich 2002). The researchers worried that pollen transfer between GE crops and the milkweed plants that often surround fields might threaten Monarch populations.

The study, which was based on a 4 day trial in which Monarch larvae were fed Milkweed leaves dusted with GE pollen had, "potentially profound implications for the conservation of monarch butterflies" (Losey, Rayor & Carter 1999, p. 214). The group found pronounced mortality (44% of the sample) in the trial group relative to the control

and a significant reduction in body size and feeding frequency. These short and preliminary findings sparked an international scientific and media controversy. Published in almost every major newspaper in the Western world, they spurred the first major round of public debate regarding the ecological merits of GE crops and did much to legitimize the emerging anti-biotechnology movements in Europe and the United States (Lambrecht 2001). In the wake of the study, Japan tightened regulations on GE corn, and by September 1999 had suspended all future approvals of GE crops until their environmental impacts could be independently verified (Saegusa 1999). US biotechnology investors fled after Japan's announcement and the value of Monsanto's stock fell 10 percent in four months.

The biotechnology industry's initial confidence that, "the public [would] not risk harming US agriculture and trade" quickly disappeared (Reichhardt 1999, p. 287). In response, the industry formed the Agricultural Biotechnology Stewardship Working Group (ABSWG) to fund follow-up studies to Losey et al. (1999) and convened the so-called "Monarch Research Symposium" on November 2, 1999 in Rosemont, Illinois (Goldberg 1999). The Symposium, sponsored jointly by the ABSWG and the U.S. Department of Agriculture's Agricultural Research Service, brought together leading experimental entomologists, journalists and representatives of a number of top US agribusiness firms, including AgrEvo USA, American Crop Protection Association (ACPA), Biotechnology Industry Organization (BIO), Dow AgroSciences LLC, Monsanto, Novartis Seeds Inc., and Pioneer Hi-Bred International, Inc. Although the results presented were mixed, the industry claimed the Symposium a success and issued press releases stating that Bt corn posed little risk to monarch butterflies. But as Becky

Goldberg, a senior scientist at New York-based Environmental Defence Fund wrote in her scathing report on the Symposium:

> In short, by the end of the day it became abundantly clear that the major purpose of the symposium, from the perspective of its sponsors, was not careful and deliberate evaluation of just completed, and in some cases, still incomplete scientific research. Instead, the meeting was designed and press interactions were orchestrated to provide the impression of scientific consensus when, in fact, no such consensus existed among meeting participants. (Goldberg 1999)

The Symposium was a sham. On November 1st, the day before the conference, BIO organized a call between selected scientists and reporters to announce that the Symposium would produce positive conclusions that Bt did not pose a threat to non-target Lepidoptera. However, the Symposium could not quell the public and scientific debate and the wave of empirical research on the non-target effect of Bt pollen continues.

It is possible that the study would not have gained such prominence had the scientists chosen a different species. With their striking orange and black wings, phenomenal migration and a chemical defence system envied by cold war strategists, the monarch is one of the world's most well-recognized and beloved insects. Diane Ackerman, author of the *Rarest of the Rare*, summarizes the species' attraction:

> It's easy to get mesmerized watching the Monarch glide overhead, with the sun shining through their wings.... They are silent, beautiful, fragile; they are harmless and clean; they are determined; they are graceful; they stalk nothing; they are ingenious chemists; they are a symbol of innocence; they are the first butterfly we learn to call by name. (in Jack 2000, p. 4)

Monarchs are the stuff of lazy summer days and childhood wanderings, harmless and fragile. Despite their powerful poisons and transnational expeditions, they are symbols of vulnerable nature and, more importantly, an innocence that is easily juxtaposed to profit-driven corporate agendas.

Monarch love is high in the United States - the insect was nominated a national symbol and a national event three times since 1987 (Lockwood 2004, Brower 1990, Stevens 1990, Young 1987). Monarch sanctuaries exist across the country and in the insect's Mexican wintering grounds; schoolchildren "rear" monarchs in their classrooms and plant milkweed in their backyards. The United States federal government even sponsored a Monarch Flyway Conservation Workshop (December 2006) to develop a trilateral North American Monarch Conservation Plan.

Thus, it is perhaps understandable that GE Free organizers (and the rest of the anti-biotechnology community) adopted the butterfly as their mascot. When I asked why the group chose the insect despite the uncertainty of the Losey et al. (1999) study, one organizer told me, "We thought it was a good association. We're trying to find positive images." Indeed, the monarch is the "Bambi of the insect world" (Lambrecht 2001, p. 78). Regardless of the outcome of the ongoing scientific debates surrounding the original 1999 experiment, the media frenzy endowed the insect a new significance as symbol of the unfettered and irresponsible disregard for nature, and the disastrous potential of genetically engineered crops to forever destroy our innocence (Jack 2000).

What unites the common senses of GE Free Sonoma's ecological arguments is the fear that nature – the pristine, fragile and external counterpoint to society – will disappear. Biotechnology firms are reckless; even, in the words of one organizer, "evil". They senselessly endanger the common good and life itself for profit. Conditioned by decades of environmentalism, these arguments fit easily into Sonoma's popular discourse of sustainability and alternative lifestyles and are thus straightforward ways to mobilize

public concern. They nonetheless run counter to decades of sociological, geographic and ecological research demonstrating the profound interrelationships of "natural" and human systems (Castree, Braun 2001, Cronon 1995b, Smith 1996, Wark 1994, Smith 1991, Fitzsimmons 1989, Merchant 1980). This contradiction is more than academic; it has profound consequences for GE Free Sonoma's socio-economic impact. Drawing on existing understandings does not challenge individuals to think critically, nor does it foster a great deal of reflexivity and scientific literacy. It may mobilize opposition to genetic engineering in the short term; but at what price? As Kosek (2006) and others (Gregory 2001, Neumann 1997) point out, contemporary environmentalism is intricately intertwined with histories of racism, sexism, genocide and colonialism. Conceptions of nature as pristine and external reproduce an ecological blindness that abets the marginalization of vulnerable communities around the globe (Walker, Fortmann 2003, Neumann 1997) and allows environmental movements' efforts to be "cast as attempts to guard and restore a natural, God-given purity, by the pure, for the pure" (Kosek, 2006, p.180). Drawing on these common senses, the GE Free movement cannot help but perpetuate an uncritical environmentalism that has too long dealt ineffectively with race and gender and colonial legacies.

Narrowing the debate to issues of protecting a pristine nature from violations of natural law also had important practical consequences for the moratorium's success and the arguments available to GE Free Sonoma. I return to the strategic openings the discourse provided the FFA and CHFS below, but at present it is crucial to understand the discursive closures created by the group's emphasis on "nature". Conceptualizing nature as external to humans, genetic reproduction as an orderly and understandable process and

species categories as impenetrable, discounts one of the most powerful arguments against biotechnology: that our understanding of genetics is rudimentary and incapable of producing a precise or predictable practice (Bowring 2003). Rather than capitalizing on the uncertainty of genetics, GE Free Sonoma claims to know what are and are not "natural" processes of genetic change. In so doing, the group perpetrates the same hubris as biotechnology firms by assuming a god-like understanding of existence.

"Nature" arguments also re-inscribe classical genetics' reduction of animals and plants to their constituent parts, correlating minor genetic change with changes in the quality of an organism. Thus, perversely, arguments about maintaining nature's purity reinforce the argument used to allow patents on biotechnology products: a single genetic change fundamentally changes nature.

Recent advances in both evolutionary biology and quantitative genetics potentially delegitimize the entire biotech project by refuting simplistic arguments about natures fragility and organisms' reducibility to genetic structures (McAfee 2003a, 2003b, Fox-Keller 2000). Animals and plants have a remarkable ability to maintain their basic constitution despite random mutation, deleted genes or addition of novel ones (Bowring 2003). In contrast to the linear one-gene/one-trait account, biologists now that phenotypic characteristics result from the interaction of multitude of genes and the time-dependent action of enzymes. In addition, environmental factors appear to determine far more than once believed. Contemporary geneticists wrestle with the complexities of adaptive mutation, autonomous amplification and epigenetic inheritance, through which cells actively change in response to ecological stress. Genes turn on, switch off or modify their function throughout an organism's life.

Together these developments in genetics throw a wrench into standard conceptions of inheritance, indicating that cellular adaptations to environmental conditions can occur within a single individual. Inherited genomes are responsible for the bulk of individual traits; yet, phenotype and genotype are no longer presumed to be determinate at birth. Random genetic mutation, natural and sexual selection and individual cellular adaptation combine to fuel species change (Bowring 2003).

More important to anti-biotechnology activism, genes move horizontally across species categories or between unrelated individuals (Gogarten, 2000). Viruses and bacteria - which hijack host cells and insert fragments of DNA or RNA - are the most common vectors of these lateral transfers. When combined with transposons or "jumping genes" – common genes that produce enzymes capable of cutting and reinserting segments of DNA in different locations in the genome – viruses and bacteria become nature's genetic engineers, performing many of the same functions as biotech scientists.[38] More than simply highlighting the emergent quality of genetic structures, transposons and lateral transfers poke holes in the idea of impenetrable barriers between "species."

Recognizing that genomes rearrange over an organism's life and genetic fragments can be shared between individuals and species complicates modern ecological thought. By vilifying GE crops as "unnatural" and GE technology as a radical departure from "normal" genetic change, anti-biotechnology activists reify outdated ideas of genotypes as "inviolable messages from ancient ancestors passed on faithfully from generation to generation" (Campbell in Bowring 2003, p. 35). That is, species categories have

[38] Barbara McClintock first described transposons in the 1940s but her findings were ignored for almost half a century by the academy. It was not until 1984 when McClintock received the noble prize for her work that the scientific establishment officially recognized the importance of these small DNA fragments.

impermeable genetic boundaries and change occurs only through the mixing of existing traits or random mutations. Organisms appear as sacred heirlooms and packages of unique genetic information. By ignoring or actively hiding genetic reality, this depiction renders GE Free Sonoma's arguments vulnerable to powerful critiques rooted in "cutting edge" science. Moreover, the group misses two important strategic opportunities. First, activists neglect challenges of scientific assumptions of genetic stability buttressing agricultural biotechnology. It is obvious genetic function is far more complex and messy than previously believed. If changes occur within an individual and the expression of traits is determined not by a single gene but by environmental factors and multiple genetic components working in synergy, than how can biotechnology firms claim precision in the lab or stability in the field?

Second, ignoring the movement of genes across species and kingdoms prevents GE Free activists from highlighting the fundamental interconnectivity of life on earth. If genetic sequences can move between categories, then the dangers posed by GE crops extend beyond close relatives to every living organism in an ecosystem. In fact, in 1998 a team of microbiologists reported that engineered genes – particularly that for antibiotic resistance - could be transferred between sugar beets and common soil bacteria, which could then introduce the GE genes to unrelated plant and animal species (Gebhard, Smalla 1998).

My argument might appear to contradict the work of scholars like McAfee (2003b) and Bowring (2003) who criticize the biotechnology industry's reduction of plants and animals to their constituent parts and the erasure of important distinctions between species. I do not suggest that this is incorrect. Rather, my point is that reverse arguments,

those that deny the plasticity of biological existence and seek to construct and preserve rigid ecological categories (those between species, and between humans and the environment) do a similar injustice to both nature and science and close off powerful strategic openings, undermining the goals for which they are presented.

Protecting Sonoma's Women and Children

Along side the discourses of protecting nature and family farmers is one of protecting women and children from genetically engineered foods. While not a primary focus of campaign literature, GE Free Sonoma actively capitalized on images of white mothers feeding helpless infants in highchairs. For example, the group introduces readers to its website with a photo of a smiling woman gleefully spooning pureed vegetables into a child's mouth . The kitchen is brightly lit and, at first glance, the image conveys a sense of order and calm. Yet on closer inspection, the food the mother lovingly feeds her child holds unknown elements, potentially threatening the infant's health, purity and innocence. Indeed, GE Free Sonoma explicitly calls on the residents in its posters to "Protect ...our Children's Health from Contamination by Genetically Engineered Crops."

Even a cursory review of the websites of other US anti-biotechnology organizations reveals similar, if not identical, representations. In some versions, such as that widely used by the True Food Network, the mother is blindfolded, symbolizing her disempowerment and the unknown threats posed by GE foods. In others, children eat alone, but still threatened by unseen danger. The cover of Andrew Kimbrell's (2007) latest book, *Your Right to Know: Genetic Engineering and the Secret Changes in Your Food* depicts a young boy happily drinking a rather large glass of milk. The choice of milk, as DuPuis (2000) reminds us, is strategic. Traditionally an unquestioned source of

strength and nourishment for growing children in the Western world, milk is no longer safe. The introduction of rBGH and the discovery of associations between the hormone, cancer and developmental disorders render it a wolf in cow's clothing. Using children's food juxtaposes biotechnology to innocence and care giving, inferring that genetic engineering has no place in healthful food.

While it is certainly true that women remain disproportionately responsible for childcare and food preparation (Counihan 1999, Fagerli, Wandel 1999, Lupton 1996), these images draw on problematic gender discourses. To begin, there are few other symbols of vulnerability as powerful as mother and child (Carpenter 2005). Constrained respectively by gender and age, the pair is widely assumed the proper recipient of society's protection. As Carpenter (2005) notes, this assumption is rooted in chauvinistic perceptions of female fragility and passivity and essentialized notions that exclude men from parental responsibility. Maternal images reproduce common sense understandings of women as "bread-makers" and men as "bread winners" (Bell, Valentine 1997). The message is clear: The wife or mother is responsible for the health and nutrition of family members. It is her job to protect children from outside threats. As Lupton (1996, p. 40) elegantly puts it, a mother "must maintain eternal vigilance to surround babies with a *cordon sanitaire*, protecting the infants' essential purity and innocence from the dirt and pollutants that threaten their health." Reducing a woman's most important role within the family to simply "caregiver" obscures the increasing importance of paid employment and discounts the prestige she may accrue from work outside the home. Family work is rarely viewed as "real" work, and reproducing the link between women and home reproduces gender hierarchies by reinforcing an unequal division of labour and equating women with

non-economic production. In short, GE Free Sonoma and other anti-biotechnology groups (inadvertently) construct the impacts of GE foods as gender-specific.

Feminized imagery is problematic at once because it reproduces patriarchal ideologies, but also, and consequently, because it potentially limits interest in the issue. Making GE foods a "woman's issue" may devalue the importance of its impacts and the credence the subject merits within a patriarchal society. Thus, maternal imagery undercuts its own mobilizing power.

Given GE Free Sonoma's ultimate goals, the use of feminized imagery in the campaign intrigued me. Why, if the movement seeks to develop alternative socio-economic relationships, would it resort to tired essentialisms? Is it appropriate to capitalize on conventions that circumscribe women's' roles? Yet, despite recognizing the problems of constructing the issue along gender lines, not to mention the limit of "food safety" data, my informants defended their use of maternal imagery:

> I think it's perfectly legitimate to say, "What are you feeding your kids?" .... This [GE food] isn't uniquely bad, but we never said it was uniquely bad. We're just saying ... a prudent person would choose not to feed their kids genetically engineered corn. ... And to show that mother and baby with the baby formula- some mash or something or other - I feel totally comfortable with that.[39]

When I asked about a campaign flier inferring that GE food posed a risk to children's health, another responded:

> We got a bit of flack for it and this was as far as we were willing to go....We felt this was ethical, because they really are using us as guinea pigs by exposing us to [GE food]. It's a very simple [message].[40]

Not withstanding these assurances, organizers understood the ideological repercussions of such images. They justified their actions in terms of strategy:

[39] Personal Interview, GE Free Sonoma, Organizer A

[40] Personal Interview, GE Free Sonoma, Organizer B

> *Robin Jane*: Did you ever consider the ideological meaning of portraying a "vulnerable" woman and a "vulnerable" child?
>
> *Informant*: Oh, yeah. Of course. So what are we going to do? Like, pick some like older pot-bellied man and his pimple-headed teenaged kid? It's like, no. And it's not disingenuous, it's just being smart.[41]

Associating GE foods with mothering and children's health is a strategically powerful of mobilizing women. Linking the issue in this way portrays it as a threat to future generations and the ability of mothers to perform their socially necessary task. A mother's role is to protect and nourish her children before all else. That a woman has no way of distinguishing GE products from "healthy" foods undermines her ability to perform her duty to both her family and the broader society (Lupton 1996). Yet, these essentializations obscure the diversity of parental relationships and perpetuate patriarchal social hierarchies. They reduce women to wife and mother and men to worker. If this were not enough, the discourse may undermine the group's ability to mobilize the public by reinforcing the very gender hierarchies that de-value feminized issues.

IV) Fighting Back

With Mendocino's victory still a recent memory, agribusiness interests were quick to launch a counter offensive in Sonoma. Led by the Sonoma County Farm Bureau, agribusiness associations established the Family Farmers Alliance (FFA) to galvanize public sentiment against Measure M and funnelled hundreds of thousands of dollars into advertising and media. In the final count, opposition groups raised over $431 812 to defeat Measure M, while proponents spent $388 192 during the campaign (Johnson 2005b). The Farm Bureau attacked the measure as an anti-modern initiative that would

[41] Personal Interview, GE Free Sonoma, Organizer A

isolate local growers from "the most modern methods in agriculture" (Stunk in Hoare 2005), a campaign of "fear and misinformation" and an attempt to exploit public ignorance by "preying on an urban community that doesn't even understand how crops grow anymore" (McCorvey in Bay 2005).

Above all, the FFA capitalized on GE Free Sonoma's campaign discourse to direct the debate along two lines. First, as discussed above the opposition to Measure M successfully focused the debate on who could legitimately speak for family farmers. Funded almost entirely by the Farm Bureau, the FFA had a significant advantage from the outset. Most Sonoma County residents are unaware that the Farm Bureau is the largest and most powerful agribusiness lobby in the United States. Rather, most residents believe the local chapter with over 3000 members, the bulk of which are vineyardists, is generally a non-partisan organization, democratically representing the interests of all farmers regardless of size or agroecological approach. Adopting the moniker "Family Farmers", the FFA strengthened this perception, proudly announcing it had the support of leading agricultural organizations such as the Sonoma County Grape Growers Association, Western United Dairymen, Russian River Valley Winegrowers, California Women for Agriculture, the North Bay Dairywomen and the California Healthy Food Coalition (a pro-GE arm of the California Farm Bureau). With these voices behind it, the group argued that Measure M "could devastate local Family Farmers" by putting them at an "obvious competitive disadvantage" (FFA 2005a). More important, the initiative seriously threatened vintners and grape growers who were already "terrified of the Sharpshooter" and Pierce's Disease (FFA 2005b).

To counter these claims, GE Free Sonoma highlighted its own endorsements from prominent *organic* farming associations. The debate consequently coalesced around which group enjoyed the support of legitimate environmental and social stewards. Substantive arguments about the economic, political and social ramifications of the corporate-led biotechnology model were supplanted by efforts to tap into existing perceptions of agriculture. The debate was less about genetically engineered crops than it was about which type of farming the county's urban population desired.

GE Free Sonoma's campaign discourse afforded the FFA a second crucial avenue of attack. Preferring to focus on standard food safety and environmental tropes, anti-biotechnology activists refrained from discussing the scientific and political economic intricacies of genetic engineering. They took for granted that voters would recognize the Measure's narrow scope and understand that the group was not trying to limit all biotechnology. As my informants were quick to point out, biotechnology comprises a host of applications, many of which they support, and the Measure was specifically directed at agricultural crops and live, self-reproducing organisms. By discounting the importance of communicating the distinction between medical, scientific and agricultural application, and relying on unnecessarily simple depictions, GE Free Sonoma opened the door for the most powerful counter-argument: that Measure M would threaten pets, livestock and children by banning critical new vaccines from the county. As McCorvey told the *Capital Press* in June (Bay 2005), "The ordinance would prohibit the use of genetically engineered vaccines.... People need to understand their pets are at risk, their horses are at risk." To drive this "understanding" home, the FFA released a series of media reports, fliers and radio ads in the weeks leading up to the election. Quoting Dr.

Mary Maddux-Gonzalez, Sonoma County's public health officer, the group claimed that Measure M would "outlaw new vaccines that fight Avian Influenza, HIV and West Nile Virus" (FFA 2005b). In the advertisement that appeared in the final days of the campaign, a threatening male voice told viewers, "the Redwood Empire Veterinarian Association warns, 'Measure M will be a dramatic step back for the care of pets and livestock'" (FFA 2005b).

The FFA's eventually admitted to misquoting Maddux-Gonzalez and affirmed that the she had actually said that Measure M *would not* affect vaccines currently available for human use (Norberg, Rose 2005). Nevertheless, the Bureau's original arguments struck fear into the hearts of many Sonoma County voters. With only days before the election there was little GE Free Sonoma could do but throw the rest of their campaign funds into combating the claims. They published their own press releases correctly quoting the health officer and blaming the FFA for intentionally trying to scare voters. They sent out a new glossy flier, which prominently quoted a local veterinarian in support of the Measure. It was too little too late. The opposition capitalized on GE Free Sonoma's oversight at a crucial time. The substantial number of the absentee ballots mailed in advance of the November 8th election date sealed Measure M's fate before the ballot booths were even erected. What many of my informants called the FFA's "scare tactics and lies" successfully swayed undecided voters. By November 9th, Measure M was decisively defeated, 56 to 44 percent.

V) Concluding Remarks: Finding Victory in Defeat?

Despite losing by more than a 10% margin, GE Free Sonoma's organizers remain optimistic. As they wrote in a leaflet distributed in the weeks after the election, the

campaign was in many ways an important victory for the US anti-biotechnology movement. GE Free Sonoma mobilized over 1000 volunteers and "transformed them from passive observers to active participants" in the political process (GE Free Sonoma 2005b). They "put together one of the biggest people-powered campaigns" in the County's history and in so doing focused public and media attention on agricultural biotechnology. In total the group estimates that it directly contacted over 115 000 homes and spoke with many times that number of residents.

When I spoke with organizers, they stressed the importance of this newly created capacity:

> So, we lost an election. So what? I've got 76 000 people who've gone on record saying it's a bad idea. And I've got a lot of farmers who've gone on record saying they won't plant it. And I've got a lot more farmers and growers who are kind of nervous about it even if they think it's a good idea they know that it was barely defeated in this county and that they're going to have a lot of neighbours up in arms if they even think about planting this stuff.[42]

Later in the interview, my informant argued:

> We have a base, we have a constituency. We have, now, several thousand people who are willing to write a letter; some on their own initiative, more when they get asked. And we have the list to ask. That means that there's organized resistance in those counties [that have mounted GE Free campaigns] to anything the biotech industry tries to do at any level: local, state, or federal.

From this perspective, the election was merely a formality, a necessary galvanizing moment to generate interest and action. Indeed, organizers perceived the GE Free Sonoma campaign from the outset as a "step along the way" and one "battle" in a much longer struggle against the neoliberal corporate order epitomized by the biotechnology

[42] Personal Interview, GE Free Sonoma, Organizer B

complex. Taking this much broader view, organizers noted the widening cracks in the biotechnology industry's dominance and the importance of cultivating seasoned activists.

Indeed, despite the loss in Sonoma there appears to be much to celebrate. My interviews with rank-and-file members support organizers' claims to have introduced a great many people to agricultural biotechnology and produced a new wave of grassroots activism. My informants frequently remarked on the positive impact their participation in GE Free Sonoma had on their understanding of the political process. Many also noted that the campaign was the first grassroots movement in which they were involved and that their activities have spurred their interest in community organizing. Others happily remarked that participation has increased their circle of friends and given them a greater sense of community. As I discuss further in chapters 2 and 3, many of these new activists are carrying on the movement, albeit in the realm of private consumption rather than policy advocacy.

In light of organizers' desire to revolutionize social consciousness, it behooves us to examine the movement's broader impacts carefully. By tracing the roots of anti-biotechnology protest in California and the disjuncture between the goals of movement organizers and the tactics employed to generate support I have tried to develop an understanding of anti-biotechnology politics and to illustrate how well meaning action in one sphere can work to propel or stifle social change in another. Relying heavily on common sense understandings, GE Free Sonoma reproduced deeply problematic environmental, gender and agrarian discourses and opened crucial avenues for Measure M's opponents.

Unfortunately, the same contradiction between goals and tactics plagues much of the contemporary movement against agricultural biotechnology. This is not to say that all anti-biotechnology activists seek to scare the public into support nor that they employ the same narratives. However, so long as the anti-biotechnology and broader alternative agriculture movements remain wedded to existing tropes they will be implicated in the reproduction of current political economic structures. Social change of the magnitude desired by GE Free Sonoma's organizers is indeed a long-term project and one that they rightfully argue requires fundamental shifts in consciousness. However, to follow Gramsci (1972, p. 328), true social change comes from avoiding recourse to "instinct" and "impulse" and "working incessantly to raise the intellectual level of the populace." Activists and academics alike have too long ignored the unintended effects of agrifood discourses. If food is to be a means of reconfiguring our political economy, we must keep a watchful eye on the types of baggage we carry with our words.

CHAPTER 2: RESISTANCE FROM BELOW: EVERYDAY ACTS OF LIVING POLITICS

The failure of Measure M in November 2005 rocked the confidence of many GE Free activists and volunteers. Months of precinct walking, public lectures and tabling at farmers' markets and the county's numerous festivals seemed to have amounted to little after counting the votes. While the campaign succeeded in politicizing and mobilizing an unprecedented number of Sonoma County residents, by the time I started my fieldwork in July 2006 organized activity on the issue was waning. In the months following the election, GE Free Sonoma attempted to maintain the group's previous energies and shift them towards developing a new political strategy. With the urgency for action reduced, the interest of many rank-and-file activists diminished in the face of more pressing demands at work and home. Only a few of the activists with whom I spoke continued to participate regularly in organized events.

Yet, struggle does continue in the county, albeit in a different form. A palpable anger still bubbles under the seemingly calm surface in Sonoma and is expressed daily in multiple acts of resistance, most notably strategic consumption. For example, during a particularly memorable interview, one activist refused to eat the corn chips served in the Mexican restaurant where we met. I was startled when she accompanied the action with a string of curses volleyed directly at Monsanto and the Sonoma Farm Bureau. In her view, refusing GE products was a way to confront the "dominating, multi-national corporations

ruling the world illegally."[43] Almost everyone with whom I spoke shared this sentiment. One woman characterized her primary means of opposing biotechnology firms as using "my dollar, just how I spend it."[44] A second woman explained, "I vote with my dollar" despite the fact that, "they're [biotech firms] trying to take our rights to defend ourselves against...genetic engineering."[45]

Strategic consumption is reinforced by efforts to "educate" friends, family members and co-workers and "lead by example" by exaggerating and highlighting politically motivated behaviour. The same activist who refused corn chips takes every opportunity to "shoot [her] mouth off"[46] about the "dangers" of genetically engineered foods and crops. Another prided herself for influencing colleagues, noting that they often mimic her "green" behaviour.[47]

In the following two chapters, I examine these everyday acts of resistance (Scott 1985) and their potential to reconfigure the agrifood system and power relations between the state, corporations and the public. As Scott (1985) notes, seemingly mundane acts of criticism, mockery and the withdrawal of compliance are important and can sometimes affect far greater change than direct confrontation. If so, then to understand the movement against agricultural biotechnology and the potential for this movement to challenge and transform the political economy we must examine the manifold daily acts of resistance. I do so in chapter 3 by exploring three types of resistances used by rank-and-file activists in Sonoma County: (1) GE Free consumption; (2) public and private denial of dominant common sense; and (3) education and friendly enrolment. My central

[43] GE Free Sonoma Activist 10, 31 August 2006.
[44] GE Free Sonoma Activist 17, 27 September 2006
[45] GE Free Sonoma Activist 9, 30 August 2006
[46] GE Free Sonoma Activist 10, 31 August 2006.
[47] GE Free Sonoma Activist 13, 25 September 2006

argument is that when confronted with a "Goliath" biotechnology industry, a state reluctant to curtail the expansion of the GE industry, and the failure of formal political engagement, rank-and-file activists consciously pursue individual and uncoordinated tactics. Evaluating the potential of such tactics requires careful consideration of individual actions as they occur within a given context. Drawing on observation and in-depth interviews, I unpack the intentional and unintentional consequences of each of the primary methods used to confront the biotechnology industry.

The present chapter lays the groundwork for this empirical analysis. The discussion begins with a review of James Scott's (1985) concept of *everyday acts of resistance*. It then moves, in the second section, to a discussion of hegemony as formulated by Antonio Gramsci and reinterpreted by Raymond Williams and Scott. In the third section, I wrestle with the paradoxical notion of counter-hegemonic action and its relationship to alternative food politics and consumption. I separate the theory from chapter 3's empirical analysis largely for issues of readability and length. However, to understand the role of the particular instances of resistance in Sonoma in larger counter-hegemonic processes, it is also important to consider general patterns and structure of hegemony in isolation.

A note on peasants and class conflict

Before launching into a discussion of Scott's work, it is important to note upfront that my analysis does not frame everyday resistance in terms of class conflict. I do so for two reasons: First, because Scott (1990) and his interlocutors have rightfully expanded the notion of everyday resistance from subaltern classes to any subordinate group. Second, because it is not my intention to suggest that my respondents constitute a class or that the

events in Sonoma represent a class conflict. I agree with Harvey (2005) that the struggles over neoliberalizations are the manifestation of resistance to a corporate class of CEOs, corporate board members and key leaders of banking, legal and technology industries. Harvey does not suggest that those opposing the corporate class are themselves unified. Opposition comes from multiple strata of society and from groups with little or no collective consciousness, a testament to the broad reach of neoliberalizations and the range of groups dispossessed.

Sonoma County activists are better characterized by Scott's (1985) broad definition of a social movement. While they are all staunchly middle class and, except for one homemaker, employed in white-collar professions requiring high degrees of education and technical training, their common position within the division of labour is not enough to generate a class identity. Oppositional activities such as consumption, education and ridicule are highly disorganized, exhibiting none of the solidarity or characteristics of a collectivist struggle (Przeworski 1985, p. 72). As Przeworski (1985, p. 79) argues: "consumers are not [a] class and to the extent to which they appear as collective actors in struggles, these conflicts are not between or among classes." Whatever seemingly collective struggle exists, does not "correspond to places in broadly conceived relations of production" (Przeworski 1985, p. 79). Indeed activists might share a common antipathy to biotechnology and the corporate class, but this opposition is not rooted in class processes – ie. it is not based on perceptions of production, appropriation and distribution of surplus labour (Gibson-Graham 1996). Rather, activists characterize the struggle as centring on the distribution of power between consumers, producers and

corporate agribusiness. Moreover, what solidarity exists manifests in a notion of protecting a diverse community not specific class rights.

It is also important to note that my respondents are not peasants. Kurtz (2000) suggests five classifications of the peasantry all of which begin from the basic assumption that individuals cultivate land in some form of subsistence. Other characteristics include a distinct set of cultural practices, high levels of social subordination, and ownership or control of land. No one I spoke with relied entirely on self-production, nor did they cultivate out of necessity. Rather, gardens are assets afforded by relative affluence and motivated by a political commitment to food system reform. Nevertheless, insofar as individuals in Sonoma feel disempowered in the face of biotechnology firms and state structures, Scott's analysis is relevant. Moreover, everyday resistance has been widely applied to non-peasant groups and is no longer simply about understanding class conflict in Third World contexts (Geiger 2006, Ewick, Silbey 2003, Lamont, Morning & Mooney 2002, Kates, Belk 2001).

I) Everyday Resistance

Scott first theorized the concept of "everyday acts of resistance" in *Weapons of the Weak* (1985). Elaborating his earlier explorations into the moral economy of peasant societies in southeast Asia (Scott 1976), Scott proposes a sympathetic, empirically grounded understanding of the mechanisms by which subordinate classes resist oppression by elites and the state. His primary concern is to expand the focus of anthropological inquiry that had focused predominantly on dramatic singular acts of defiance or peasant revolutions. Restricting academic discussions to such events, he argues, discounts the breadth of peasant agency and ignores the critical ways subordinate groups shape political economic

trajectories. The study of power and agency is better directed towards the "*everyday* forms of peasant resistant - the prosaic but constant struggle between the peasantry and those who seek to extract labor, food, taxes, rents, and interest from them" (Scott, 1985, p. 29 emphasis in original). In combination, Scott (1985, p. 35) argues, "such petty acts of resistance...may in the end make an utter shambles of [state] policies." His point is not that peasant resistance will always end exploitation, but rather that it forces the powerful to alter strategies in ways that advantage the previously disadvantaged.

"Constant", "commonplace" and "routine" (Scott, 1985, p. 29 & 321) everyday acts of resistance are largely uncoordinated. They are the efforts of individuals seeking to carve out a space for themselves in power relations and temper exploitation by elites. They are, as Scott (1985: 29) notes, "self-help" mechanisms. Geiger (2006) highlights this in her reinterpretation of crime and deviance among Mizrahi women in North Africa and the Middle East. She claims the separation of resistance and coping:

> Loses its meaning in the context of female offenders' ecology that is characterized by poverty, illiteracy, economic deprivation, ethnic discrimination, and abusive relations.... These women are simply acting as free agents asserting their will to resist (2006, p. 584).

Lamont et al. (2002) take Scott in a similar direction in their exploration of North African immigrants' response to French racism. Immigrant groups, they suggest, "cope" and "manage their coexistence with racism" by developing "folk theories and rhetorical devices to demonstrate to themselves and others that racism is wrong" (Lamont et al., 2002, p. 392).

What is important in both these cases is that resistance is directed towards improving an individual's circumstances and finding a way to exist within power relationships. Resistance is not necessarily part of a larger program to overthrow the state

or fundamentally alter social structures (even though it may do so in the end). More often, it simply softens the edges of social structures or mitigates their effects (Sivaramakrishnan 2005).

Everyday resistances are both individual and collective acts of defiance. While the majority are perpetrated by individuals in an effort to ameliorate a specific circumstance, they are fuelled by a "popular culture of resistance" (Scott 1985, p. 35). Driven by a popular culture of alternative food consumption, environmentalism and anti-biotechnology activism the actions of rank-and-file activists in Sonoma present a similar sort of directed disorganization. Participants rely on a shared sense of individual agency. The notion of "voting with your dollar" implies that activists conceive of consumption as they do electoral democracy: individual choice is important and sacrosanct, but it is powerful only in combination with millions of other individual choices. Indeed, the logic underlying consumer politics requires the same choice be made across space and time to give "votes" enough voice to speak to powerful actors and to create sufficient demand to foster alternative systems of provision.

Not every act that improves living conditions is resistance. Extending Scott's theories, Ewick and Silbey (2003) note four elements necessary to qualify an act as resistance: (1) a consciousness of being the weaker party in a relation of power and acting in opposition to something or someone; (2) a consciousness of one's own autonomy and the range of opportunities available; (3) particular claims about justice and fairness; and (4) institutional indecipherability – that is the inability of structures or dominant groups to overtly counter tactics.

Chapter 3 returns to each of these elements, and how they apply to the actions of GE Sonoma Free activists. For the moment, these criteria suggest resistance must be conscious and purposeful action conducted with the aim of confronting a more powerful group or person. The investigation of everyday acts of resistance must therefore be rooted in the understanding and meanings actors give events: "A theft of grain, an apparent snub, an apparent gift – their import is inaccessible to us unless we can construct it from the meanings only human actors can provide" (Scott 1985, p. 46).

Working from the understanding of those involved in resistance is particularly relevant to the exploration of consumer activism, which is often condemned for accepting and perpetuating the types of social relations it claims to oppose (Brown, Getz 2008, Guthman 2007, Allen et al. 2003, Allen, Kovach 2000). That condemnation relies almost exclusively on analyses of market mechanisms and ignores the subjective understanding of participants. While consumer activism certainly warrants careful consideration, dismissing the meaning consumers ascribe to their actions fundamentally weakens critique. At the very least, recent works assume that individuals want to "revolutionize" economic relations when they may, in fact, simply want to lessen their personal impact, harmonize their political values with their economic actions or simply fit in.

It is important to examine the goals espoused by activists and the relationship between these and everyday resistances. Is a focus on local food or home gardening commensurate with a desire to reduce the political influence of corporations? Will buying GE Free products or emailing companies increase the democratic control of agrifood production? Can choosing to shop at a community supported agriculture increase funding

for independent scientific assessments or strengthen government oversight? If not, what potential do these actions have and should goals or tactics be refined?

While the concept of everyday resistance has received attention across the social sciences (Geiger 2006, Greenhouse 2005, Sivaramakrishnan 2005b, Sivaramakrishnan 2005, Kull 2002, Lamont, Morning & Mooney 2002, Levi 1999), it is not without its critics (Elias 2005, Abu-Lughod 1990, Roseberry 1989). Gutmann (1993) provides a particularly succinct critique. He argues that Scott's emphasis on the everyday reproduces theoretical blindness to the overt struggles between peasants and elites. Rather than privileging one form of resistance over another, he suggests richer analyses focused on the relationship between private and public tactics. He goes on to question Scott's assumption that covert protest is "essentially all that they [subordinate groups] realistically can achieve" (Gutmann 1993, p. 80). Citing squatters' struggles and the actions of religious communities in Latin America, he argues everyday resistance need not be covert and incremental, but can and does involve a great deal of collective confrontation.

In Sonoma, it is important to question the extent to which individuals are truly constrained by more powerful actors and whether working through the market is really their only option. While activists are perhaps correct that direct confrontations like Measure M have limited effect, individualized, private consumption is not the only alternative.

Other critics condemn Scott's overly romantic conceptualization of peasant life (Roseberry 1989). In particular, feminist scholars charge that by ignoring gender divisions in the household and the unequal distribution of social goods, Scott veils critical

differences in how men and women experience and confront power (Elias 2005, Hart 1991). Nevertheless, feminist inquiries have put everyday resistance to good use and highlighted the manifold ways women resist patriarchy and their subordinate social position (Geiger 2006, Robson 2006). Exploring the difference between male and female resistance is essential if we are to understand contemporary socio-environmental and political economic change. However, in the following discussion I do not attempt to tease out the different resistances attempted by men and women in Sonoma, in large measure because the activists with whom I spoke (and who participated in GE Free Sonoma) were disproportionately female (only 22 out 30).

I also do not mean to depict activists in Sonoma in an overly romantic light. While I believe their actions have merit, I am not convinced consumption and educating friends by leading by example are the best means to achieve the desired ends - particularly if we understand these to be the end of corporate control. This tension marks much of this manuscript, and I take up the issue directly in the next chapter. For the moment, however, let us consider the limits and possibilities of counter-hegemonic action.

II) Stepping Out? Everyday Resistance and Counter-Hegemony

If Scott's first aim was to legitimize the actions of subordinate groups and expand academic understandings of agency, his second was to rework prevailing conceptions of hegemony. While the definition is debated, dominant understandings are traced to the work of Antonio Gramsci. Gramsci (1972) distinguished between rule through coercion or force and hegemony, which involves the totality of social structures. Raymond Williams, Gramsci's oft-noted interpreter, calls this totality, "[the] complex interlocking of political, social, and cultural forces" (Williams 1977, p. 108). Hegemony is the lived

process through which domination and subordination are reproduced and stabilized. The consent of subaltern classes is produced by rendering contingent circumstances and outcomes as common sense, and reinforcing an individual's understanding of the position, purpose, and agency of their class through everyday institutions such as schools, churches, the media and the workplace (Althusser 1971). Thus, hegemony naturalizes the unequal distribution of power and implicates subalterns in the reproduction of their own subordination.

Hegemony is totalizing. Like ideology, there is no escaping hegemony; it is an ever-present aspect of existence. It is essential to distinguish between hegemony as a "fact-of-life" and hegemonic systems as particular configurations of social, cultural and political economic power that define who we are, what we do and how we understand the world. We can speak of *counter-hegemonic forces* but not of *counter-hegemony* as even the most radical groups seek to impose their own social and political economic structures.

Moreover, counter-hegemonic movements do not exist outside the present hegemony but rather are reactions to its perceived injustices. Hegemony is as much productive of opposition as it is repressive: "all initiatives and contributions, even when they take on manifestly alternative or oppositional forms, are in practice tied to the hegemonic" (Williams 1977, p. 114). This holds because opposition emerges from within systems of domination, and because opposition often brings with it "survivals" of past structures (Althusser 1967, p. 33). In certain circumstances these remnant common senses, practices or material objects can inadvertently reproduce extant hegemonic structures. Even when opposition succeeds in shifting the distribution of power in its

favour, problematic elements of past hegemonies can be "reactivated" (Althusser 1967, p. 34).

The purpose of hegemony, in contrast to force, is to buffer elites from challenge, by co-opting and disarming social movements (Williams 1977). Counter-hegemonic action consequently can be an integral part of re-legitimizing dominance. Even if concessions are made in one domain, the totality of social structures and constituent power relation remain largely intact. More important, subordinate groups or individuals often inadvertently challenge hegemony using the very tools that benefit elites. For example, when activists resist corporate control by buying different products in conventional supermarkets they open new, profitable avenues for the existing corporate food manufacturers, strengthening their economic dominance.

When evaluating counter-hegemonic movements we must take care to distinguish between contesting the manifestations of power and contesting the processes and practices that distribute power. That is, in the supermarket example, the difference between trying to resist industrial agriculture by buying organic produce in Safeway, or shopping at Whole Foods, and buying food directly from a producer or growing it oneself. The first instance neither questions the existence of enormous national food distributors and retailer, nor does it counter the competitive market logics that drive agricultural industrialization (Guthman, 2004, Allen, Kovach, 2000, DeLind 2000). The second and third, however, challenges both the institutions and the processes that empower supermarkets and (trans)national food firms by directing money to different economic actors (still within capitalism) in the second case, and rejecting "market" transactions and the idea that someone else should produce one's food in the third.

Moreover, at the root of corporate power are free-market ideologies that suggest that citizen agency is best expressed through consumption practices. Choosing different products in the supermarket to improve environmental or social relations leaves these free-market ideologies, and thus the institutions and actors primarily responsible for the present circumstances intact. Citizens are subordinate and dependent on the interests of manufacturers, rather than empowered to force regulatory change or live alternative relationships.

From Gramscian hegemony, we can take one last crucial point: revolutionary social change is not sudden; it is the result of consistently and slowly altering common sense and practices. It requires "patience and inventiveness" (Gramsci 1972, p. 239). Meaningful counter-hegemonic action therefore can be small and ephemeral, so long as it is part of a longer strategy to transform consciousness and undermine dominant structures.

Scott's (1985) attempt to reformulate hegemony begins by challenging the idea that subordinate classes are entirely passive, compliant and mystified by dominant ideology. This very narrow interpretation, he argues, ignores the importance and possibility of counter-hegemonic action. He argues when faced with repressive forces, subordinate groups actively employ the ideas and logics of elites and attempt to "work" the system to their advantage. The absence of revolution is not an indication that political economic structures are universally accepted, but rather that individuals have made a strategic decision to avoid repression. In this light, subordinate groups do not suffer from false consciousness. Rather, discursive and material acts of resistance illustrate the ability of groups to "penetrate and demystify" hegemonic logics.

In this context, narratives that justify a hegemonic order become tools of social justice. Like capitalism, hegemony is fraught by internal contradiction. Elites conceal the logics that propel their power in narratives of social progress and equality (e.g. income redistribution, access to health care and nutritious food etc.). The inevitable disjuncture between the promise and the reality is itself a means of forcing change:

> The crucial point is...that the very process of attempting to legitimate a social order by idealizing it *always* provides its subjects with the means, the symbolic tools, the very ideas for a critique that operates entirely within the hegemony. (Scott 1985, p. 338 emphasis in original)

By highlighting the points where the system fall short of the ideal, subordinate groups mobilize a politics of reputation and force concessions from elites who struggle to maintain power.

Although Scott begins from an overly-simplistic depiction of top-down control (Akram-Lodhi 1992) and a narrow understanding of ideology, his work does provide critical insight into the manifold ways subordinates resist hegemonic systems. Moreover, he shows that action outwardly aligned with hegemonic logic does not necessarily derive from a conscious or unconscious acceptance of that logic. That is, critical work must be rooted in a careful understanding of the strategies and understandings of subordinates.

Yet, given the ability of hegemonic structures to incorporate resistance, it is crucial that we (and resistance groups) not lose sight of the extent to which using the logics of a particular hegemony as resistance reinforces the very forces that marginalize subordinate groups in the first place. That is, to what extent does the system internalize victories of resistance and twist them back to the benefit of dominant groups? Moreover, even sympathetic analyses must distinguish between the object and institutions of repression (e.g. lobbying, public agendas, funding and grant structures, corporate power,

regulations) and the broader logics that fix the balance of power. Groups and individuals might eke out benefits in one domain only to reproduce their marginalization in another. Understanding how the totality of social actions affects domination and subordination in a given instance is a prerequisite to altering the distribution of power and preventing the ill effects of that distribution.

Scott's analysis forces us to pay attention to the individuals involved in counter-hegemonic action, and the unintended consequences their actions imbue. We must also recognize, as Gramsci did, that meaningful resistance can seek reform within present structures. In such cases, the question becomes not whether revolution is possible, but to what extent and for how long actions can improve the lot of the subordinate, whether human or non-human.

III) Consumption as Counter-Hegemony

Creating and supporting local food production is the primary means of everyday resistance in Sonoma. Through a range of institutions, including farmers' markets, CSAs, independent grocers and home gardens, activists consciously confront the power of biotechnology firms to dictate food quality and determine the structures of American political economy. Activists are stepping out of the conventional system of provision and entering what Morgan et al. (2006) have called a new world of food. As I explain in the next chapter, at least at present this new world is embedded within the local ecology and economy and far less amenable to incorporation into global circuits of capital.

However, given the emphasis on consumption in neoliberal theory, it behooves us to ask whether shopping can ever be counter-hegemonic. Geographers and agrifood scholars wrestle tirelessly with this question; that it remains unresolved after decades of

debate bespeaks the issue's complexity. Broadly, there are two lines of thought. On the one hand, scholars celebrate "reflexive", "ethical" or "sustainable" consumption as the conscious effort to resist the structure of the conventional food system and the power of its elites (Morgan, Marsden & Murdoch 2006, Seyfang 2006, Goodman 2004, Goodman, DuPuis 2002, DuPuis 2000). Along similar lines, the last two decades have produced a wave of explorations of commodity systems and the potential of reforming food systems by unveiling production and distribution practices (Cook 2004, Miller 2003, Castree 2001b, Johns, Vural 2000, Hartwick 1998, Buck, Getz & Guthman 1997, Harvey 1990). While this work continues, particularly in the popular press, academic fashion has turned away from triumphant calls for "removing the veil". Today, scholars are far more likely to suggest we "get with the fetish" (ie. work with existing fetishes or develop new ones that disrupt current symbolic closures and silences) (Cook, Crang 1996) or abandon the project altogether.

The critical turn has come in part from a deepening of the scope and scale of commodity analyses. For example, Guthman (2003a,b) and others (Slocum 2007, Getz, Shreck 2006) suggest that alternative food politics and niche marketing may exacerbate existing social and racial cleavages by reserving good food and the associated moral worth for the wealthy. Similarly, Barnett et al. (2005) question the extent to which "ethical" consumption is anything more than a way of 'keeping up with the Jones'. On a more practical note, other scholars argue that the balance of power in the food system really rests with retailers and thus consumer choice matters little (Morgan, Marsden & Murdoch 2006, Freidberg 2004b, 2003, Marsden 2004, Dixon 1999). Lockie (2002) goes so far as to suggest that retailers deliberately construct the organic consumer to create a

premium, niche market and extract maximum profit. Uniting these perspectives is the concern that consumption does not escape the dominant political economy and is too easily directed towards the needs of economic elites.

Recent works condemn consumer tactics for reproducing unequal social and political economic relationships and neoliberal free market ideologies (Brown, Getz 2008, Guthman 2004, Allen et al. 2003). Indeed, neoliberal ideas infuse the green consumerism driving "ethical" consumption. The logic is that the combination of millions of individual market choices creates a "purchasing power" that forces manufacturers to alter production practices. Individuals can then believe that their particular market choice is transforming commodity systems (Allen and Kovach 2000).

Each of these criticisms is partially true; however, what is missing is a systematic review of what consumption is and how and why it is practiced. Conciliatory conclusions about "making do" with consumption and recognizing the limited benefits of consumption, nevertheless veer towards rejecting consumer politics if possible rather than seeing the use of eco-certified products, farmers' markets and community supported agriculture as part of the slow struggle for an alternative hegemony.

The majority of critical works focus on what occurs in supermarkets. Consumption, as such, is limited to choosing between products on grocery shelves. Yet there are many forms of consumption even within this narrow frame, and each holds different consequences for the agrifood system and the broader political economy. For example, there are significant qualitative differences between buying food at a local independent grocer and a large multi-national firm. Shopping at Whole Foods, the most "conventional" of alternative supermarkets (Pollan 2006), enlists the consumer in a

different set of social and economic relationships then buying at the small corner market. When we look at the gaping difference between the procurement practices of Wal-Mart and Whole Foods, or even between Wal-Mart and Safeway, the picture becomes even more complex. Moreover, organic, fair trade and other purportedly "alternative" foods are available in most grocers, thus where shopping occurs is at least as, if not more important than the type of food purchased.

As discussed above, any investigation of everyday resistance like consumer politics must begin with the lived experience of participants. However, the majority of critical work ignores activist or resistance groups' motivations and understandings. They overlook crucial psychological and social effects of alternative food consumption that do not produce immediate material change in the food system but nonetheless improve everyday life. Take, for example, the shift from passive shopper to active label reader; or the satisfaction one might get from meeting neighbours in farmers' markets or small local grocers. Lamb (1994) cautions alternative retail sites explicitly foster a sense of community to attract customers. Yet, regardless of their origins, a smile or a brief hello from neighbours or perfect strangers has tangible effects on personal wellbeing. While these changes may seem small, they are potentially important ways of improving daily life and should not be dismissed simply because they can also attract customers.

Similarly, if we follow Scott, counter-hegemonic action involves consciousness of constraint and deliberate effort to work with available options. Resistance might not overthrow power structures, but it can reform them to the benefit of subordinate groups. Consequently, reform can be counter-hegemonic insofar as it is intended to slowly chip away at the logics and practices that support elite power. Evaluations of consumption

must begin from an understanding of whether or not participants actually believe the logics of free market rationality or whether they are intentionally "working" the present system. A few scholars examining the emergence of third party certification have noted the limited options available in the context of neoliberalization (Brown, Getz 2008, Busch, Bain 2004). However, activists are portrayed as embracing the tactic gladly or conceding that it is the only option in the present context (Guthman 2007). We have yet to really ask whether activists are content to work through niche markets, whether they adopt such strategies in an explicit attempt to use the system, and whether they do so as part of a much broader and longer-term strategy.

The following chapters address this missing question by unpacking consumption and exploring the lived everyday politics of Sonoma county residents engaged in counter-hegemonic action. Following Scott, I recognize that activists might be consciously using organic and Non-GMO products to highlight and remedy the failure of the current system to redistribute income to primary producers and support ecologically and socially just production.

While tactics may conform to neoliberal principles to various degrees, as I note above, revolutionary change is most often the result of a slow process of reclaiming spaces within the dominant system. Within these spaces, individuals and groups can withdraw from the present hegemony and forge new social relations that challenge the distribution of power – what Kloppenburg et al. (1996, p. 38) call a hollowing out of the global food system. Thus, even the "industrial organic" (Pollan 2006, p. 8) products on supermarket shelves are hopeful reminders that change, however minor, is possible.

My analysis is further informed and given hope by the empirical record that gives reason to be excited by a host of alternative markets. By twisting neoliberal logic against itself, consumer activism restrains the unbridled "dis-placing" of some forms of food production (Morgan, Marsden & Murdoch 2006). In the present case, the market for Non-GMO foods can be understood as governed by a new moral economy that "unfrees" agricultural production and creates a concrete resistance to certain aspects of neoliberalization.

This is not to say that alternative shopping will revolutionize the capitalist political economy. Indeed, it does not challenge the fundamental contradictions of a competitive market that drive the exploitation of labour, animals and the environment. It simply re-directs profits into different hands. These alternate companies are vulnerable to acquisition by existing multinational food firms (and indeed their acquisition is an important competitive strategy (Heffernan 2000)), as illustrated by the organic market, "alternative" foods actually benefit the elite and reproduce the present hegemony. Not only are they new sources of profit, but they give a firm a "friendly" or "ethical" public face and a way to counter the criticism of environmentalists and social justice advocates. Therefore, while the natural food market might be counter-hegemonic, it does not challenge the basic allocation of power.

The idea that consumption drives social change also reproduces conditions that facilitate privatizing and commodifying collective goods. It declares citizens are ready to pay for the privileges of health, social justice and ecological sustainability, and thereby opens new realms through which capital can circulate. Buying alternative food from

grocers thus benefits corporate power irrespective of its effects on profits in the food sector.

Still, I am reluctant to reject alternative markets out of hand. As I suggest in the next chapter, there are forms of alternative consumption that challenge power relations and have lasting or long-term effects on consciousness and practice. Economic systems that derive profit from being explicitly place-based are less amenable to the dynamics of global capitalism (although they may still flow through global networks) (Morgan, Marsden & Murdoch 2006, Murdoch, Marsden & Banks 2000, Whatmore, Thorne 1997). Farmers' markets and community supported agriculture epitomize a resistance through embedding. They both redirect money to producers, and they resist incorporation by the dominant corporate system of food provision. It is conceivable that Whole Foods or a comparable firm would purchase control of a farmers' market or that Kraft, Earthbound Organics or Coca-Cola could establish a CSA. However, it is likely that the moral economy of these alternative systems of provision would prevent it or would energize new institutions elsewhere.

To know if consumption can be counter-hegemonic we must tease out the ways to procure food, the purposes ascribed to these ways and the subtle and small changes that may result. We must recognize the differences between shopping in a supermarket and joining a CSA; between selecting organic apples at Whole Foods and picking them off a tree you tend yourself. We must similarly pay attention to the end goals of purchasing products. Are participants seeking to resist corporate control, slow the spread of genetically engineered crops or simply reduce their exposure to pesticides? Is consumption a constrained choice or is it perceived as the "best" course of action?

Without concern for such details, scholarship will remain moored in an intractable debate over the legitimacy of consumer politics.

IV) Concluding Remarks:

The concerns, concepts and critiques outlined in this chapter raise three important questions that inform the discussion of everyday resistance in Sonoma in chapter 3, and my critical evaluation of the emerging certification project for Non-GMO foods in chapters 4, 5 and 6. First, what is the range of resistance activities practiced by activists? Second, why are activists choosing consumption and other "covert" resistances? Third, to what extent do the actions of grassroots activists alter or reproduce problematic social relations? Ultimately, these chapters ask what gains we can make through everyday resistance and consumer politics and what problems do we smuggle in with our efforts.

CHAPTER 3: EVERYDAY RESISTANCE IN SONOMA

While GE Free Sonoma's organizers focus on mobilizing an apathetic public and strengthening oversight and legislative control of GE crops, the group's rank-and-file members pursue a different, and yet no less important, set of tactics on a daily basis. Seeing their everyday practice as a form of protest, activists consistently "vote with their dollar" and avoid GE foods, publicly ridicule the biotechnology industry and deny popular justifications for GE crops, and enrol others in the movement by speaking to friends and neighbours and "living by example". These tactics differ markedly from the environmental movement's traditional focus on direct confrontation and litigation. To some scholars (cf. McCarthy and Prudham, 2004; Allen et al., 2003), discarding policy-making and relying on the private market significantly weakens the potential for radical reform. However, following Scott (1985), such everyday resistance can be a potent constraint on elite power and slowly manoeuvre social, economic and ecological relations towards sustainable and just ends. In this chapter, I explore the consequences of the everyday resistances of rank-and-file activists and their potential to construct new social realities.

Extending the discussion of Scott's notion of everyday resistance in chapter 2, the chapter begins by defining resistance and sketching its broad characteristics in Sonoma. Drawing on in-depth interviews with rank-and-file activists, I specify the targets of intervention, activists' goals, and the logic behind the choice of market tactics over policy advocacy. It is important to detail the broad contours of activism in Sonoma in part to

situate the proceeding discussion of tactics, but more to differentiate unconscious daily practice from everyday activism – a distinction that is crucial, but difficult to ascertain at first glance. Not every act of "alternative" consumption is resistance; nor is every act of "conventional" consumption passive acceptance of the dominant hegemony. Even among resistances, food provisioning is not necessarily targeted towards the same object or goal. Thus, in the first half of this chapter, I follow Ewick and Silbey (2003) and use activists' perceptions of the struggle to illustrate that they are conscious of who they are fighting against and the opportunities afforded by the distribution of power within the dominant hegemony.

The second half of this chapter draws on Scott (1985) and others to assess the potential and limitations of three major tactics: (1) GE Free consumption, (2) ridicule and denial of dominant common sense, and (3) education and friendly enrolment. Examining each in detail, I argue that together these tactics provide the basis for new social, economic and environmental relations that challenge the dominance of corporate agribusiness and with it the broader neoliberal political economy. Education, for example, strengthens the movement by enrolling new members, while ridicule disrupts dominant common senses, carving out spaces for alternative understandings of agrifood problems and forcing the industry to live-up to its public relations campaigns. Consuming foods free of genetically engineered material is by far the most common and powerful resistance rank-and-file activists practice and thus, receives the greatest treatment herein. In their efforts to avoid GE products activists challenge the dominant system of provision and construct new ones, some of which require significantly different relationships and structures. Not all consumer resistances, however, create much change. Intervening

through dominant institutions, like, for example buying processed organic food at Whole Foods or Safeway, is notably weaker than purchasing foods from CSAs, farmers' markets or growing it yourself. Nevertheless, even minor resistances and the resulting reforms deserve consideration. Thus, I explore the transformative effects of four types of consumer activism, free market activism, using local independent grocers, direct marketing venues and self- provisioning, and the unintended consequences of each. I conclude by returning to Scott, Gramsci and questions of hegemony. Specifically I explore the connection between everyday resistance in Sonoma, agrifood system change and the broader project of resisting neoliberalization.

I) A View of the Ground: Recognizing the Everyday Activist in Sonoma

What makes something resistance? If resistance appropriates the language and logic of dominant systems, how do we recognize it? Recognizing resistance and the everyday activist is difficult and requires an understanding of the purpose of practices. In this section, I use Ewick and Silbey's (2003) four elements of resistance to argue that the everyday actions of rank-and-file members of GE Free Sonoma are resistive. To contrast quotidian practices with the organized tactics used during the Measure M campaign, I refer to rank-and-file members as everyday activists. This also highlights that resistance can be a way of life, not simply time spent in volunteering, and that social and political economic change need not come from activist groups.

Consciousness of Power

To resist, individuals must be conscious of their position within hegemonic structures and their relative disempowerment vis à vis other actors. Resistance is marked by an

awareness of "being up against something or someone" (Ewick, Silbey 2003, p. 1336). Sonoma County activists perceive themselves in direct opposition to the much more powerful biotechnology industry and the broader agribusiness complex. When asked why she participated in the movement, one everyday activist responded:

> [B]y the time I had come to the environmental movement ... I had been *so* involved in the labor movement and had been watching and getting more and more angry over how corporations run everything. And so for me then when I got involved in the environmental group [GE Free Sonoma]...I brought that same sensibility with me because as I saw what was happening to, you know, my own community and land and food issues ....[I]t was all being controlled by big corporations, which was the same thing we were fighting with labor. We've got corporations who just, you know, come in and they just take over ownership and they make all the decisions about, you know, how we're all going to live and how we're going to take care of ourselves. You know, they're the ones with *all the power.* You know, they're the ones that have all the control of everything *and that just pissed me off!* [48]

Monsanto is the primary antagonist in this struggle, and activists use the company to illustrate the problems of the industry as a whole. Referring to what she believed to be the firm's goal of global imperial expansion, one everyday activist called it the "Master of the Universe."[49] A second, describing her motivations to become involved with GE Free Sonoma, stated:

> There certainly is the safety of food, which is maybe the most obvious, to some; but to me what really got me most agitated and interested was the Monsantos - the corporate greed, you know - without conscience.[50]

Many activists blame their subordinate position on structural mechanisms that perpetuate the unequal distribution of economic assets or political systems that provide affluent groups disproportionate access to decision-makers. For example, one female everyday activist noted:

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[48] GE Free Sonoma Activist 5, 24 August 2006

[49] GE Free Sonoma Activist 10, 31 August 2006

[50] GE Free Sonoma Activist 6, 24 August 2006

> Well I know that they're trying to take away our rights to defend ourselves against genetic engineering. You know they have strong lobbies, you know multi-billion dollar corporations. I don't think there's enough money ... on the grassroots side of it. You know, it's like David and Goliath and it's unfortunate that lobbyists have so much weight with our representatives.[51]

Not only are everyday activists aware of political structures and the processes through which political decision-making occurs, but they perceive ways they are marginalized by these structures and processes.

The state has an ambiguous position in this struggle. Many everyday activists criticize the federal government's support of biotechnology and its unwillingness to adequately regulate the industry for fear of impeding economic growth. As one woman argued:

> I am concerned about how our government is assisting genetically engineered foods [to enter] the market so readily and so secretly. Like not testing enough, kind of just getting it in there and then all of a sudden going, "Oh, woops. We really shouldn't put that on the shelves."[52]

Another began an attack on the federal government:

> There still is no oversight. There still is no *independent* oversight. The USDA has regulations in place, [but] they're not very [strong], they're just kind of rubber stamping.[53]

A couple minutes later, she added:

> And so ... our [anti-biotechnology activists'] argument is not a contrived argument. This is real things happening to real farmers in real time, and the government is acting, per their usual way of supporting those that finance their campaigns.[54]

At best, everyday activists perceive decision-makers as constrained by campaign donors. At worst, they are disempowering citizens and lining their own pockets.

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[51] GE Free Sonoma Activist 9, 30 August 2006

[52] GE Free Sonoma Activist 4, 23 August 2006

[53] GE Free Sonoma Activist 8, 29 August 2006;

[54] Ibid

Despite their impressions of the state's agenda, everyday activists do attempt to use political mechanisms to restrain biotechnology. Some informants did write letters to elected representatives (both federal and in California). When asked about possible solutions, some everyday activists listed ballot measures or regulatory change. Clearly, my informants believe that pro-industry forces dominate the state, but that they also believe that specific individuals in government may be amenable to the interests of consumers and citizens. Although most feel relatively powerless relative to biotechnology firms, they do not perceive themselves as impotent. Still, only one respondent who identified the lack of government oversight as the most pressing problem regarding genetically engineered foods suggested legislative and regulatory solutions, and this was second to the need to increase popular awareness of the issue. The rest argued for more consumption-oriented action.

The Sonoma County Farm Bureau is another antagonist in this struggle. Prior to the Measure M campaign, many rank-and-file members of GE Free Sonoma were not concerned about the organization. They presumed it represented the interests of local farmers – an unqualified good. Those more familiar with the Bureau understood it is a conservative trade association that advocates for the county's large livestock and wine operations. The Bureau's opposition to Measure M revealed its bias towards large agribusiness firms and industrial farming. In one man's words, the campaign taught him how "non-farm-related their [the Farm Bureau's] politics and activities are."[55] The Bureau's extensive financial resources and media experience allows them to skew public opinion. As one woman put it:

[55] GE Free Sonoma Activist 25, November 1, 2007

> Oh, it was just awful! Farm Bureau, friggin' Farm Bureau man! That's who controls the politics of Sonoma County, [be]cause Sonoma County is so ag[riculture] based; it's so grape-based; it's so monoculture-based. They rule Sonoma County.[56]

A second argued:

> The Farm Bureau just did a job on us....Well they, they put out the line that this was going to prevent the pets, people's pets and children from getting their vaccines. Every house I went to had some kind of pet. ... So we were facing that....And we didn't have the money to put out ... a flyer or put an ad in the paper or something like that like they did. They pulled together the big guns.[57]

Whereas the biotechnology industry is condemned for using it's financial clout to muscle away control from citizens, the Farm Bureau's power is perceived to derive from it's ability to out-buy opponents to biotechnology and spin the truth to its advantage. When asked why Measure M failed, one woman said bluntly:

> Oh, [be]cause they lied and cheated. The other side. Absolutely...They scared people - telling people that they wouldn't be able to get vaccines.[58]

Another woman responded sardonically to my question of whether or not it was true that GE Free yard signs had been stolen off private property: "Yeah, I think. That wasn't unheard of, especially with the Farm Bureau."[59]

Like Monsanto, the Farm Bureau represents the larger corporate agribusiness complex that supports biotechnology. When asked how the community could solve the problems of genetically engineered foods, one female everyday activist noted:

> [C]ombat the lies of the industry. The industry dumped a whole bunch of money into a lot of lies and put them in everybody's mailbox; and misquoted the health department. I mean [they] really sabotaged the whole campaign by their lies and their funding of it. And I really don't think that .... some outside corporation should be able to come in and drop a million

[56] GE Free Sonoma Activist 10, 31 August 2006
[57] GE Free Sonoma Activist 7, 25 August 2006
[58] GE Free Sonoma Activist 21, 23 October 2006
[59] GE Free Sonoma Activist 12, 20 September 2006

> dollars into a local campaign and steer it and spread lies. It would be nice if there were laws that held people accountable and that, you know, you had to tell the truth. Unfortunately that's not so. I would like to see the grand juries look at this; especially when our own health department was misquoted and put into everybody's mailbox. So those are the things I'd like to see done.[60]

Again, this suggests activists understand the rules of the game they are playing. These rules are the reason corporations are able to influence decision-making and skew political agendas. Consequently, my informants are consciously opposing Monsanto, federal agencies, the Sonoma County Farm Bureau and the mechanisms that privilege biotechnology interests.

Consciousness of Opportunity

The second aspect necessary for resistance is consciousness of the opportunities to intervene and "turn matters to [activists] advantage" (Ewick, Silbey 2003, p. 1336). While individuals might adopt practices similar to those of everyday activists, they are not resistance unless they are deliberately performed in opposition to something or someone. This does not mean that such actions are inconsequential, but simply that they are not resistance.

To be resistance, people must also understand the processes that govern social and political economic relations. In the case of GE Free Sonoma, this means everyday activism must draw from some sense of the logics of capitalism, the structures fuelling changes in agrifood production and the political economy of biotechnology. As I discuss in more detail below, the everyday activists with whom I spoke almost universally see the market as their best means of intervention. However, this is not necessarily a hollow

[60] GE Free Sonoma Activist 9, 31 August 2006

subscription to neoliberalism; rather, activists are actively evaluating their options and making strategic choices.

My informants are conscious of the forces driving the current (de)regulation of biotechnology. Many noted the role of restricting labelling in the agrifood economy:

> I can't believe we don't have labelling. I mean they have it in Europe. It's really unbelievable to me. But, I know in the United States we have the big corporations that, you know, financially they'll probably lose a lot to have labelling.[61]

Speaking more broadly about government oversight, another activist stated:

> I understand the game; the reason that there is no [labelling] in place.... If somebody's child becomes sick and the [GE] ingredient is listed on the package then that might cause concern about that particular ingredient and then there starts to be a case history. And then you start having ... a process by which to track these things, which is problematic for the companies that just want to get it out there.[62]

Activists can see past the rhetoric used to justify current regulations. They understand why labelling is restricted in the United States and why oversight has been so lax. Consequently, it is not surprising that many are seeking non-policy interventions.

Activists are also cognizant of the ability of firms to obscure production processes by capitalizing on "alternative" discourses or appropriating "ethical" production lines. One woman argued that she has to pay attention to "who owns them [companies]" because, "just [be]cause there's a nice packaging doesn't necessarily mean the company is worthy of my dollar."[63] The reference to ownership implies an awareness of ongoing restructuring in natural food markets and the increasing concentration in the hands of multi-national powerhouses such as Heinz, Kraft and Kellogg. Not every "ethical" product lives up to its image.

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[61] GE Free Sonoma Activist 27, 20 November 2006

[62] GE Free Sonoma Activist 8, 29 August 2006

[63] GE Free Sonoma Activist 8, 29 August 2006

Other activists are assiduous label readers and do not trust products that are not verifiably GE Free, even if companies are staples of the natural food market. In some cases, shoppers contact companies and demand information regarding production practices. When representatives refuse to provide necessary details or cannot provide satisfactory responses, activists stop buying the products and protest by phone or email.

Activists also understand the shifting political economy and political ecology of alternative agriculture. Choosing organic food is the predominant means of avoiding genetically engineered products. However, increasing rates of cross-pollination and post-harvest mixing reduce the Non-GMO "purity" of organics. Many activists recognize contamination and the problem of equating organic with GE Free. For example, when I asked one woman whether it was difficult to avoid GE foods she responded:

> *Activist 12*: Not in this county. And, of course, that presupposes that organic food is actually organic.
>
> *Robin Jane*: Can you explain that?
>
> *Activist 12*: Well, I mean, that someone can be growing organic corn and that can be pollinated by GE corn. So their best intention is that they are giving you organic corn, but, who knows?[64]

Others lamented the way conventional manufacturers were "watering down" organic standards:

> NOP [the National Organic Program] is waffling and there's amendments to it all the time and they're slipped in under other laws that are passed. ... So I don't know what's happening there. Seeing that stamp on things, yeah that's nice, but it's not good enough.[65]

Thus, everyday activists understand the potential openings for intervention and the points of closure: organic food is quickly losing its use as a means of avoiding GE;

[64] GE Free Sonoma Activist 12, 20 September 2006

[65] GE Free Sonoma Activist 17, 27 September 2006

labelling is unlikely due to the state's economic priorities; and shopping requires a watchful eye on the dynamics of agrifood production. In response, activists pursue alternative ways to protest, including purchasing products explicitly labelled GE Free, boycotting standard systems of provision to varying extents, and contacting companies and voicing their concerns directly.

Claims about Justice and Fairness

Every act of resistance also contains an assessment of the ways in which powerful actors have produced "unfair constraints and opportunities" (Ewick and Silbey 2003, p. 1337). In the present case, Sonoma County activists make four specific claims. It is important to note these claims are not mutually exclusive, and individuals may not necessarily make more than one. I review them here to illustrate the types of accusations that motivate resistance in the anti-biotechnology community.

The four claims that dominated my interviews revolve around the notion of rights. The most frequently cited is the violation of an individual's right to freely choose what they put in their bodies and to express their political beliefs at the checkout stand. This claim takes two forms. On one hand, activists accuse the industry of restricting mandatory labelling: "And the way that the biotech companies are *hiding* it! You know, how there is no labelling? And they won't allow labelling... so that there is no recourse. I think that's *criminal!*"[66] On the other, activists accuse the industry of attempting to monopolise the food market. Revealing her frustration and anger, a female activist argued:

[66] GE Free Sonoma Activist 21, 23 October 2006

> It's not enough that they're [the biotechnology industry] doing their thing [producing biotechnology products], they're *actively undermining* every opportunity for somebody to do something different. That's the bad thing. That to me is where the huge big corporation thing...get[s] out of control. In this capitalist society ... it's like 'Okay, you have a product you sell it, but I don't have to give you my money.' They're taking over and making it so that we don't have any options. And that's wrong, that's *wrong!* They are single handedly taking away our options.[67]

Biotechnology firms are not merely violating freedom of choice; they are purposefully preventing competition and violating basic principles of the neoliberalism they espouse.

A second and related claim made by Sonoma County activists is that the state is undermining democratic rights and kowtowing to industry interests by allowing quick commercialization of GE products with minimal oversight. One man characterized existing regulation as having been "railroaded in" and being a "*fait acompli* before people were even really aware of what it was."[68] Another male informant noted:

> It just shows how our democracy is failing us. You know, I mean... this [terminator technology] was pushed through by an elite group of people that had an agenda and that agenda had nothing to do with, (a) following the rules and, (b) the public interest. I mean it was all about private interest.[69]

Such critiques rest on a vision of justice and fairness in which people are autonomous and citizens' interests supersede those of capital in policymaking. This imaginary draws on liberal notions of individual independence and self-sufficiency and counters neoliberal claims that the economy is, in fact, free.

The third and forth claims extend rights to farmers and the public at large. In the third, everyday activists accuse biotechnology firms and the larger agribusiness industry of violating farmers' rights and impinging on their ability to earn a livelihood:

[67] GE Free Sonoma Activist 5, 24 August 2006
[68] GE Free Sonoma Activist 18, 27 September 2006
[69] GE Free Sonoma Activist 18, 27 September 2006

> I don't know too many farmers but the farmers that I do know personally have issues with being able to provide a good wage for themselves and for their workers. It [lack of economic opportunity] allows large agribusiness and/or chemical companies to entice them with their products. ...Often the relationship becomes very unfortunate....[E]specially the chemical-GMO cycle where they have contracts where you have to return to the supplier to get your seed. That's much more like a dealer and a druggie relationship then a good business...relationship.[70]

In this view, agribusiness practices are unfair because they force farmers into exploitative relationships. These relationships then impinge on a farmer's ability to act justly towards their employees and the environment.

Percy Schmeiser's ongoing battles with Monsanto figure prominently in these arguments. For example, one man noted:

> I've heard and I've read ... that some of the...farmers up in [Canada]...have had this long running battle with Monsanto and their crops are contaminated through no fault of their own. I think that's just obvious injustice.[71]

Prudham (2007) notes that Mr. Schmeiser has become the folk-hero of the twenty-first century. His legal battle with Monsanto has come to epitomize the struggle to preserve farmers' rights, particularly their right to save seeds. Indeed, when Mr. Schmeiser and his wife toured Sonoma, Alameda and Mendocino counties in November 2006, audiences cheered loudly and praised the Canadian canola farmer for his strength and tenacity in preserving the rights of farmers to work unencumbered by industry control.[72]

Concerns for farmer livelihood are based on agrarian ideology and are as much about preserving the fabric of American society as they are about the rights of growers

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[70] GE Free Sonoma Activist 25, 1 November 2006

[71] GE Free Sonoma Activist 16, 26 September 2006

[72] I was fortunate to accompany Mr. Schmeiser on the northern portion of this tour. Also in attendance were Dr. Ignacio Chapela and Brit Bailey of Environmental Commons. November 16-18, 2006.

(Fink 1992, Peterson 1990). Depictions of farmers as "duped"[73], seduced or forced to give up their autonomy to corporate agribusiness are imbued with a nostalgic sense that, as I noted in chapter 1, independent farmers are the foundation of strong and healthy communities. Corporate control is unjust not only because it exploits farmers, but because it threaten the general quality of life. A just world includes independent, sustainable farming operations in which farmers have the option of saving and re-planting seeds, thereby preserving biodiversity and the genetic basis of agriculture.

Finally, Sonoma County activists claim that genetic engineering threatens the ecological and genetic integrity of the environment. In this realm, activists were principally concerned with the "irreversibility" of introducing GE crops and the "irretrievability" of novel genes once they become established in wild and cultivated populations. Many likened the technology to a biological "Pandora's Box", which once open would forever change global ecology. Compounding this fear was a concern for the limits of current scientific understandings, and the hubris of policy-makers and corporate leaders in releasing GE plants without adequate oversight. As one woman argued, "It can't be recalled. Once it gets out into nature, you know, the destruction could be endless. We don't know. And that to me is really frightening."[74]

Such claims posit two subjects of injustice: nature, and the humans that rely on it. A few activists accused scientists of "messing with Mother Nature" and "playing God."[75] Others noted that GE crops could disrupt ecosystems and harm wildlife. Take for example the following comments of two female activists:

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[73] GE Free Sonoma Activist 17, 27 September 2006

[74] GE Free Sonoma Activist 21, 23 October 2006

[75] GE Free Sonoma Activist 19, 18 October 2006; GE Free Sonoma Activist 24, 30 October 2006; GE Free Sonoma Activist 10 August 2006

> I see the concern for biological disruption of ecosystems and the limiting of biodiversity, both for plants and for insects that are affected by it all. The whole destruction of ecosystem; because it's a huge change [at] a genetic level.[76]

> I also have concerns about the disruption of the ecological community, the biotic community, whatever you want to call it; the unintended consequences of genetically engineered organisms and crops ... on butterflies or various parts of the ecosystem.[77]

Justice in such statements is preserving habitat and existing biodiversity.

In addition, everyday activists seek justice for the humans who rely on ecosystem services. Specifically they note the potential for GE crops to introduce novel species and traits that harm human health:

> Similar to what I said on an earlier question: health issues [concern me]. I think our health; the health of our humans and animals that will be ingesting GE foods; the health of the soil and the insects and everything else that depends, you know the cycle of life, that eat crops, other trees, you know, the diversity of our planet in other words would really be limited.[78]

Activists also indicate the connection between ecosystem and agricultural health:

> [T]he real reason to be worried about it is the impact it could have on our ecology and our agriculture. Escaping of GMO substances like these superweeds, the problem with monocultures, and the inability to stop this stuff from spreading.[79]

In a particularly interesting variation, one man suggested that nature would resist GE crops with unforeseen strength thereby harming agriculture and food production:

> That they get into the wild [concerns me]. Then they escape and it's really hard to get rid of. And then they're around forever and we have no idea what resistance is going to be created and... if we think the crop diseases are bad now, the ones that are going to be developed by nature to take out those [GE] plants are just going to be horrendous. Those diseases are there for a reason.[80]

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[76] GE Free Sonoma Activist 13, 25 September 2006

[77] GE Free Sonoma Activist 11, 18 September 2006

[78] GE Free Sonoma Activist 15, 26 September 2006

[79] GE Free Sonoma Activist 18, 27 September 2006

[80] GE Free Sonoma Activist 23, 25 October 2006

These arguments question the environmental justice of introducing GE crops. That is, the fairness of a technology that will negatively impact the consumer health and the economic viability of farmers, for the financial benefit of a few biotechnology firms.

Taken together the claims made by Sonoma County activist illustrate a vision of justice and fairness in which, the state is the voice of the people and decisions protect the environment, citizen health and the viability of small family farms. Thus within statements, purchases, and every effort to avoid a conventional system of provision circulate claims about the injustice and unfairness of contemporary agrifood production.

Indecipherability

Finally, Ewick and Silbey (2003) note that acts of everyday resistance are most effective when they are not immediately recognizable and when elites have no readily available counter tactics. Such circumstances render opponents impotent and undermine the legitimacy of extant power relations. Indecipherability, however, is transitory. As Ewick and Silbey (2003, p. 1337) note once resistance is detected:

> [O]rganizational practices are often restructured to make the resistant tactics once again decipherable and controlled. Indeed, we can often find the residues and marks of resistance practices in the evolving rules and procedures of modern organizations and popular culture.

Yet, the interplay between resistance and structure does not ebb and flow in precise time. Rather, counter-tactics can alter the terrain on which resistance operates without rendering it controllable. The case of anti-biotechnology activism is particularly instructive. Everyday consumer tactics, such as scanning labels, contacting manufacturers and using non-conventional systems of provision, accord nicely with neoliberal doctrine – and as such, support the ideological commitments of the US Federal government and

the country's biotechnology interests (Harvey 2005). As Harvey (2005, p. 42) argues, the global "capitalist class" embraced post-modernism and "emphasized the liberty of consumer choice, not only with respect to particular products but also with respect to lifestyles, modes of expression, and a range of cultural practices" to secure the conditions of capital accumulation. Insofar as Sonoma activists express their freedom to take on "alternative" lifestyles - largely through consumption - they act according to dominant norms. Biotechnology firms and the state have very little recourse without contradicting their own rhetoric.

This is not to say that counter-tactics are impossible. In fact, the marks of past anti-biotechnology activism are visible in the FDA's prohibition of negative labelling (marking products free of genetically engineered ingredients) and its restrictions on statements regarding rBGH (chapter 5). In reaction to manufacturer efforts to advertise production practices and increase GE Free consumption, the FDA severely curtailed the type, placement, wording and composition of labels. Nevertheless, while such regulations make resistance more difficult, they have not eliminated consumption from the tactical toolbox. Resistance of the sort practiced in Sonoma remains somewhat beyond the reach of the state and corporations.

II) Action on the Ground: Everyday Resistance in Sonoma

Everyday activists' are actively resisting agricultural biotechnology and the neoliberal corporate order in which it is implicated. The following section explores the use and potential effects of three dominant tactics of rank-and-file informants. Using data from interviews and informal interactions in Sonoma County, I outline the potential for each tactic to counter and transform existing political economic structures and the help

construct new social, economic and environmental relations. Consumption is the dominant tactic and receives the greatest treatment in the following, but it must be understood as one of many resistance practices. Thus, while the bulk of this chapter reviews four types of consumptive resistance, it bares noting up-front that resistance is in no way restricted to consumption and that the tactic is part of a much broader package of everyday opposition.

"Worthy of My Dollar": Consuming GE Free

Eating GE Free is the predominant tactic described and practiced by my informants. The methods of consumption are diverse. In this section, I review four of the main type of consumer behaviour employed in Sonoma, which I categorized according to the systems of provision used to access food. While many informants characterized their behaviour as "voting with their dollar", their actions in fact are far more complex than this metaphor suggests. What is occurring in Sonoma, in part because of efforts to avoid GE products, is the establishment of alternative economies that set the groundwork for different types of social and economic relationships. In a sense, everyday activists are working through the economy without completely accepting the limits of the economy.

It bears noting that very few rank-and-file activists with whom I spoke appear to understand the complexities of genetically engineered food. Nevertheless, their actions are still carefully considered political statements. Only one informant discussed the difference between using a protein and a lipid from a GE ingredient. For this retired chemist, corn, canola, cotton and soy oil are not necessarily dangerous because the suspect proteins are not present in significant quantities. The truth of this statement is matter of much debate. That other informants did not seem to care whether they actually

consumed GE material, only that the ingredients at some point came from GE plants, is not evidence that they are mystified or acting according to rote doctrine. Rather it is illustrative that they are not necessarily acting out of a concern for health, but as a sense of protest. The majority of informants are concerned about "putting money in the mega-corporate pockets"[81] and the justice of biotechnology as an agro-ecological and political economic project. Consumption, therefore, is a political statement and it does not ultimately matter if a product contains GE traits. The fact that manufacturers buy ingredients derived from GE crops and thus support the production of these crops is sufficient to warrant resistance.

Consumption is a form of activism. To this point in the discussion, we have taken that fact for granted, but it is important to specify how everyday activists interpret their own actions. When I asked my informants how they attempt solve the problems of genetically engineered foods, I was told among other things, "I try to abandon [them]", "avoid [them]", or simply "mak[e] purchases that reflect [my] views."[82] One woman summarized her activities as "activism with my dollar, just how I spend it."[83] Another man suggested that everyone should "make their personal choices political."[84]

These statements are important. To be resistance consumption must be a reflexive engagement with the political economic system; it must be strategic and purposeful. My informants see themselves as the distributors of scarce financial resources, which allow them to step in or out of particular production systems.

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[81] GE Free Sonoma Activist 6, 24 August 2006

[82] GE Free Sonoma Activist 7, 25 August 2006; GE Free Sonoma Activist 16, 26 September 2006; GE Free Sonoma Activist 14, 25 September 2006

[83] GE Free Sonoma Activist 17, 27 September 2006

[84] GE Free Sonoma Activist 18, 27 September 2006

1) Free Market Activism – Using the System at Hand

Sonoma County activists have two perspectives on consumer activism. First, they draw on neoliberal understandings of free market regulation and attempt to change the way food is produced within the dominant system of food provision. That is, to reform the practice of the current players but not challenge their power. Activists use their consumer dollars to reward companies they deem morally and socio-environmentally responsible and use personal boycotts to retract support for "bad" companies.[85] In the words of one informant, consumer activism is about "creating a market."[86] Put another way, consumer activism is about leveraging demand and creating incentives for manufacturers to reform environmental and social practices.

To create a market, everyday activists keep a watchful eye on their food choices and are careful of the companies that they support. At a minimum, informants scan ingredient lists and read packages. Regardless of whether they only read labels the first time they buy a product or read them every time "just to be certain", most activists self-identified as "label readers." Without mandatory labelling of GE products or a standard Non-GMO label/certification this type of resistance is quite difficult. Everyday activists, therefore, make decisions based on the presences of "suspect ingredients" such as corn, soy or canola, or on a product's organic status. Some informants recognize that these methods are not perfect and that organic products are vulnerable to GE contamination. Their solution is to avoid processed foods altogether.

To the extent that GE Free consumption pushes individuals to abandon "durable" foods, it can significantly challenge the current globalized food system (Freidmann

[85] GE Free Sonoma Activist 12, 20 September 2006
[86] GE Free Sonoma Activist 29, 29 November 2006

1994). As discussed below, this turn is accompanied by the use of local systems of provision (SOP) such as farmers' markets, community supported agriculture and home gardening. Although problematic in their own ways, such SOPs re-define basic social relations and embed production in local economies and agro-ecologies.

Unfortunately, as we will see, the efforts of other groups in the anti-biotechnology movement may slow or prevent the turn away from processed to whole foods. The Non-GMO Project's proposed certification will make it much easier for consumers to choose Non-GMO products in the grocery store. By making it easier the group actually helps the dominant manufacturers and retailers who might otherwise lose customers trying to avoid GE products. Still, a Non-GMO label has the potential to increase awareness of GE foods and if the group can attract sufficient consumer and manufacturer interest might slow the spread of GE crops.

This type of "free market activism" works within the current hegemonic system. It is at best reformist. Switching from food containing GE to Non-GE corn, or from foods with sunflower instead of canola oil does not directly question the social relations governing food manufacturing and distribution. Such actions still benefit the systems winners, multinational firms like Kraft, Nestlé, and General Mills. As is clear from the current state of organics, these companies can easily produce their own "green" versions of existing foods or purchase smaller manufacturers with successful brands. Eating a Non-GMO food made by Kraft might increase demand for non GE crops, but it does not redistribute power across the food system, nor does it challenge the economic dominance and political privilege of multinational corporations. In essence, it does not challenge basic elements of the neoliberal political economy.

Moreover, this first type of consumer activism accepts current levels of consumption. It does not ask participants to limit their purchases or to switch to items with less embedded energy use. Nor does it challenge contemporary subjectivity and labour relations that create the necessity to purchase processed and durable foods (McGowan 2004, Horkheimer, Adorno 2002 [1944], Baudrillard 1981). For example, it does not ask why meals need to be made outside the home? What induces people to purchase basic necessities from global firms? Why goods that can be produced locally or regionally are imported from distant locations? Why political, social and environmental values have to have market value to matter?

The changes brought by free market activism are likely ephemeral because the tactic does not escape the contradictions within capitalism that exert downward pressure on the costs of production and deter re-investment in ecological services or social welfare. As Allen (2004) notes, once market competition develops, even the most dedicated actors are driven by economic efficiency rather than environmental rationality.

So it is clear that working the "free market" has very little power to alter the present political economy in the long-term. But it does have utility as a stopgap measure; as a small reform that can open a political and cognitive space for further counter-hegemonic action. For example, even as organic is being "conventionalized" (and perhaps because of this), a much broader audience is becoming aware of pesticide use, monocultures and other problematic agro-ecological practice. A larger segment of the population is coming round to the idea that food production should aspire to environmental sustainability and human health. As the idea takes hold, it creates a new moral economy that can slow

capitalist tendencies. The trick is not to limit action to the supermarket aisle and prevent complacency and a false belief that reforms are permanent and thus enough.

It is also important not to reduce the political force of consumption to market exchange. Free market activism requires engagement – albeit in a very limited sense - in food production. The devolution of responsibility for food quality from the state to consumers forces individuals to watch what is produced and how. Recent contamination incidents and the discovery of potentially harmful GE traits in the human food supply undermine trust that manufacturers and federal agencies can assure food safety. Consequently, everyday activists spend a great deal of time investigating companies and interrogating public relations officers. Take for example, how one female activist characterizes her resistance activities:

> Well, I try to be really mindful of how I participate; like where I buy my food. I try to really understand what companies I support. I vote a lot with my money. ...I like to understand the politics of those companies.[87]

To find out a company's politics she reviews their websites and researches the relationships between companies - in her words, "who owns them." Seeking more assurance, a few informants contact manufacturers directly to inquire about their production processes. What they find is not always reassuring. For example, one man recounted with profound disappointment:

> There's this really groovy company that makes corn tortillas. They're hand made and they're really great. My wife called them up because we both like their tortillas but we read all over the packaging but we couldn't figure it out [whether they were GE Free]. They said, 'Well we do use some organic but it's not all organic and we can't label it organic.' She said, 'Well is there any GMO in it?' And they said, 'We can't, for 100% certainty say no.'

[87] GE Free Sonoma Activist 8, 29 August 2006

> So we stopped buying it. And we told them, 'We're sorry, we love your product but we're not going to buy it unless you can certify that it's not GMO. We don't want to support that.'[88]

Explaining her first experiences in the anti-biotechnology movement, another informant noted that she also "checked up" on her favourite companies:

> I wrote the manufacturers of every product that I ate...that wasn't raw, that was a cereal or a cracker or whatever, anything like that. And I got a lot of responses and some of them were great. They [the companies] could vouch for everything or maybe they could vouch for everything except one small part of their product.[89]

By contacting manufactures and generally being aware of company practices, informants are keeping a watchful eye on the food system. My interviews with manufactures suggest that many companies changed their production practices in response the few emails, telephone calls and letters they received from disgruntled customers. To the extent that manufactures respond to direct communication, consumers can discipline the market. They are not simply hoping that their dollars will give them voice, but telling producers that they are watching and breeches of trust will punished by a loss of sales.

These actions suggest the need for an expanded conceptualization of consumption and particularly the ways that reflective consumption can force a shortening of the distance between producers and consumers. Reflexivity extends from what is eaten (eg. organic, GE Free etc.) to the producers' specific actions and their broader political economic relationships. Reflexivity is not just thinking critically about purchases, it can also involve asking questions and voicing concerns about the way goods are produced.

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[88] GE Free Sonoma Activist 18, 27 September 2006

[89] GE Free Sonoma Activist 12, 20 September 2006

2) Alternative Market Activism – Local Grocers

The free market perspective on consumer activism is in part an effort to redirect the practices of national and international firms. In comparison, a second approach focuses less on grand transformation and more on reconstructing local and individual social and environmental relationships. It is about stepping out of the dominant system and supporting different types of retailers, growers and food products. This second approach eschews neoliberal ideology more than the first. With this "local" approach, everyday activists do not see themselves as acting through the dominant market – that is voting with their dollar - but personally performing alternative systems of provision. Exemplified by a concern for how and from where they procure food, activists emphasize local production and a creative mix of sourcing practices. In the rest of this section I elaborate three main groups of "localizing" activity: retail-focused, direct marketing and self-provision.

A free market and local perspectives are not mutually exclusive. Take, for example, the following response to my question, "What can you do to solve problems you see with genetically engineered food?":

> [G]row food in my garden and keep bees and have chickens like we do. You know, and just localize it as much as you can; whether that means making it and creating it and growing it yourself, or buying local stuff at the store that's organic.... I look at labels. That's another thing, looking at the labels on your food.[90]

As this statement suggests, the different perspectives exist in tension and activists use tactics opportunistically. It was clear from the stacks of root vegetables, jars of homemade honey and large vegetable garden outside, that the informant above spends

[90] GE Free Sonoma Activist 29, November 29, 2006

quite a bit of time engaged in home food production. However, as we sipped imported liquorice tea and watched her housemate remove a lasagne from the oven, it was equally clear that the pair did not completely eschew grocery stores. Indeed, after her own garden, she listed her food sources as Whole Foods, Andy's and Fircrest Market.[91] The list itself illustrates tactical hybridity. As discussed below, activists generally prefer the two local, independent regional retailers to Whole Foods, which itself is preferred to conventional retailers like Safeway or Albertson's. Everyday activists refrain from using standard food provision outlets, but when they are forced, they approach such moments with the rationality discussed above: they choose to spend their dollars in those institutions that they assume have the best ecological and social relationships.

The first category of resistance practices involves a choice between conventional supermarkets and "alternative" grocers. As was done for manufacturers, informants interrogate retailers' integrity and patronize establishments that "have good reputations."[92] This generally means avoiding Safeway and Albertson's – the County's leading supermarkets – and shopping at one of numerous independent stores, which activists believe have stronger ties to the local community (Figure 5). For example, in listing his food sources, one man stated:

> [I]t's like a local Sonoma County place. It's called G & G Market. It's a local chain of markets. They are close to my house, but again they're locally owned....They're not like the monster Safeway type of thing.[93]

"Localness" is important for many reasons. The statement above indicates a concern for scale; that is, local grocers are smaller firms. The metaphorical transformation of large companies into "monsters" portrays Safeway-type retailers as

[91] Andy's and Fircrest Market are two independent grocers in the region.
[92] GE Free Sonoma Activist 14, 25 September 2006
[93] GE Free Sonoma Activist 16, 26 September 2006

uncontrollable and dangerous predators and suggests that large retailers prey on other actors in the system. This conceptualization is consistent with informants' general view that large corporations are profit-driven and corrupt. It is also consistent with academic findings indicating a relationship between a retailer's size and its ability to secure preferential (and exploitative) contractual terms from suppliers (Morgan, Marsden & Murdoch 2006, Marsden 2004, Freidberg 2003).

Figure 5: Sonoma's Independent Grocers

Note: From RJ Roff, 2006

Independent stores are also "eco-groovy" (ie. they have social and environmentally sustainable policies) and provide a greater variety of locally produced products than the larger firms.[94] One activist recounted his dismay in finding that two of the area's stores are not "into the local thing":

> *Activist 19*: So we've been getting a lot of our stuff there [Market A]. But it's interesting because [my wife] was working there for a little bit and

[94] GE Free Sonoma Activist 24, 20 October 2006

> they're not as tight with their standards as we are. I've talked to a couple farmers who feel a little bit alienated by the owner. So it's just hard. We want to support them [Market A] but we have some issues with them. And then one of the farmers I met this weekend - a guy that sells Asian Pears - was telling us that [Market B] - where we shop a lot - isn't really into the local thing.
>
> *Robin Jane*: Really?
>
> *Activist 19*: Yeah, I was shocked. I didn't know that either.
>
> *Robin Jane*: I thought that was one of their founding principles?
>
> *Activist 19*: How they define themselves. So we're gonna query them a little bit.... He [the pear farmer] says 'I see their trucks, because I deliver their Asian Pears all over the place. But,' he says, 'I see the Andy's trucks all over the place; picking up whatever's the cheapest not necessarily local.' So that made us think because we tend to not go to Whole Foods; to not support the whole corporate thing. But they [Whole Foods] say, 'No, they are [sourcing locally].'[95]

This short exchange reveals a great deal. Not only does it highlight the importance of local food in local stores, but it also suggests that independent stores *are expected* to have fair arrangements with growers and suppliers. They are not supposed to seek out the cheapest price and thus exert downward pressure on the cost of production. Local retailers are supposed to participate in the broader effort to maintain and encourage local agricultural production - which is perceived to be ecologically and socially beneficial. Independent stores should be part of the community in a way that Safeway is not.

Informants also believe independent stores are more honest and trustworthy than larger supermarkets. By shopping at the latter, everyday activists risk participating in practices that violate their sensibilities or threaten their health:

> If I go into a Safeway or an Albertson's and pick something off the shelf I know I'm risking not knowing what's in that food. But if I go to our tiny co-op, Community Market ... [I] know there's integrity there and ... to their

[95] GE Free Sonoma Activist 19, 18 October 2006

> best abilities they will only put things on the shelf [that they agree with] or they'll tell you what they know about what they put on the shelf if they're not in agreement with it.[96]

Other informants reiterated this depiction, noting that they shop at independent retailers and even Whole Foods, because they "don't have to read every label and wonder, 'Is this genetically engineered corn?'" They simply trust that the stores do not carry such products.

Whole Foods has an ambiguous role in counter-hegemonic action. The company's integrity is suspect, particularly in light of its size and increasing attempts to monopolize the natural foods market. As one woman said with a hint of sadness, "I'm not really thrilled with Whole Foods....We [Sebastopol] used to have a really good natural food store that was taken over by Whole Foods."[97] Other informants satirize the store's high prices, calling it "Whole Pay Check".

Most informants do shop in the store: 17 of the 30 individuals I interviewed claimed to shop predominantly at Whole Foods. Indeed, Whole Foods is the geographic and social pivot around which much of Sebastopol circulates. Centrally located in the town's plaza it is a meeting place and appears to visitors as statement of the community's dominant values – you have to drive past the impressive and domineering storefront to get through town. While less geographically dominant, the store has a similar place in Santa Rosa, Sonoma and Petaluma.

While everyday activists might prefer to shop at independent grocers, at times they are unable to do so. A few guiltily admitted using Albertson's or Safeway and were quick to justify their actions. For instance, one woman claimed that she shops for herself

[96] GE Free Sonoma Activist 15, 26 September 2006
[97] GE Free Sonoma Activist 21, 23 October 2006

at Whole Foods, but her son will not eat "healthy" food so she must also shop at Albertson's.[98] Others noted that the higher prices at alternative food stores were sometimes prohibitive. In many cases, however, the solution was not a turn to conventional supermarkets but to Trader Joe's – a chain that has made a name selling artisan, gourmet and organic foods (and a range of groceries) at incredibly low prices.[99]

Seyfang (2006, p. 1) suggests that avoiding supermarkets is an important means of resisting conventional systems of provision that "squeeze local producers financially, import most of their produce, remove money from the locality and impose social, economic and environmental costs on local economies." Conscious consumer aversion, she argues, stems from a desire to reduce these processes and establish new systems with different standards of wealth, progress and value. This is certainly true for the direct marketing venues Seyfang (2006) emphasizes. The statements of Sonoma County activists quoted above suggest it is equally true for small, local and independent grocers. In using such stores, everyday activists are attempting to support alternative systems of provision embedded in the surrounding agricultural economy and that, they believe, redistribute income to local growers. Yet, like alternative products, these alternative SOPs do not fundamentally recreate hegemonic social relations but temper and change some of their harmful aspects. In particular, by focusing on quality, proximity and fair treatment they oppose tendencies to exploit labour and the environment for private gain and to create elongated production networks to minimize the economic cost of production.

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[98] GE Free Sonoma Activist 1, 10 August 2006

[99] For the best description, see the Trader Joe's (TJ's) website: www.traderjoes.com. TJ's also has a prominent No-GMO policy, which was seen as a benefit by some activists.

3) Direct Marketing

The third type of consumer resistance involves the use of direct marketing venues, including farmers' markets, community supported agriculture (CSAs), and manufacturer wholesale outlets. As I was reminded by my informants, these venues are not inevitably GE free, but only because the county's growers have yet to adopt GE crops. Nevertheless, the close communication between consumers and producers in these markets means that so long as patrons overtly reject GE foods, growers are unlikely to introduce engineered varieties.

Farmers' Markets

Sonoma County has 15 farmers' markets, many of which are open year-round. The largest and most popular is the Santa Rosa Downtown Wednesday Night Market (SRDM). The SRDM runs between May and August, and fills the town's streets and plaza with farm stalls, arts, food vendors, musicians and activist group representatives gathering signatures for various petitions. The few times I attended this "summer celebration" (SRDMA 2007a) I was amazed by the "hustle and bustle" of the place. Official estimates put annual attendance somewhere near 100 000, with between 5000 and 8000 people visiting the market each week (SRDMA 2007b). In 2006, the farm stands lined a side street abutting the "main drag" between the small but vibrant, "free speech area" and a much longer section "populated by jewellery, clothing and food stalls."[100]

Farmers' markets are an essential part of counter-hegemonic practice in Sonoma county. Rank-and-file activists use them to access GE Free food, to change dominant

[100] Author's field notes, 9 August 2006. Santa Rosa Downtown Wednesday Night Market.

social and economic relations towards more sustainable methods, and establish an alternative agricultural economy. For example, one male activist hoped more people would "try to go to those farmers' markets" in order to resist "the whole corporate takeover of food systems."[101] Another woman, reflecting on her own use of farmers' markets added:

> I'd love to see people eating more regionally, being more connected with their local producers for lots of reasons, not just the GMO reason. I think it builds community; it builds your local economy.[102]

Indeed, farmers' markets avoid the "farm-gate price squeeze" of handlers, distributors and retailers (Morgan, Marsden & Murdoch 2006). Direct producer to consumer sales such as these also support local businesses and can safeguard agricultural livelihoods (Morgan, Marsden & Murdoch 2006, Goodman 2004). They explicitly challenge the dominant logic of efficiency and yield maximization by refocusing producers' vision on the needs of the immediate community. Instead of producing bushels of tomatoes for sale to an anonymous broker, farmers are encouraged to offer consumers a diverse and unique product selection. Some of the more committed growers will go so far as to introduce new products upon request. Thus, farmers markets offer alternative socio-economic realities for both farmers and shoppers.

Farmers' markets also increase consumers' awareness of the productive landscape. They visually and cognitively connect patrons to the land and labour that produces their food. Individuals meet farm employees (and sometimes the farmer) and can see the farm's agro-ecological diversity on the table before them. In some instances, photo displays of fields and barns embed production processes in the local geography. These

[101] GE Free Sonoma Activist 8, 29 August 2006
[102] GE Free Sonoma Activist 18, 27 September 2006

displays ask consumers to imagine the productive landscapes as they see the products of those landscapes. In this way, farmers' markets are a material resistance to the increasingly global and placeless conventional food system (Holloway, Kneafsey 2000).

Indeed, the experience of Sonoma's farmers' markets is starkly dissimilar to that of a supermarket. They are loud, boisterous events occurring in the open air – an air filled with the rhythms of local musicians and the smell of roasting coffee and fresh-cut flowers and herbs. As such, they "subvert the conventional spaces of food shopping" (Holloway and Kneafsey 2000, p. 292) and create new socio-economic relationships between buyers and sellers that deviate from those experienced in standard systems of provision. Through this subversion, farmers' markets provide a space for the performance of community not just consumption (Roth 1999). Within the context of this convivial consumpto-entertainment venue individuals interact with their neighbours – they see, watch, speak and laugh with them. The relationships created at, and by, farmers' markets continue outside the market gates and include friendships between sellers themselves. I frequently witnessed and overheard Sonoma county residents consulting with local growers in the street, at parties and in grocery stores. More commonly residents smiled, waved and extended a welcoming "Hi, how are you?" to growers (and vice versa).

Taking the lead from Crewe and Gregson's (1998) analysis of car boot sales, farmers' markets can be spaces in which local producers can meet, exchange and socialize with their peers. Such was the case in Sonoma where growers often traded products, planned diner parties and laughed and mingled with others as they sold produce (and meat, fish, eggs and flowers). In one particularly memorable instance, a local goat herder approached my shopping companion and asked if he could trade a fresh batch of

goat yogurt for the herbal tea my friend produced. The pair made the trade at a potluck later that week. While I do not know exactly where each of these relationships began, I did witness many first meetings at the region's markets and have developed my own friendships with farmers by frequenting farmers' markets.

Farmers' markets may provide opportunities to resist the dominant system of provision but the question remains: what unintended consequences are smuggled in between their stalls and brightly stacked vegetables? To begin, as Holloway and Kneafsey (2000, p. 294) argue, farmers' markets can be "a re-entrenchment of nostalgic and socio-politically conservative notions of place and identity." From this perspective farmers' markets are part of a larger tendency within environmental and agrarian politics to re-imagine the past as a time of authentic and pure connection to land and place. This idea cropped up in a few interviews but notions of past harmony were not a major theme in Sonoma county. Rather, informants' accounts suggest a desire to move *forward* towards a locally-embedded, biologically diverse and agro-ecologically complex agriculture. One activist juxtaposed her vision of integrated "multi-crop" fields with the older monocrop style of her great uncle's Iowa corn farm.[103] Others proposed new organic farming methods, which would harness the tools of chemistry and biology to create "high-tech" breeding lines and place- or organism-specific "field sprays".[104]

Second, Winters (2003) and Hinrichs (2003) caution that consuming locally often involves defending a homogenous ideal. This defensive localization constructs "rigid boundaries" around places and reifies extant and imagined community characteristics

[103] GE Free Sonoma Activist 24, 30 October 2006

[104] GE Free Sonoma Activist 23, 25 October 2006; According to this informant a field spray is a bio-chemical solution used to enhance or diminish a crop's biological characteristics.

(Hinrichs, 2003, p. 37). This type of localization is reactionary and exclusionary: it seeks to distance the "local good" from external others who threaten internal harmony.

My informants, however, do not appear to hold this spatial politics. Rather, their actions are coincident with Hinrichs' (2003, p. 37) "diversity-receptive" localization, which "recognizes variability and difference" within and outside the local. Participants in this system epitomize the "Think Global, Act Local" slogan that now populates everything from beer packages to t-shirts. Sonoma activists emphasize the origins of products rather than the products themselves. In addition, "local" is not a singular spatial identifier in most accounts but rather a relative quality: the closer the product is produced the better. Consequently, localness is attached at once to products grown within the US, California and Sonoma. Nevertheless, my informants and other market patrons encourage growers to introduce exotic and novel foods to localize as much production as possible. When successful in their efforts, vendors can earn a great deal by being first adopters.

Hinrichs (2000) volleys a third criticism at farmers' markets, arguing that they do not and cannot escape conventional capitalist relations. Taking the lead from Block (1990), she suggests that alternative economies be evaluated based on their relative "marketness" and "instrumentalism." Marketness refers to the extent to which decisions are based on financial criteria. Instrumentalism captures the relative prioritization of concern for the self versus human and non-human others. Accordingly, insofar as they perpetuate the commodification of food, the separation of production and consumption and are motivated and mediated by the logics of capitalist exchange, farmers' markets are "significantly tinged by both marketness and instrumentalism" (Hinrichs 2000, p. 298). Moreover, she argues that the embedded social relations valued so highly by academics,

activists and consumers may themselves be commodified and "sold" as value-added services (Hinrichs 2000, p. 299).

We must take these critiques seriously. Yet, again, they do not align perfectly in the context of GE Free activism. Hinrichs (2000, p. 299) extends her argument to farmers' market patrons by citing studies indicating that consumption is motivated by a concern for personal health rather than the "plight of farmers or the social and environmental impacts of agriculture." GE Free consumption in Sonoma is predicated on a desire to resist and challenge corporate agribusiness, the political dominance of the US biotechnology industry and the unjust treatment of farmers, consumers and the environment. Thus, at least for my informants, farmers' markets are a political intervention, not merely a "healthful" system of provision. In addition, rank-and-file activists recognize that GE Free products are relatively more expensive whether they buy them at a farmers' market or in a store. Consequently, everyday activists' use of farmers' markets shows lower levels of both marketness and instrumentalism than Hinrichs implies. Informants are behaving, at least in part, with broader political goals in mind and forgoing income for such purposes.

Of course, Sonoma's farmers' markets are not without problems. They are expensive and higher prices can reinforce social cleavages, especially if the site is used as to define identities and perform elite lifestyles (Holloway, Kneafsey 2000, Bell, Valentine 1997). The "people watching" that goes on at farmers' markets and the prevalence of artisan food and craft goods in Sonoma make this danger very real and alterative food activists must be careful not to further racial and class divisions and reserve good food and "good" political expression for the wealthy.

My observations suggest that the 15 markets presently serve a variety of communities, races and socio-economic groups. However, as Rachel Slocum (2007) argues, understanding racialized space is not a matter of counting the number of white or brown bodies. Alternative food practices in the United States are inescapably white. They have developed out of, and thrive in a "middle-class consumer base that tends to be interested in personal health and perhaps in environmental integrity" (Slocum, 2007, p. 526). What counts as alternative is in large measure defined by the "white dietary obsessions" (ibid). Moreover, accessing alternative foods is intimately tied to owning a car, having money and "comfortably traversing" space – all aspects Slocum links with the performance of whiteness. Thus, it is not surprising that "there is a physical clustering of white bodies" (Slocum 2007, p. 526) in alternative food spaces.

The reproduction of white privilege through alternative food practices does not obviate their progressive potential and Slocum (2007) is quick to point out that whiteness does not necessarily mean oppression. White spaces, such as farmers' markets, can bring races into proximity and help develop links between community groups. Closeness develops through direct interaction or can be mediated through "exotic" foods or preparation techniques. More important, the white imaginary contained within alternative food practice is, "a hopeful vision of changing communities, supporting farmers, preserving farmland, improving the welfare of nonhuman life and helping people get better food in their lives" (Slocum 2007, p. 528). It is also an active stance – one that requires engagement in the world.

White spaces can expose the racial cleavages in American society. For example, it was virtually impossible for me to ignore the predominance of upper-middle class

patrons, or the juxtaposition of a largely white shopping population and the many Hispanic and Asian growers at Sonoma farmers' markets. The markets bring individuals face to face with the reality that in the US, work remains starkly divided along racial and class lines. The brown faces behind the counter give concrete form to the flow of bodies across borders that supports the American food system (and other manufacturing sectors). In essence, they force individuals to see the agricultural labour that is generally (and purposefully) hidden in fields. Thus, farmers' markets can be spaces for highlighting racial cleavages.

I do not want to overstate the role of farmers' markets as tools of social and political transformation. GE Free activists are using them as such, but this does not mean that other patrons are not using them for social distinction or simply as easy ways to access fresh, nutritious produce. Moreover, it does not prevent individuals from having multiple understandings. Given that this is very likely the case, it raises important questions regarding the transformative power of alternative SOPs. For example, to what extent do the heterogeneous motivations of consumers help or hinder farmers' markets radical possibilities? Does it matter if a segment of patrons aspires to exclude others or define localness in defensive terms? How do we weigh the positive benefits of seeing cleavages and working across them with the unintended consequence of potentially reinforcing marginalization? As a tentative step towards answers, I will say it is a matter of quantity. The critical mass of any consuming segment will drive the market towards its own ends. Preventing harmful shifts requires committed decision-makers and a dedication to ensuring that the market is accessible to all consumers. Accessibility includes more than price. Market managers and growers have to avoid the temptation of

constructing the space as a venue of distinction for rich clientele; they must avoid the tendency to "yuppify" the market space. Regardless of prices, if a market feels like it embodies the visions and imaginaries of white, upper class patrons it is less accessible to other social segments.

Nevertheless, I appreciate Slocum's (2007) optimism. To the extent that farmers ' markets create different economic relations, they are powerful political tools. In the present case study, by using this system of provision, everyday activists are intentionally shortening the economic distance between producers, labour and consumers. They are at least partially withdrawing their support for the dominant system of provision and thus resisting the alienation of mediated exchange and the power of the retailing and distribution sectors. We must endeavour whenever possible to route out elitist tendencies when they develop in farmers markets, but participation, whatever the motivation, is important.

Community Supported Agriculture

Many rank-and-file activists also turn to Laguna Farm, a local community supported agriculture (CSA), to shop GE Free and resist both biotechnology and global agribusiness. However, in turning to this particular social and agricultural institution, everyday activists inadvertently (and sometimes overtly) support a significantly different hegemonic possibility: One that offers dignity to agricultural labour, builds a sense of community, deepens relationships with local ecology and reties the knot between place and food.

Figure 6: Laguna Farm

Note: From RJ Roff, 2006

Community Support Agriculture is a relatively new type of direct marketing system in which consumers buy "shares" or "subscriptions" in a farm. These shares entitle the owner to a certain amount of the farm's production, generally distributed in weekly or bi-weekly allotments throughout the season. In such arrangements, the farmer decides the boxes' contents. For example, if the harvest is good, members might receive many tomatoes, but if it is poor, they may receive only carrots or lettuce. Similarly, only those crops that are in season can be distributed to members.

Established in the late 1990s, the Laguna Farm is the centrepiece of Westcounty's alternative food movement (Figure 6). For only $17 a week and a deposit of $75, members have access to a large Rubber-Maid box of "beyond organic" fruits and

vegetables.[105] Members and non-members can also shop at the farm's store, which stocks local artisan breads, jams, tea, salves and herbs, and a selection of off-farm produce such as shallots, avocadoes, dates and bananas.

The farm is an exception to many trends in contemporary American farming. To begin, the farming family owns the land outright and has been for many years. The main farmer, Scott (of Scotty), cultivates the land for his retired parents. Second, contrary to the concentration of land and labour in other domains, Laguna is increasingly disaggregated. What was once a single operation is now divided between a number of farmers – the majority of who were once or remain field workers and interns on the main farm. In addition to small plots of land, Laguna offers reasonable rents and access to agro-ecological information (eg. trade journals, seed catalogues, and organic farming manuals). The program enabled many of its long-time employees, most of whom, like the rest of California agricultural labour, are first generation Hispanic and Mexican immigrants, to start successful farming operations and secure independent livelihoods. Farmers rent the fields and produce food and flowers for themselves and for commercial sale. The CSA buys a portion of these crops and the rest are sold directly to restaurants and at farmers' markets.

In her path-breaking analysis of the politics of labour in California's strawberry fields, Miriam Wells (1996) links the rise of sharecropping and tenancy in the post World War II period to the rise in agricultural unionization and state labour legislation which

[105] The term "beyond organic" is emerging to counter the standardization and simplification of the National Organic Program and is an attempt to incorporate organic's original agro-ecological philosophies (ie. small plots, multi-crop systems, polycropping, and reduction of off-farm inputs). It has become particularly popular with growers like Farmer Scott who have been priced out of participation in the NOP. According to a Laguna Farm brochure, "Our standards are above and beyond those of the National Organic Program, which, we believe, has compromised the original intent of the organic community. For this reason, we as Laguna Farms have chosen to no longer use the term "organic," though our commitment has not changed."

protected workers' rights. In telling this story, she argues that dividing land can and has been used to undermine labour rights and counter emergent class sensibilities in the field. Her analysis is undoubtedly correct. However, Laguna's is not this tale. Tenancy here is part of a concerted effort to help individuals, and particularly the farm's labourers improve their socio-economic circumstances. The relationship benefits both Scott and renters. The land is cultivated and workers are given the opportunity to establish themselves in Sonoma. This is a small program, of course, but to the extent that it eschews contemporary agriculture's tendency to capitalize on a vulnerable seasonal labour force it offers a good model for an alternative future.

In addition to these exceptional qualities, participation in the CSA funds alternative ways of interacting with both farm labour and the environment. As "Farmer Scott" tells potential members:

> By subscribing, you are supporting more than just the freshest possible, nutritionally superior non-GMO produce, grown with methods that increase its life force; you are also supporting our efforts in the areas of: bioregionalism; ethical employment; alternative energy and fuels research; [and] community connections. (Laguna Farm N.D.)

Indeed, employees receive a high and fair wage for their labour and, as noted above, are given access to agricultural and business training. The farm and the small community that lives on the property is also attempting to get off the grid and out of the barrel with a new photovoltaic solar system, strawbale-insulated cooler, wind turbines, and bio-fuels powered vehicles.

CSAs present a radical challenge to the dominant economy. The concept of buying a share of produce in advance changes notions of price and price production, and counters standard ways of purchasing food in spot markets (Hinrichs 2000). In essence,

participation in CSAs is as much about supporting local farming as it is about buying food. In direct contradiction to basic capitalist principles, food's use value supersedes its market value and the social and environmental utility of local farms takes precedent. From this perspective, subscriptions are a means of subsidizing social and economic development and farmers actually trade food for the opportunity to farm.

Economic relationships based on advanced payment redistributes risk between growers and patrons. Subscriptions preserve Laguna Farm, which was near foreclosure prior to establishing the CSA. Insofar as membership is assured from month to month, the CSA relieves Scotty of the need to focus on finding outlets for his products. Instead, he can focus on growing the types and quantities necessary to fulfil the needs of the immediate community. CSAs thus establish the direct and meaningful links between consumers and producers espoused by activists and academics. While the quarterly or monthly payments give Scott less assurance than the standard annual payment would, Laguna is incredibly popular and shows no sign of closing in the near future. A farm informant predicts that that membership will double from 500 to 1000 in the coming years.[106]

Like farmers' markets, CSAs are praised for fostering a sense of community beyond the farm gates and rooting participants in the local agro-economy (Lyson 2005, Guthman 2004, Hinrichs 2000, Lamb 1994). As Lamb (1994) notes, farmers may capitalize on this quality by promoting the farm as a centre of community activity. In this respect, Laguna is no different. I attended numerous festivals, celebrations and meals at the farm (the majority of which featured local musicians and artists) over the course of my stay in

[106] Interview with former Retail Manager and resident, Laguna Farms, 21 November 2006

Sonoma. With the help of two residents, "Farmer Scott" is also developing a school program to provide elementary children the opportunity to visit and participate in farm activities. Combined with the actual community living on the property, Laguna is an important site of community-building and social cohesion.

Thus, by using the CSA to resist corporate control, GE Free activists are simultaneously supporting a radically different hegemonic reality. More importantly though, participation transforms individuals and forces them to perform these alternative realities. For example, participation in Laguna requires new consumption practices. Most participants must take the time to visit the farm on Tuesday or Thursday. [107] In doing so, they witness the working landscape from which their food comes and the labour that goes into its production. The farm's initiatives and the brochures that line the CSA entranceway expose participants to environmental and social justice activism in the area and the small material changes that they can make in other domains of their lives. Through this direct contact, CSAs can get people to think about new issues that may be tangential to the agrifood system, but which nonetheless add to the broader counter-hegemonic project.

Participation also brings unintended cognitive and dietary changes. At minimum, members must also forgo a portion of their control over food decisions and learn to be creative and spontaneous in meal preparation. I witnessed some CSA participants exchanging products or sharing cooking ideas suggesting that these requirements can add to the sense of community.

[107] Laguna Farms does offer a "drop-off" service for a small fee but a minority of members use this service.

As one female activist noted participation in Laguna Farm forces individuals to pay attention to environmental limits and, in her words "think seasonally". She joined the CSA to counter "capitalism", "Monsanto" and "big business" more generally. Although her politics remains focused on resisting corporate power, she remarked with a great deal of joy that the CSA has changed her habits and understanding of the region:

> What I did do is I joined a community supported agriculture. Joined a farm. So our vegetables now come from an organic farm – a beyond organic farm. [This] changed the way I eat because we eat organic vegetables and ...[are] trying to eat more seasonally. ...It certainly does make you more aware when you're getting a box from the farm.[108]

For her, what started out as a way to withdraw from the dominant system evolved into a consideration of seasonality and the provenance of food. These concerns are important for reconstructing human-environment relationships and the character of the food economy. Moreover, they illustrate that anti-biotechnology activism can be a catalyst for more profound activities in the food system. For example, it can inspire a transition away from long-distance trade and the associated use of diminishing fossil fuels reserves, the release of greenhouse gases and the extension of transportation infrastructure.

Thinking seasonally roots consumers in the local ecosystem, increases awareness environmental relationships and fosters a greater concern and appreciation for the surrounding community and landscape (Lamb 1994). Seasonality also relieves some of the pressure on energy-intensive global commodity networks. Insomuch as these networks are driving the extension of free trade areas (Buttel 1999), accepting eating in season allows everyday activists to withdraw compliance from both industrial agriculture and broader neoliberal changes. Thus, if CSA members take seasonality and the

[108] GE Free Sonoma Activist 5, 24 August 2006

restrictions imposed by farm boxes seriously, this system of provision begins to effect real political economic and agrifood change.

As Lamb (1994) notes, CSAs are not completely divorced from the conventional economy. First, consumers must use supermarkets or grocers to access non-farm commodities – which usually means anything that is not a fruit or vegetable. Second, farmers rely on conventional networks to backup consumers' needs in times of dearth or in the off-season. Indeed, the informant quoted above also nervously admitted that she "still [goes] to Safeway" for groceries, but rapidly justified it arguing that she continues to "be aware" of the products and companies that she supports in the supermarket. As if to reinforce the legitimacy of her actions, she ended her statement forcefully with: "I think it's better than a lot of people do!"

The guilt this woman felt in going to Safeway is noteworthy on two accounts. First, it suggests problematic social stigmas exist within alternative food politics in the county. Attaching shame to shopping at Safeway implicates the movement in marginalizing individuals who have no other option. Second, it illustrates the connections between CSAs and the broader conventional food system. So long as patrons must return to supermarkets, Laguna will offer on a *partial* stepping out of the system.

Laguna Farm is also directly connected to international networks through the store, which supplies patrons with foods imported from Mexico and other parts of the United States and Latin America. Introducing the retail outlet, and particularly the sale of imported goods such as bananas, was controversial. When I inquired about the potential contradiction between transporting goods long distances and the farm's philosophy of connecting consumers "in a meaningful way with their food and the farmers who grow it"

(Laguna Farm N.D.), the store's manager emphasized that employees work hard to source locally before looking to growers outside Sonoma. When I pressed her further on the issue she argued that the retail outlet allows the CSA to operate year-round and thus extends the economic benefits for "Farmer Scott" and the farm's other employees.[109] Nevertheless, the store tempers Laguna's alternativeness and connects the farm (and its patrons) to global commodity flows.

4) Self-provisioning

The last major type of consumer resistance practiced by Sonoma activists is self-provisioning. This includes using home gardens, trading and bartering with friends and local growers, and "gleaning" food from farms and manufactures. Among the minority of informants who participated in these types of SOPs, gardening is particularly prevalent. Informants see it as a way to control foods' genetic stock and thus avoid GE traits: "I grow a lot of food. And I know that that's not genetically engineered. So I'm aware of where I get my seeds. I save a lot of seeds."[110] Another man argued that by cultivating his own food he "knows where it comes from" and is assured that he is not supporting "any corporations; Monsanto being one of them."[111]

More adventuresome activists "glean" food from farmers and manufacturers. Over the course of my stay in Sonoma, I had the opportunity to sample many different gleaned food (apples, tomatoes, lettuce, bay leaves, and bread)[112] and even harvested my own grapes after the close of the wine season in late November.

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[109] Interview with former Retail Manager and resident, Laguna Farms, 21 November 2006.

[110] GE Free Sonoma Activist 8, 29 August 2006

[111] GE Free Sonoma Activist 19, 18 October 2006

[112] We did not glean the bread from a field; it was the "leftovers" from a local, organic bakery at which a close friend was employed.

Gleaning has historically been an important means of food procurement for the poor and has been part of Western custom and law for centuries. In many countries, including the United States, gathering "waste" crops and foods supplements or replaces state welfare systems. Most recently the USDA endorsed "food recovery" efforts as a "creative way to help reduce hunger in America" (USDA 1996). Samaritan organizations, such as the radical food justice group Food not Bombs or the Society of St. Andrews, continue this tradition by accumulating and redistributing food gathered from restaurants and retailers.[113]

Gleaning in Sonoma is different from the altruistic efforts of these community groups. In Sonoma gleaning is part of the larger effort to eat local food. What could amount to theft, is justified under the rubric of "not letting anything go to waste." Growers appear unconcerned with the practice and in a few cases directly supportive. Take for example, two of my experiences with the practice. In the first case a friend noticed that the vineyard adjacent her home had been recently harvested. Upon returning home, she telephoned and invited me to join her in an afternoon of "scavenging" the leftover grapes. Unused to the practice, I warily agreed and we trudged off the next day into the fields. As we walked through the rows of pinot noir and chardonnay, we saw the grower tending the last of the season's harvest. He waved and proceeded with his task. I was amazed.

As we walked back to her house an hour or so later, I expressed my surprise and asked my friend about the incident. She noted calmly that this was standard practice in the region and that it was common for large groups of individuals to move from vineyard

[113] For more information on these groups and the institutionalization of "gleaning" in the United States see *A Citizens' Guide to Food Recovery* published by the USDA and available at: http://www.usda.gov/news/pubs/gleaning/content.htm

to vineyard collecting as many bushels of grapes as possible. Indeed, as I discovered over the next few months, these gleaning efforts kept a plentiful supply of "home-brew" wine at parties, potlucks and community events.

In the second instance, I watched as two other female friends transformed a number of buckets of heirloom tomatoes into exceptionally good pasta and pizza sauce. With a standard price between 3 and 4 dollars a pound, heirloom tomatoes are not your usual processing base. However, the women had had the good fortune of knowing a local farmer who had decided not to harvest a large portion of his crop. Cold weather and limited rainfall made the fruit cosmetically imperfect and commercially unviable (in an oddity of microclimatic chance, the farmer's other two fields had not experienced the cold snap and had received sufficient moisture from the adjacent river to produce a bountiful harvest). Knowing the women might be interested, the farmer had telephone one and invited her to pick as much as she wanted.

As these two anecdotes illustrate, gleaning is an alternative social relationship – albeit not a new one – to conventional economic exchange and property rights. Here consumers and producers meet not in the market, or through the market, but in the field. An unspoken moral economy guides action and induces growers and manufacturers to relinquish their property rights to "leftovers". As long as gleaners respect the integrity of agricultural land and commercially valuable crops and attempt to minimize their impact they are granted access to what is at other times enclosed space.

Such a moral economy requires the partial and temporally contingent commodification of crops. Only that portion which meets standards is harvested and given market value. While developing on the tree all apples are *potential* commodities;

their transformation is incomplete until they navigate the rigors of quality control. Those apples that are not harvested are common property.

Of course, not all informants had the time or the desire to step so far out of the dominant system of provision, nor did those with gardens "eat everything off their own land."[114] Many traded and bartered with friends, manufacturers and local growers, sometimes offering products or services, other times paying for food at below market prices.

Everyday activists take a great deal of pride from being able to participate in self provision. The more one "knows" producers or can produce for oneself, the better one's reputation as an "alternative" and "good" community member. As a male activist noted: "We kind of pride ourselves on trying to stay local; on trying to buy from either friends or farmers or what we have ourselves."[115] In a particularly clear instance of this "politics of reputation" a very boisterous female activist noted with delight that her daughter "thinks of food as the producers" because their family has always "shopped based on relationship" – that is the woman goes directly to farmers and manufacturers with whom she has developed friendships. Her daughter "calls Straus milk Albert's milk" and refuses to eat anything but "Paul's pasta."[116]

Self-provision is also a source of tension in informants' lives. Many noted the importance of gardening but lamented that they were not participating to the best of their abilities. Some expressed guilt and remorse that they did not have "green thumbs" or were currently not particularly astute gardeners: "We grow some of our own vegetables.

[114] Sonoma County Activist 14, 25 September 2006

[115] GE Free Sonoma Activist 19, 18 October 2006

[116] GE Free Sonoma Activist 22, 10 October 2006; The Straus Family Creamery is a large, Marin-based dairy business. I did not ever discover the name of the pasta manufacturer.

We'd like to get better with that."[117] Even a woman employed as a master gardener noted that she should produce more of her own food: "I kind of feel guilty about it. I want to do a better job of growing my own fruits and food."[118] A third man attempted to justify his use of supermarkets and grocers by arguing: "I'm certainly not perfect; not many of us are. I mean you've got to be eating everything off your own land just about to the perfect."[119]

The pride and guilt associated with self-provisioning can foster a closeness between producers and consumers and between consumers and their local agro-ecology. Nevertheless, as with anything based on social distinction, it is also divisive. There is definitely a danger in conflating eating local food and self-provisioning with being a good community member. It can further marginalize community members who cannot afford to garden or buy directly from manufacturers. Gardening is time-consuming, particularly in Sonoma where the season can last the entire year. Trading and bartering necessitate direct contact with farmers and manufacturers dispersed around the area. Participants must have access to a car and the time to make multiple shopping trips. Self-provisioning also requires a flexible work schedule – luxuries that socio-economically disadvantaged community members may not have.

Some everyday activists recognize this danger and while they take pride in being able to source locally, they also know they are lucky to be able to do so. Informants stressed that the county's bountiful farming and manufacturing community and the particularly mild Northern California weather give them unmatched access to "the best

[117] GE Free Sonoma Activist 13, 25 September 2006
[118] GE Free Sonoma Activist 10, 31 August 2006
[119] GE Free Sonoma Activist 14, 25 September 2006

food in the whole world."[120] Others highlighted the tradeoffs that were required to live a "local" life. For example, one informant noted that her ability to garden was a direct consequence of her decision not to have a family:

> I chose to not have children so my life isn't busy with that kind of thing. I'm really aware of that. I've made choices along the way for a lot of reasons. And so I think people are really busy and they have to choose how they spend their time. And so I think it'd be rather short sighted of me to, to say how others should spend their time.[121]

Another woman likened her attempts to localize to the choice to engage other expensive practices:

> This is something that is important to me. I mean some people smoke cigarettes, some people drink coffee and I will spend that extra money to buy good food. You know, to buy the quality food. I'm willing to put my money in that direction. And that's just a choice that I'm making.[122]

Although my informants believe that good food systems include local production and self-provisioning, many also have a pragmatic understanding of their economic and geographic privilege.

Gleaning, gardening and direct trading bring with them a different set of social, economic and ecological relationships. They are, in many ways, quite radical departures from conventional practices. They require a significant amount of time, which in turn requires that individuals forgo time spent in paid employment or childcare. Their adoption by a majority of citizens would necessitate a re-configuration of labour and family relations. Environmentally, gardening and gleaning force individuals to be attentive to seasonal changes, and in the former the health of garden ecosystems. Together these practices challenge conventional system of food provision and particularly

[120] GE Free Sonoma Activist 5, 24 August 2006
[121] GE Free Sonoma Activist 8, 29 August 2006
[122] GE Free Sonoma Activist 27, 20 November 2006

biotechnology. Whereas the conventional system is visually obscured and spatially extensive, self-provisioning is "seen" and proximate; individuals "know" production in intimate ways and their interaction with agro-ecologies is no longer mediated by packaging and glossy advertisements.

Most important, the self-provisioning practiced in Sonoma resists the logics driving agricultural biotechnology by replacing "scientific expertise" with experiential knowledge. Foods are judged based on "knowing" their origins, which in some cases includes a direct knowledge of a seed's pedigree. In addition, insofar as gleaning and seed saving undermine exclusionary property rights they challenge the proprietary norms on which the biotechnology industry has flourished (Boyd 2003).

Ridicule and Denial of Dominant Common Sense

Ridicule and the denial of common sense are important weapons against the power of biotechnology firms. They are, according to Scott (1985, p. 22 & 27), "small arms fire" that opens a space in which "elite control fall[s] away." Criticisms and the disavowal of dominant logics are normative constraints on powerful groups insomuch as "they embody...a critique of things as they are, as well as a vision of things as they should be" (Scott 1985, p. 23). Thus, much of what counts as resistance occurs in the realm of discourse, and particularly in the discursive construction of social norms and responsibilities. In Scott's analysis, Malay peasants are able to influence situations that they might otherwise not by emphasizing their relative impoverishment vis à vis upper classes. In doing so, they draw on established moral economies that require incomes to be redistributed justly between the rich and poor through systems of charity and "help". Similarly, by satirizing elite piety, they play on the "politics of reputation" that governs

public behaviour and attempts to extract benefits from elites endeavouring to maintain a "good name" (Scott 1985, p. 24).

A similar politics of reputation exists in struggles over agricultural biotechnology. In Sonoma, this politics emerges through denials of the dominant narratives used to justify genetically engineered crops and accusations of state corruption. To win a crucial and ongoing public relations battle, the biotechnology industry promotes itself and its products as working in the service of humanity (McAfee 2003b). For example, at the time of writing, the Council for Biotechnology Information (CBI) welcomed readers to its webpage with the statement, "High-Yield Agriculture Can Help Protect Rainforests" (CBI 2007b). The ensuing article claimed that the yield enhancing properties of genetically engineered crops would increase food production and lessen the need to slash and burn "the earth's oldest living ecosystem":

> Biotech seeds can help farmers in the developing world grow the amount of food, and the variety of food, people need, without having to plow under new land. That's good news for rainforests and other natural woodlands, wetlands and prairies bordering agricultural areas.

A photo of moss-covered trees and a forest floor lushly blanketed in vibrant green ferns accompanied the story. In a column to the right CBI listed other articles that might interest the webpage's visitors. The headlines read:

- Brazil sees biotech soybeans as a tool for economic development;
- Biotechnology helps create long-lasting soybean oil that's better for your heart;
- Biotech crops boost incomes, raise living standards around the world;
- Farmers take steps to protect economic value of harvests.
- Ethanol made from biotech corn yields more environmentally friendly alternative to gasoline;

Genetic engineering, in other words, is not just another agricultural technology but the key to sustainable economic development, combating food-related disease, preserving rural livelihoods around the world and overcoming the looming oil crisis. Brooks (2005, p. 365) notes that this framing amounts to an "evergreen revolution." It at once constructs an environmental and social crisis and suggests the solution in plants designed to work in harmony and even flourish with environmental contingency.

Nature in this framing is contradictory – at once understandable, predictable and reducible to an assemblage of genetic information (McAfee 2003b), but also a precious and unique resource in need of protection. Third World farmers are hungry, deploy inefficient agricultural practices and are caught in a Malthusian bind of rampant population growth. American farming is portrayed as similarly unsustainable, facing declining economic margins and inadvertently degrading agricultural environments.

While Sonoma County activists do not necessarily disagree with such framings, they stridently deny the basic claims that biotechnology will alleviate hunger and lead to prosperous rural communities. To begin, many challenge the conceptualization of hunger as an issue of quantity, rather than quality and distribution. For example, one female activist rejected the suggestion that agricultural biotechnology might bring long-term benefits stating:

> There are so much simpler solutions ... than talking about being able to grow rice, or whatever, in places you could never grow it before. We're going to destroy the Earth doing stuff like that; creating plants that are going to change whole ecosystems. I don't think that's a good idea. I mean world hunger is so political. It's not really about an abundance or a lack of abundance of food. So I don't see the point![123]

[123] GE Free Sonoma Activist 21, 23 October 2006

A second woman accused the biotech industry of using hunger and nutrition to conceal less altruistic motives:

> I think there could [be benefits], for sure. But as far as what I've learned all the benefits are for shelf life, for appearance, for better harvests, not necessarily for health or the environment. So, I'm not convinced. They're not making carrots that have like extra vitamin A....They already have enough vitamin A; they don't need more vitamin A. The idea of adding vitamins to your fruits and vegetables is silly anyway. Trying to make it more nutritious; I mean eat more of them![124]

Everyday activists also refute the industry's claims that the technology helps farmers. One man, himself a practicing agro-ecologist, noted:

> Well they're saying feed the world and I'm saying they're requiring the farmer to buy seed from them and the cost is about five times more and then they have to rely on all the chemicals.[125]

From this perspective, genetically engineered crops magnify the threats to rural livelihood by further tying farmers to the corporate, industrial farming system.

That they contradict dominant framings is not sufficient to render such statements resistive. What is important is that each contains a normative vision of an alternative agricultural and economic system that does not include biotechnology. Rather, genetic engineering is portrayed as a misguided technological solution to current environmental and social problems. The industry is at best producing unnecessary products and, at worst, perpetuating the structures that produce the social and ecological marginalization they are purported to reduce.

When activists claim that biotechnology firms are not helping poor farmers or are looking for solutions in the wrong place, they draw on the moral economy underlying industry rhetoric: rich Northern countries are morally obliged to share their intellectual

[124] GE Free Sonoma Activist 4, 23 August 2006
[125] GE Free Sonoma Activist 23, 25 October 2006

and economic advantage and develop solutions for Third World problems. At issue then is not the logic of development but the means of achieving appropriate redistribution. In this way, everyday activists attempt to constrain biotechnology firms by highlighting the gaps and inconsistencies in their claims and at the same time holding companies ever tighter to dominant justifications. Paraphrasing Scott (1985), such acts of resistance reconfigure the existing moral economy into a symbolic and material barrier to exploitation.

Critical portrayals of corporate leaders, such as Monsanto, are similar attempts to hold biotechnology firms to their own discursive frames. Everyday activists depict the firm's actions as imperialistic, self-interested, and "illegal". The company is a "liar", "sneaky", purposefully "duping" farmers and consumers. Referring to her own experiences in business school, one activist questioned the ethics of biotechnology industry executives:

> I took a business ethics class 'cause I had a marketing degree in my undergrad. And I'm wondering where the ethics classes have gone? ...Where's the business ethics in this? ....We've got to re-send these business people into these ethics classes.[126]

Industry ethics were not the only thing at issue: the ethics of scientific expert advice is equally suspect. Everyday activists criticized the academy for being beholden to industry funding and regulators for accepting data that they believe is essentially bought by biotechnology firms. For example, a female nurse lamented:

> I wish that we had true scientists in charge of food safety testing as opposed to corporate scientists; I should say independent, not true, independent scientists involved in testing for safety. As it is now it's largely corporate.[127]

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[126] GE Free Sonoma Activist 24, 30 October 2006

[127] GE Free Sonoma Activist 7, 25 August 2006

This type of "small arms fire" is an act of defiance. Neoliberal doctrine gives the balance of power to the free market and the scientific experts that advise decision-makers (Harvey 2005). Such statements suggest a space in which oppositional ideologies circulate and the legitimacy of "experts" falls away. More important, they make public the industry's private actions and undermine its good name.

Reputation is of utmost importance to the biotechnology industry. Faced with mounting international opposition (particularly in Europe and Africa) and declining profits, firms are mounting multi-billion dollar advertising campaigns to boost their image, increase investor confidence and gain the public's trust (Lambrecht 2001). Critical statements can force firms to follow-up their rhetoric with changes in material relations by turning private actions into public knowledge (Lambrecht 2001). In effect, they publicize and politicize what Monsanto and other companies have stridently attempted to de-politicize: the economic and scientific assumptions and practices that enable biotechnology's advance (Patel, Torres & Rosset 2006). In so doing they open these up to debate and, potentially, reconfiguration.

Talking it Up: Education

A third way everyday activists resist biotechnology and genetically engineered food is by educating and enrolling others in the movement. When asked to describe their methods of solving the problems of biotechnology, a majority of informants noted sharing information or "living by example". Education extends the reach of criticism , ridicule and counter-hegemonic ideologies. Not only does it provide a vehicle and an audience for this type of resistance, but when successful it draws more people into such practices and shines a spotlight on industry action. Indeed, one female activist noted that the purpose of

talking to friends about GE products is "to keep...an element of suspicion or question in peoples' minds."[128]

Everyday activists target different actors suggesting divergent perceptions of the best point of intervention. Most target friends, family members and co-workers. Others spoke of the need to educate "the broader population"[129], "the 'ag' community" and "food producers"[130], or "children"[131]. Coincident with these different targets are different modes of engaging in conversations. Those focused on friends, the public or co-workers tend to highlight the use of bumper stickers, GE-Free Sonoma buttons (Figure 4) and living by example. The same woman who emphasized the need to increase suspicion suggested using dinner parties and meals as forums to discuss the issue. Another woman noted that her food choices at work are the best means of sparking conversations:

> I can share with other people why I eat the way I eat. Like, "[W]hy do you never eat at the cafeteria?" ...[Y]ou know, people will ask you if you do things outside the norm; people will then ask you about it and then you can share with them.[132]

She illustrated her point with a hypothetical answer to the query "You won't drink Coca Cola?": "And I explain to them that if you buy anything with corn syrup in it you're eating genetically modified food and... then one thing leads to another and you can have a conversation." In her view, this type of "leading by example" is "the first and most powerful thing that you can do."[133]

Activists targeting children, the broader public or agribusiness actors emphasize using school networks and the media. For example, one woman uses her position as

[128] GE Free Sonoma Activist 11, 30 September 2006
[129] GE Free Sonoma Activist 13, 25 October 2006
[130] GE Free Sonoma Activist 18, 27 September 2006
[131] GE Free Sonoma Activist 9, 29 August 2006; GE Free Sonoma Activist 4, 23 August 2006
[132] GE Free Sonoma Activist 13, 25 September 2006
[133] GE Free Sonoma Activist 13, 25 September 2006

master gardener at the University of California to be "as subversive as [she] can."[134] She believes that acting within the UC system is particularly rebellious because of the University's strong ties to corporate giants like Monsanto, Bayer CropScience and Genentech.[135] Other activists were less confrontational, attempting to educate children about food at daycares or discussing biotechnology in college classrooms.

Education stretches beyond traditional venues, such as classrooms and lecture halls, to dinner tables, street corners, water-coolers and the backs of car bumpers. At minimum, this suggests that everyday activists believe that awareness will motivate politically powerful acts. More importantly, this suggests a constant, diffuse attempt to undermine the legitimacy and influence of biotechnology firms in Sonoma County and the broader United States.

Education is also an important moment of self-transformation. Informants noted how this type of resistance forces them to speak out when they might otherwise stay quite. While many were already "talkers", others had to develop public speaking abilities when they joined the GE Free movement. Even the talkers had to learn to negotiate educational moments without alienating those they are attempting to enrol. Discussing the effect of her participation on everyday life one activists noted:

> Generally being involved in the movement has made me see myself as an activist in every action. That there is that potential. ....I have to soften that or modify that to balance it with my life. But nonetheless I still [try to educate my friends and family]. So, there's that balance. So when I go to a family gathering I try to tone it down.... I try to be gentle and kind and supportive of what's going on in the moment and if it's not food activism then, you know, it's not. Um, but at the same time I do try to speak up when I can.[136]

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[134] GE Free Sonoma Activist 10, 31 August 2006

[135] For a full list of the UC's corporate sponsors see: http://ucdiscoverygrant.org/portfolio/sponsors/biotech.asp

[136] GE Free Sonoma Activist 13, 25 September 2006

GE Free participants are developing deeper understandings of social relations and their positions within them. While they see themselves as justified and their motives legitimate, they also recognize the power of existing structures and the possibility that individuals will respond negatively to their arguments.

In their analysis of contemporary consumer movements in the United States Kozinets and Handelman (2004) argue that consumer activists often view other consumers as opponents: they are manipulated, unreflective and foolish. Activists' role, therefore, is to supersede corporate brainwashing and change behaviour by whatever means possible, including counter-manipulation. GE Free Sonoma activists do not appear to hold such radical views. Rather, interviews and observation suggest that while they do believe the broader public is ignorant, they see this as neither an insurmountable obstacle nor a moral failing. Rather they use education to slowly and gently whittle away the veil. In such interactions, they approach Gramsci's enlightened philosophers. They prompt others to "be philosophical about it" and "give a conscious direction" to actions and avoid recourse to the dominant common sense (Gramsci 1972, p. 328). Through their daily attempts to educate others, therefore, everyday activists undertake the slow transformation of subjectivities that organizers espoused in the GE Free campaign. Moreover, the emphasis on living by example ensures a constant performance of alternative practice and the types of engagement essential to reconfiguring social relations (Teske 1997). In this sense, Scott is correct: these everyday acts of resistance are powerful and can be used to quietly build the capacity to change the basic practices that support dominant structures.

III) Concluding Remarks: Resisting Agricultural Biotechnology and the Re-creation of Relationships

My assessment suggests that taken together the three types of uncoordinated action, including talking to friends and family, publicly refuting popular rhetoric and carefully considering which system of provision to use, carve out spaces in which dominant hegemonies weaken and alternative ways of being emerge. By challenging the legitimacy of genetically engineered foods, asking a wider audience to think critically about food choices and providing models of alternative realities, they can slow or alter the trajectory of biotechnology.

Their power stems, in part, from their indecipherability. Resulting from the failure of policy-oriented approaches, these tactics appropriate the dominant language and logic of individual freedom and use them to temper the effects of socio-economic and agro-ecological relations. In particular, while consumer politics is certainly fraught by questions of racial and class equality, it is also illustrative of the potential of such tactics to lay the groundwork for new political economic, social and environmental relationships.

Adopting the sympathetic and empirically informed perspective called for by Scott (1985), my analysis suggests that consumption is much more than simply "voting with your dollar." For Sonoma GE Free activists it involves communicating directly with manufacturers or stepping out of the conventional system. In the former tactic consumers challenge the distribution of power between actors and take back their ability to express themselves through words rather than money.

Yet, choosing alternative products in supermarket aisle is far from a complete withdrawal of compliance. At best, shopping GE Free reinforces a network of

independent grocery stores, which in turn support local producers, artisans and businesses. The "embeddedness" of these grocers varies and requires consistent pressure from patrons. As present, this pressure emerges from direct inquiries and demands or individual and collective boycotts.

Grocers, however, never directly challenge the overarching economic structure, nor the alienation, fetishism and commodification that it entails. By accepting the neoliberal logic informing this type of consumer activism, individuals may be blinkered to alternative (non-market) systems of provision and ways of intervening in the world. Nevertheless, insofar as it seeks to reform but not overthrow the current system, shopping GE Free remains consistent with Scott's notion of *everyday resistance* and the tactic is not necessarily evidence of ideological mystification. Thus, shopping is a weak tactic but it can still be counter-hegemonic.

Tactics that do not attempt to overthrow the dominant system are often strategic choices made within present constraints (Scott 1985). Although everyday activists resist in multiple ways, the focus on market-based solutions and education stems from a perception that policy options are closed by the unequal and unjust distribution of power between biotechnology firms, the state and citizens. In this light, alternative food products and grocers are a means to slowly shift the political economy to a new hegemony. Consumers at least partially cast off the shackles of the dominant system of provision and forge new links between themselves, producers, agricultural labourers and agro-environments.

Consumer politics is not limited to the aisle. Everyday activists also take much more radical steps out of the conventional system and work out their politics in

alternative systems of provision through which they actively perform alternative hegemonies. In these alternative SOPs, including farmers' markets, CSAs and gardens and gleaning, the intent is not to influence remote actors but to develop locally specific agro-ecological practices and economic structures. These types of interventions are less about changing the entire system one food at a time, but rather rejecting (to various extents) the system and starting with a different framework. Insomuch as notions of proximity and seasonality mark these SOPs, they resist the distantiation and placelessness of conventional systems. Direct marketing also allows growers and manufacturers to reorient their sensibilities from the requirements of global commodities chains to local needs and contingencies. Gleaning, in particular, establishes a different moral economy based on new conceptions of trust, rights and responsibility. Established notions of property dissolve. CSAs and self-provisioning counter standard ways of purchasing food and embed both choice and economic relations in environmental contingencies. All these alternative SOPs provide a space to perform and create community and to root this community in Sonoma's productive landscape. In particular, the area's numerous farmers' markets and Laguna Farm provide sites for community building activities and bring patrons in direct contact with a range of social, economic and ecological issues.

On the surface, this alternative hegemony does not appear directly concerned with agricultural biotechnology – except because GE crops are excluded from these particular consumptive spaces. However, if we understand genetic engineering as the result of a longer process of hyper-standardization, industrialization and corporatization of the last century of agricultural history (Kloppenburg 2005), then alternative SOPs that resist or reject these tendencies hold important implications for genetic technologies.

In particular, these practices challenge the distance (both physical and social) between production and consumption, support farmer autonomy and crop diversity and question the ultimate purpose of food production. The mere existence of alternative ways of getting food, encourages individuals to think about the dominant structure and question why others are stepping out. As the manufacturing sector is first to point out, genetically engineered foods have advanced as far as they have largely because of their secrecy. Any activity that draws attention to their existence shakes consumer confidence. By increasing public awareness, education, ridicule and strategic consumption undermine the tendencies that enable the introduction of these agricultural technologies and the genetic and economic reductionism on which agricultural biotechnology is based (McAfee 2003b).

In addition, by adopting and reorienting the logic used to justify biotechnology, activists' public arguments force firms to live up to claims, thereby altering the technology's trajectory. Whether this new trajectory will involve a concerted attempt to respond to the global problems of farmer indebtedness, hunger and malnutrition and environmental degradation is uncertain. The re-emergence of the "golden rice" project which aims to reduce blindness by providing (potentially free) beta-carotene-rich rice to the Third World and the introduction of "consumer-oriented" functional foods suggest a flutter – although not a turn – in that direction.

Everyday acts of resistance are intended to redistribute power between actors and when not possible help individuals find a way to live within existing power relations. They are a way to cope with the present situation. By forcing biotechnology firms to take account of their promises and manufacturers to produce GE Free foods, Sonoma activists

are strengthening their position. By speaking directly to food companies, growers or other consumers they are "making their political presence felt" (Scott 1985, p. 36) and thereby taking political economic power. By constructing different systems and excluding (at least for the time being) actors and practices they dislike, activists are shifting the local balance of power. So long as local producers continue to avoid GE crops, biotechnology firms have no place in Sonoma's new economic relationships. Thus, for all their problems, the everyday acts of resistance by Sonoma activists are successfully challenging existing power dynamics between the state, the biotechnology industry and the general public.

As a final thought, I would like to raise the question of concessions. Gutmann (1993) notes that it is critical that we not lose sight of the complete range of interventions available to individuals struggling against deleterious social change. What concessions are GE Free activists making by giving up policy-oriented approaches? Are state-centred tactics truly unreachable? Such questions are crucial and I will return to them in the proceeding chapters of this manuscript. For the time being I will say that while I do not believe the state to be off limits, the present analysis suggests that consumer tactics, education, ridicule and denying dominant ideology can be important means of resisting and reasserting power in the contemporary food system. For many activists it is not just about shopping differently; it is about learning to live, work, and eat in new, politically informed and contextually sensitive ways.

CASE STUDY 2: THE NON-GMO PROJECT

CHAPTER 4: WORKING THROUGH INDUSTRY: THE HISTORY AND POLITICS OF NON-GMO CERTIFICATION*

The following chapters shift our focus 55 miles south of Sonoma county to Berkeley, California and explore an emerging Non-GMO labelling project intended to precipitate a new round of consumer resistance: The Non-GMO Project (NGMOP), a coalition of activists, retailers and manufacturers advocating for a third party certification for Non-GMO products. The campaign hopes to increase access to products without GE ingredients, create and expand Non-GMO markets and minimize the risk of genetic contamination in organic and natural food supplies (an increasing problem in the United States). As with all labels, the NGMOP's transformative potential rests on its ability to enrol industry by promising competitive advantage in the battle for market share.

The NGMOP is one of an increasing number of third party certifications that "help" consumers shop ethically and reorganize commodity markets. Proponents argue that by working to make the conditions of production visible, certifications and labels counter commodity fetishism and provide consumers a way to push for environmental and social sustainability (Hudson, Hudson 2003, Allen, Kovach 2000). Some schemes, most notably fair trade, are meant to redistribute the benefits of production to actors marginalized by dominant economic structures (Shreck 2005, Goodman 2004, Renard 1999); others, such as organic and local labels, purport to embed commodities in specific geographies and

* At the time of writing, this chapter is in press to appear as "No Alternative? The Politics and History of Non-GMO Certification" in *Agriculture and Human Values*. The original publication is available at www.springerlink.com.

preserve ecological and socio-economic qualities (Morgan, Marsden & Murdoch 2006, Murdoch, Marsden & Banks 2000). In either case, so the story goes, certifications foment alternative food networks that internalize the externalities of their more conventional counterparts (Hines 2003, Marsden 2000).

Much has been written in recent years about the proliferation of such voluntary and incentive-based forms of agrifood activism (Mutersbaugh, Klooster 2005, Allen et al. 2003). This emerging literature echoes broader discussions in political economy (McCarthy, Prudham 2004) and takes a predominantly critical perspective on what is a shift from direct regulatory intervention by activist groups. In particular, scholars caution that third party certifications reproduce neoliberal subjectivities and market relations antithetical to the environmental and social qualities they endeavour to protect (Brown, Getz, 2008, Guthman 2007). In addition, labels encourage expensive niche markets that perpetuate socio-economic cleavages (Guthman 2003b, Allen, Kovach 2000), and create entry barriers that disadvantage small and medium sized producers (Getz, Shreck 2006, Mutersbaugh, Klooster 2005). Most problematic, successful incentive-based schemes put downward pressure on standards as certifiers attempt to attract manufacturers and compete with similar labels (Mutersbaugh 2005b, Gereffi, Garcia-Johnson & Sasser 2001). The progressive weakening of evaluation criteria is particularly evident when certifications are developed by and for the industry they are meant to regulate (Raynolds, Murray & Wilkinson 2007) or from what Gereffi et al. (2001, p. 38) call the NGO-industry complex. Strict production standards are entry barriers for large companies with extensive production lines, so there is inevitable "pressure to weaken" standards and to replace the original agro-ecological or social ideals on which the certification is based

with "considerations of economic efficiency" as larger firms enter the market (and capture regulatory control) (Allen, Kovach 2000, p. 224).

Paralleling these critiques are efforts to understand *why* certifications are emerging. The majority of work focuses on national and international neoliberalization. For example, Cashore (2002, p. 506) links labels to "economic and political trends in the last 10 years that have given market-oriented policy instruments greater salience" and Mutersbaugh (2005b, p. 390) calls certification an "emerging form of neoliberal governmentality." Fleshing out the specific mechanisms driving private governance, Allen et al. (2003, p. 65) argue that the "neoliberal revolution," with its "political culture of entrepreneurialism," weakens financial support for radical social movements and shifts attention to consumer choice. Similarly, Gulbrandsen (2006, p. 480-481) suggests that certifications "compensate for governments' perceived unwillingness or inability to address" social and environmental concerns (see also Brown, Getz 2008, Raynold, Murray & Heller 2007, Gereffi, Busch, Bain 2004, Garcia-Johnson & Sasser 2001).

I agree that de-regulation severely curtails the opportunities available to activists. However, I am not convinced, as Guthman (2007, p. 457) recently stated, "there is no alternative" to certification. Rather, in this chapter, I follow Bartley (2003) and Guthman's earlier work (Guthman 1998, Guthman 2004) to explore the macro- *and* micro-political dynamics that converged to create the labelling project. Specifically, I argue that while neoliberalization and organizers' place within the food system initially oriented activists towards the private sector, the choice to create a certification arose in the context of two industry partnerships. Consequently, the "politics of the possible"

(Brown, Getz 2008, p. 1188) might favour market mechanisms, but certification is only one possible intervention among many.

To make this argument I examine the processes by which the NGMOP has become a profitable tool for the industry it intended to regulate. Organizers worked hard keep the standard robust and independent, but were enticed and induced to accept industry involvement. Consequently, over the course of a few short months, major manufacturers took over decision-making power. Since then, the label's ambitious criteria have been weakened and the focus has shifted from the elimination of GE foods to the creation of a parallel premium market. This chapter speaks to conversations about the origins of certification and what appear to be the unavoidable problems with that path.

The chapter proceeds as follows. The first section reviews debates on third party certification with a particular emphasis on four major contradictions that limit the effectiveness of labels. Then, after briefly outlining the current state of Non-GMO certification, I provide three snapshots of the NGMOP's history. Section 3 describes the national and international regulatory environment that proscribed direct policy interventions. Section 4 turns to the group's beginnings and explores the way organizers' experience with the retail sector oriented tactics towards the market. I show that while group members has always sought to create demand for Non-GMO products, the founders originally attempted to organize a retail boycott which they perceived as more powerful and less problematic than certification. The fifth section brings the discussion to the present and traces the NGMOP through two critical partnerships –with Genetic ID (GID), and with United Natural Foods Inc. (UNFI) – that allowed the natural food industry to take control and shift the group's focus to a Non-GMO label. The

penultimate section assesses this transition and explores the potential of the current NGMOP standard to meet the group's original and current goals. Unfortunately, it appears that despite organizers' good intentions label standards are weakening. Consequently, the NGMOP is unlikely to significantly affect the future of agricultural biotechnology. The chapter concludes with a tentative discussion of a range of more successful market mechanisms, particularly the push for mandatory positive labelling and shifting investment funds, currently used to oppose agricultural biotechnology. Ultimately, my purpose herein is to expand understandings of the points of intervention currently available to activists. Before launching into this analysis, however, it is important to set out the problems of third party certification in general as a strategy to alter the dominant mode of agrifood production and distribution.

I) The Dangerous Logic of Certification

Certifications are used to ward off the neoliberal "race to the bottom" by attaching value to conditions of production and giving commodities new ecological or social meaning (Guthman 2007). Labels entice "ethical" consumers "with the idea that what they are buying and eating is somehow 'better', not only for themselves, but also for all players in the foods chain" (Getz, Shreck 2006, p. 490).

Third party certifications alter social relations. On the one hand, their proliferation highlights the re-scaling of decision-making away from national governments towards international and private domains. On the other, they re-inscribe market-oriented individualism and reconfigure ideological and practical modes of democratic citizenship (Guthman, 2007; Mutersbaugh et al., 2005). Four aspects bear particular scrutiny. First, certifications enclose part of the market and privatize access using financial and technical

barriers to entry. In the case of organics, growers must pay annual assessment fees and wait three years before certification over which time lost productivity is not recuperated through premium prices. Together, these significantly restrict participation (Guthman, 2004). Moreover, the National Organic Program bars anyone from using the term "organic" without certification. Anyone who has walked down a farmers' market aisle recently knows this forces many producers out the premium organic market regardless of the production methods. Instead, they must claim that their products are "pesticide-free" or "grown without chemicals".

Privatizing and enclosing market space is very problematic. It tends to concentrate assets in the hands of large national and multi-national firms and thereby privilege the market's existing "winners". The costs of certification, including assessment fees, testing requirements and annual renewal, are prohibitive for smaller companies with limited capital. Even if the price of entry is not exclusive, many smaller firms cannot compete with larger companies working at greater economies of scale and with access to international supply networks (Guthman 2007, Mutersbaugh 2005a, Renard 2005). In a study of threats to the Canadian organic market, MacRae et al. (2006) note the tendency for smaller processors to be pushed out of successful alternative food markets. Large retailers favour large suppliers who can guarantee sufficient volume and year-round supply. Even if this is not the case, the market power of the concentrated retail industry allows supermarket firms, like Whole Foods, to dictate the price paid to manufacturers. Forced to compete on the basis of price, smaller companies lose out.

A second problem with third party certification is the tendency for competitive market forces to distance production practices from the perception of a label

agroecological effect (Brown, Getz 2008, Levi, Linton 2003, Guthman 1998). This is most striking in the organic market, where many manufactures reproduce narratives of small farms, short supply chains and "happy cows" to ensure premium prices, while at the same time expanding field sizes, using feedlots and importing ingredients from around the world (Pollan 2006, DuPuis 2000). As Guthman (2004) notes, this tendency is endemic to capitalist market relations and creates a space for capital accumulation that is, ironically, necessary to encourage manufacturer participation in certification regimes. For example, criteria often weaken as certifiers try to attract customers with easier assessments (Hudson, Hudson 2003, Guthman 2003b), or as producers cut corners to squeeze more profit out of competitive markets (Getz, Shreck 2006).

Success in the conventional market magnifies these tensions and introduces new ones that can steer certifications away from their original principles. As participation increases, certifications must be standardized and codified, and assessment practices professionalized. This opens criteria to complex political negotiation and limits a certifier's ability to respond to local environment and social needs (Mutersbaugh, Klooster 2005). Again, the organic market is exemplary. While its phenomenal growth deserves celebration, the transition from counter-culture to mainstream distanced the certification from its original ideals of preserving small-scale producers and encouraging non-industrial farming methods. The struggle to create a market space and the criteria that would provide access restricted requirements to a set of proscribed agricultural inputs (Guthman 2004). In effect, this allowed growers to mimic conventional, monocultural production methods at massive scales while enjoying the benefits of a socially and economically valuable label.

The ability to alter a label's standards without altering the meanings consumers ascribe to it makes certifications easy ways to "greenwash" corporate images and avoid criticism (Klooster 2005, Bartley 2003). Some companies develop certified production lines alongside traditional products (eg. Wal-Mart Organics or Safeway's "O" line) while others have acquired smaller competitors and existing certified brands (Roff 2007). Indeed, the development of an official Organic seal in the United States and the success of the natural food market have stimulated a rash of mergers and acquisitions as leading food firms attempt to capitalize.

To the extent that the narratives that give value to certified products exceed or misrepresent the actual conditions of production, labels become means of obscuring rather then revealing social and ecological relationships. This is problematic not least because the motivation for certification is often to "de-fetishize" the socio-ecological and economic relationships of production (Hudson, Hudson 2003). Moreover, if certified products are tools of agro-ecological change, then the gap between what labels mean to shoppers and what they mean to manufacturers seriously challenges their transformative potential. To quote Getz and Shreck (Getz, Shreck 2006, p. 500), if "representation is disconnected from reality, then the entire basis of certification systems is in jeopardy."

A third aspect is the acceptance and perpetuation of voluntary and incentive-based forms of regulation (Guthman 2007, Bartley 2003, Cashore 2002, Gereffi, Garcia-Johnson & Sasser 2001). Market mechanisms of this type are part of the neoliberal state's move from controlling industry through legislation to facilitating capital accumulation and reducing regulatory burdens (Brown, Getz 2008, McCarthy, Prudham 2004). These changes have profound implications for democracy. Social and ecological concerns are

only addressed if groups can generate enough money or interest to create a profitable niche. Moreover, by relying on premium markets for agro-ecological change they limit the range of voices in discussions of alternative futures. Since many food-labelling schemes, including Non-GMO, are in part efforts to allow citizens a "vote" in agroecological change, excluding a substantial portion of the population – those who can not afford or access premium products – is a significant limitation.

The uneven distribution of the ability to "vote with your dollar" re-inscribes class (and by extension racial) cleavages in American society and thus challenges activists working for social and environmental justice. Quality markets are elite in part, because they rely on premiums to attract participants, but also because NGOs, retailers, restaurateurs and consumers actively construct them for "yuppies" (Barnett et al. 2005, Guthman 2003a, Lockie 2002). Consequently, alternative foods are marks of distinction (Bourdieu 1984) that play a divisive role in social life. They limit access to "healthy" products and mark the affluent classes as "good" and "ethical". Moreover, relying on product certification in lieu of the election process grants more rights to economically privileged strata. In this sense, "voting with your dollar" reads more like "if you have the dollar you may vote". It is tantamount to electing political representatives by donating to campaign funds, an (almost) unimaginable violation of basic democratic principles. Rights to good food and the power to determine the content of the agrifood landscape attribute to wealth, not citizenship.

A fourth aspect relevant to any discussion of alternative food labels is the tendency for certifications to produce niches parallel to the dominant system. Because they are voluntary and incentive-based forms of regulation, certifications cannot require profound

change and thus, at best, reform the edges of the current system. A firm will not adopt something that cuts too deeply into their profits. In addition, the value of labels derives almost entirely from the juxtaposition between "quality" and conventional products. Profit in the Non-GMO market, for example, is only possible if GE and Non-GMO crops coexist. In addition, because they draw their power from market competition, incentive-based systems can only exist so long as participation remains limited (Guthman 2003b). As a label's use proliferates, the value it generates erodes, necessitating higher entry barriers. As noted above, fees and strenuous requirements tend to exclude smaller manufacturers and growers that eventually lead to the concentration of niche markets in the hands of large, financially endowed companies (Mutersbaugh, Klooster 2005).

In sum, third party certification has political, ecological and social implications that may contradict activists' goals. At the very least, creating robust standards and a meaningful label requires that groups remain independent of industry and pressure firms through consumer expectations, not financial incentives. Moreover, the threat of lost sales must be sufficient to force companies to change production practices without increasing the cost of goods. As I discuss below, the Non-GMO Project has been unable to shield itself from agribusiness interests or the seduction of premiums.

II) Non-GMO Certification

It bears repeating that the NGMOP was not always about creating a novel certification. Project founders originally sought to hold natural food retailers accountable to consumer expectations, reduce demand for GE crops, and hopefully curb the spread of biotechnology in food production. They saw public statements of any kind, including

labels, shelf tags or notices in stores, as tools to make the public aware of GE foods and thereby bring more voices to the debate.

Geared as it currently is to certification, the NGMOP no longer aims directly to curb GE crops, but rather to "offer consumers a consistent Non-GMO choice" and "ensure viable Non-GMO alternatives long into the future" (NGMOP 2008c, online). The group's primary goal is to reduce contamination in the organic and natural food supply by "leveraging [food manufacturers'] collective power" (NGMOP 2008b, online). Guthman (2003b) cautions that incentive-based schemes rely on the juxtaposition of certified and conventional products and thus have a paradoxical interest in preserving the production practices they ostensibly oppose. This is perhaps nowhere better visible than in the NGMOP's focus on protecting the natural food industry's integrity as opposed to reducing harvests of GE crops. I return to such problems below. For now, let me briefly describe the current certification standard.

The *Non-GMO Project Working Standard* (February 2008), outlines the purpose, scope and methods of assessment for companies wishing to use the Non-GMO seal. To begin, participants must submit specification sheets that fully disclose all components of each input (NGMOP 2008a). For "low-risk" inputs – ingredients derived from crops with no commercial GE counterparts (eg. wheat, green peppers or cherries) – assessment ends here.[137] For "high-risk" inputs – crops with commercial GE counterparts (e.g. corn, soy, canola, cotton, papaya) or products derived from animals subject to GE products (e.g. milk, meat, honey, eggs) – participants must document segregation practices and indicate active monitoring (PCR or Elisa test results) along the commodity path. Testing can be

[137] The Board of Directors hopes to expand assessment in future to include end product testing.

conducted on individual ingredients or final-products, although producers are responsible for monitoring points of contamination. It is likely that testing will be delegated to suppliers further up the chain.

Companies may use the seal if they can show that the GE contamination of every ingredient does not exceed the current "Action Threshold" for the food sector in question. By 2013, the NGMOP aims for a 0.1% threshold for seed and propagation materials, 0.9% for animal feed and supplements, and 0.5% for human food and other products. Due to present rates of contamination, however, "temporary variances" are currently set at 0.24%, 1.5% and 0.9% respectively.

III) Setting the Stage: Neoliberal Limits

Laura Raynolds, Douglas Murray and Andrew Heller (2007, p. 148) suggest that certification fills the "regulatory vacuum" created by "the spread of neo-liberal policies" and particularly "deregulation in agro-good sectors." In the case of agricultural biotechnology, a Non-GMO label does not fill a previously occupied space, but a void in which regulation never existed. The package of regulations governing genetically engineered foods is a product of a time of federal de-regulation and thus is limited, porous and largely reliant on industry self-monitoring (Perrin 2006, Eisner 1993). Food safety assessments rely on voluntary disclosure of test results generated by biotechnology firms, and GE foods are treated as substantially equivalent to conventional counterparts. Yet nothing highlights the federal government's reticence to regulate the technology more than the fact that current regulations were created at the behest of the biotechnology industry. In 1986 agricultural biotechnology firms, led by Monsanto, asked for federal regulations in the hopes that oversight would bolster public confidence and avoid the

amount of opposition the industry was experiencing in Europe. In the words of Leonard Guarraia, one of four executive directors who met with then Vice President George W. Bush: "We bugged him for regulation. We told him that we have to be regulated." (Smith 2003, p. 127)

Repeated attempts by the anti-biotechnology movement to strengthen regulations by instituting mandatory labelling, shifting liability for contamination from farmers to biotechnology firms, and enforcing stricter monitoring of pharmaceutical ("pharm") crops have failed (Guthman 2003b, Smith 2003). Of particular note, the two federal labelling bills introduced by Representative Denis Kucinich (in 1999 and 2006) and that of Senator Barbara Boxer (2000) gained little or no traction with the FDA, despite wide sponsorship in the House and enormous public support.[138] The Agency continually curtails efforts to distinguish GE from Non-GE foods. For example, when Oregon Citizens for Safe Food succeeded in getting Measure 27 - which would have required the labelling of GE foods produced and sold in the state - placed on the 2002 ballot, the FDA sent a letter to Governor Kitzhaber counselling that the measure would violate the Agency's guidelines. FDA Deputy Commissioner Lester M. Crawford warned that the proposed legislation "would impermissibly interfere with manufacturers' ability to market their product on a nationwide basis" and thus impede the "free flow of commerce between the states" (Crawford 2002, online). Although Measure 27 failed to gain enough support at the ballot box, the FDA's move is testament to the lengths the Agency will go to preserve the current regulatory environment.

[138] In a 2001 ABC poll, 93% of respondents supported mandatory labelling of GE foods. Similarly high levels of support have since been reported (Hallman et al. 2004, PIFB 2005).

De-regulatory agendas also make it difficult for anti-biotechnology activists to intervene in state and municipal policy. The federal government has repeatedly used its authority over inter-state commerce to prevent municipal, county and state decision-makers from implementing environmental and social regulations. For example, the *National Uniformity for Food Act of 2005*, requires "the laws of a State or a political subdivision of a State [contain] substantially the same language as the comparable provision under this Act [the Federal Food, Drug and Cosmetic Act] and that any differences in language do not result in the imposition of materially different requirements" (H.R. 4167 Sec. 2 c § (1)). The 15 preemption bills introduced across the US in 2006 add an additional hurdle (Roff 2008). Justified with calls to "level the playing field" for agricultural producers and food manufacturers, these bills transfer jurisdiction over seeds and nursery stock from county and municipal governments to state legislatures. This shift disables the possibility of establishing GE Free Zones - one of the most successful tactics used to date to slow the spread of biotechnology and increase public awareness of the issue – and thus has profound implications for rejecting GE products.

Anti-biotechnology activists fare no better in the international political arena. While numerous jurisdictions across Europe and Asia have successfully enacted labelling legislation and testing protocols in excess of US requirements, activists have been unable to translate these victories into global trade policy. On the contrary, the proliferation of free trade agreements and their stringent enforcement by the WTO threatens states' abilities to regulate environmental and social protections (Busch, Bain 2004, Bartley 2003). The recent successful WTO challenge of the EU's *de facto* moratorium on

genetically engineered foods and crops is a good example. Despite widespread citizen support, the WTO ruled that European regulators violated international trade agreements by restricting the commericalization of GE crops (WTO 2006).

With legislative avenues seemingly closed, the NGMOP's founders perceive few options other than the private sector. Discussing why the group chose to work within the market rather then targeting regulators, one informant stated, "There are no requirements, no limitations about GMOs. So you can target the government... but it doesn't get very far."[139] Later, when asked who should take responsibility for the adventitious presence of GE material he noted:

> They [biotechnology firms and the federal government] should be responsible for that. But they're not, and none of us are really going to be able to make them. ...We have a much better shot at influencing natural food companies to do something about it than at influencing the government.[140]

Indeed, anti-biotechnology groups have been successful at stalling or preventing the commercial release of GE crops by cajoling conventional manufacturers, such as McDonalds and Gerber, to reject products.

Yet it would be incorrect to portray the NGMOP's market orientation as merely the product of a strategic analysis. Neoliberal ideologies of consumer choice and the power of market demand infused my conversations with NGMOP members. Their concerns are in line with broader shifts in contemporary environmentalism and food activism away from state institution building (McCarthy, Prudham 2004, Allen et al. 2003, Dryzek 1997). Individual choice and a consumer's right to know product qualities are sacrosanct. Indeed, almost all my informants stressed the value of choice and information.

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[139] Personal Interview, NGMOP Organizer, 17 August 2006

[140] Personal Interview, NGMOP Organizer, 17 August 2006

Regardless of whether the solution proposed was collective, such as community gardens, or individual, such as purchasing organic foods, the basic assumption is that citizens have the power to change political economic systems by living in different ways. In short, to a certain extent the choice of market mechanisms is at once materially and ideologically driven.

IV) Using the Market from Within: Position and Place

While market strategies appeared to be the only avenue of intervention available to NGMOP founders, third party certification was not inevitable. Even after the label was adopted, my informants perceived it as a possible, but limited strategy. Pervasive as neoliberalization is, any explanation of why activists are attempting to create a Non-GMO certification would be incomplete without understanding the ways organizers' personal context and desires shaped the groups' evolution. In this section, I describe the NGMOP's early development and explore individuals' particular role in determining the group's strategy.

Like many eco-certification programs, the Non-GMO Project grew from the modest efforts of a handful of people. In 2002 workers at The Natural Grocery Company (NGC) in Berkeley, California received word from a supplier that their bulk soy lecithin powder was produced from genetically engineered beans. Workers at the store were appalled that either the manufacturer or the NGC would knowingly carry the product, a sentiment shared by customers. All began to question the company's ethics and pressure representatives to remove these "unnatural" foods. A petition circulated among concerned consumers demanding something be done. After engaging in a frank conversation with employees, management agreed to a wholesale product review.

The burden of review fell on the shoulders of three dedicated employees who diligently catalogued every product, from soymilk to skin cream to granola, for "at-risk" ingredients. Following the work of Tucson, Arizona-based The Food Conspiracy, and Brattleborough, Vermont's Food Coop, the group planned to contact manufacturers for information about their sourcing practices and when possible to find alternative suppliers for products known or suspected to contain GE ingredients. The three realized, however, that a request from a single small grocer was unlikely to concern major manufacturers. So in early 2003 the group established the "People Want to Know" campaign, gathering support from the American natural retail industry. The group contacted cooperatives and small food stores across the country asking them to endorse a letter that would eventually be sent to manufacturers requesting information regarding their use of GE ingredients.

"People Want to Know" was amazingly successful and the letter was soon "signed" by 161 retailers from across the country. The effort also expanded into Canada, where Toronto's Big Carrot Natural Food Market took the lead among northern retailers. Internationalization has proved extremely important. The Big Carrot, having already successfully run a Non-GMO campaign in 2001, brought its own expertise and significantly increased the number of participating stores.

The group's early orientation towards the market was not therefore strictly a matter of external constraints on other types of organizing. The need for retailer support certainly stemmed from the repeated failure of labelling legislation, but the decision to work through retailers was largely a product of the group's initial purpose and activists' position within the agrifood system. That the founding members were all employees of a natural food retailer gave them access and insight into the agrifood political economy. As

employees they were particularly attuned to the vulnerability of grocery companies to consumer concerns; a vulnerability which they consciously highlighted to increase support. When I asked why the group chose to target manufacturers using retail purchasing power, one of my informants stated flatly, "who [better] can we go to as, as employees of a natural grocery store to, to find out about this than the companies?" Later he explained that founding members:

> [We are] in a unique position to influence companies because, you know, companies have a bottom line and that's sales to the stores that carry their products....And retailers are dependent upon their customers' loyalty and their customers' faith in what there're selling them....And everyone assumes, coming into a natural grocery store, that everything they're getting there [is natural].... What this project is doing ... really calling both the stores and the companies to, to take responsibility for that assumption.[141]

As evidenced by the almost complete elimination of GE foods from Europe after leading supermarkets refused to stock them, mobilizing retailers in this way is a potentially powerful tactic. Since the 1990s, the market size and spatial scope of supermarket firms have grown precipitously in response to the reduction of barriers to international trade (Morgan, Marsden & Murdoch 2006). This highly oligopolistic sector is the central pivot of agrifood production, with firms competing fiercely on the basis of non-price aspects such as service, convenience, variety and quality (Busch, Bain 2004, Freidberg 2003, Dixon 2002). The last is particularly critical to natural food retailers who distinguish themselves from conventional companies by their ability to provide high quality, safe and "environmentally friendly" goods. Activists capitalized on this vulnerability by offering retailers a new way to attract consumers and publicly reaffirm their corporate philosophies.

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[141] Personal Interview, NGMOP Organizer, 17 August 2006

What is important about these early moments is that they derive not just from the limits imposed by neoliberalization, but from the particular knowledge and position of individuals involved. In addition, while they are push for the private regulation of GE foods, they do so in a different and potentially more influential way than third party certification. Retailers are the first and largest buyers of GE foods. They are the gatekeepers to consumers and exert significant control over the type and distribution of foods in North America. In comparison, individual consumers have very little power to influence markets; in part, because market signals must travel through yet one more intermediary, but to a greater extent because, individually, they do not "speak" as loudly. For activists, altering consumer buying habits might appear a simpler strategy than attracting retailers, however, to be successful they must influence millions of individuals rather than the much fewer retail buyers.

V) From "People Want to Know" to "The Non-GMO Project"

When I met the NGMOP's founder a third time in August 2007 his original optimism for the group's success was gone, and he spoke with thinly veiled anger about corporate take-over and industry co-optation. Indeed, the events of October 2006 to July 2007 were remarkable and troubling. In the span of a few short months, People Want to Know became the Non GMO Project, and quickly moved from the grassroots to the corporate scene. The ensuing struggle for power shifted control to the industry the nascent Non-GMO Standard was supposed to regulate. What started out as a grassroots effort to capitalize on retail power transformed into a profitable marketing tool with weak requirements and high entry barriers.

This section traces the NGMOP through two critical partnerships that precipitated the struggle over certification: the first with Genetic ID in the spring of 2006, and the second with United Natural Food Inc., later that fall. While each partnership was essential to attracting widespread participation, in combination they weakened the NGMOP's strategy and decreased the likelihood that the group will substantially impact the market for GE crops.

Despite its long list of endorsements, manufacturer responses to the letter were extremely uneven. Large companies, those that arguably hold more influence in the food system, paid little attention to the "People Want to Know" campaign. As one informant lamented to me during our first meeting:

> Well, the bigger companies...said they had [Non-GMO practices] but they wouldn't detail it for us. They just- that's what I mean, where they would say, 'We don't carry GMOs.' Or they would just photocopy their website and send it to us. And it's like, that doesn't tell us anything because it's just you're, you're saying you do something about it but you're not saying what it is you do.[142]

Smaller companies, for whom the loss of a single retail outlet mattered more, were far more forthright. Many provided stacks of documents attesting to the purity of their supply chains. However, with few members and financial resources the campaign faltered under the mounting workload of compiling, standardizing and assessing the responses.

As time passed, and volunteers moved on to other projects and employment, the campaign stalled. However, an unexpected offer to collaborate with Genetic ID (GID), the world's leading Non-GMO certification firm revived energies in early 2006. GID approached organizers and suggested the campaign shift from enrolling retailers to developing a standardized verification process for Non-GMO products. GID offered its

[142] Personal Interview, NGMOP Organizer, 17 August 2006

technical assistance and access to its infrastructure at reduced cost. While generous, this offer was not entirely altruistic. For GID, the NGMOP is an opportunity to expand its clientele beyond companies exporting to the European Union and Asia and to stimulate a domestic market for Non-GMO products (for which it would be the principal certifying body). Indeed, although testing is decentralized, FoodChain Global Advisors (FCGA), GID's parent firm, monopolizes verification and certification.

With GID's guidance, the "People Want to Know" was re-christened The Non-GMO Project and the group released an initial standard and shopping cart seal in late summer 2006. After public and private consultation, a final *Working Standard* was amended to accommodate manufacturer concerns and released with a new seal in February 2008.

Initially, GID's representatives appeared committed to limiting the food industry's involvement, repeatedly agreeing that the NGMOP was "not here for the manufacturers."[143] However, shortly after December 2006 the firm began stressing the need for industry "buy in." John Fagan, GID's founder and CEO, began actively involving natural food manufacturers and seeking advice on how criteria should be developed. The NGMOP's purpose was reframed from living up to consumer expectations and protecting human and environmental health to providing a competitive edge to companies in an increasingly crowded food market. Promotional material stressed the financial benefits of participation and the numbers of consumers waiting to purchase certified products. By fall 2007, the NGMOP's website promised that the Non-GMO label would give companies a way to "guarantee the GMO-free nature of their products to

[143] Personal correspondence, Non-GMO Project, 31 May 2007

a public who has consistently polled in favour of labelling for informed choice regarding GMOs." An information brochure distributed through retailers also assured participating firms increased sales and premium prices:

> Because of the dangers, and because of the lack of sufficient testing, an overwhelming majority of our customers do not want GMOs in their food and are eager to invest in their health and food safety by buying products that have 3rd party Non-GMO verification.[144]

In an earlier editorial in the *Natural Food Merchandiser*, Fagan wrote that the Non-GMO label would provide incentive for manufacturers to participate because "[c]ompanies know that consumers are concerned. They know that being GMO-Free adds value to their products" (Fagan in Lewandowski 2004, p. 1).

In our many conversations, my informants claimed that they never intended partnership with GID to change the group's focus so radically. They agreed at the time that a common standard for Non-GMO foods was needed, however, they envisioned the manufacturers participating because they were forced to by retailer or consumer demand, not because it offered premium prices. They also, perhaps naively, saw the label as a way to increase awareness of GE foods and thereby increase opposition to the products – opposition that they hoped would funnel back to legislators and retailers. Non-GMO was not to be simply another niche market, but rather an expression of opposition that would eventually eliminate GE crops and become unnecessary.

Thus, the NGMOP's founders were increasingly concerned about industry's role. Despite Fagan's attempts to ease their fears by arguing that manufactures shared the group's opposition to agricultural biotechnology, volunteers struggled to maintain some

[144] I was given a copy of this pamphlet in August 2007. While this particular brochure is not electronically available, as of 1 October 2007, the same text could be found at: http://www.ghorganics.com/CampaigntoTestNaturalFoodsSupplements.htm.

measure of independence. They established an "Educational Network" and "Technical Committee" to draw together representatives of academia, consumer advocacy groups, farmers, individual consumers and the food industry. GID rebuffed these efforts and in their stead suggested and created an "Advisory Board" dominated by food industry leaders.[145] Nevertheless, in the end, the group was lured by the possible participation of major manufacturers and accepted GID's increased involvement.

Meanwhile, in fall 2006, United Natural Food Inc. (UNFI), the country's largest manufacturer and distributor of natural and organic products, solicited the NGMOP. UNFI offered to sponsor a public launch at the Natural Products Expo West in Anaheim, California. As with Genetic ID, UNFI's interest came as a surprise to NGMOP members, who were still sceptical of support from industry leaders. Even more surprising was Whole Foods' enthusiastic interest in the review process. When I first met NGMOP's founder in August 2006, he expressed little hope for the retail giant's participation because, as he put it, "it's such a highly charged political thing."[146] Yet, when UNFI's president and CEO, Michael Funk, called on natural food manufactures "to eliminate GMOs from natural and organic products" at the Natural Products Expo, Whole Foods and other industry leaders were quick to lend their weight.

Accepting UNFI's sponsorship again altered the NGMOP's trajectory. As the Expo neared, staff and volunteers found themselves further removed from the planning process. The original format was replaced with a new list of speakers and the NGMOP's representatives were allocated only 5 minutes to speak at the very end of the session. The group was shocked to find that the session's original online abstract did not mention the

[145] Since this time, the Board of Directors has created a Technical Advisory Board; however, the majority of members are major natural food manufacturers and retailers.

[146] Personal interview, 28 October 2006

Non-GMO Project by name, but rather referred only to the need to develop a certification process. While the NGMOP's volunteers managed to pressure UNFI to fix this "minor" oversight, the presentation remained dominated by industry representatives. On 9 March 9 2007 it was Michael Funk, UNFI's founder and CEO, who introduced, explained and promoted the Non-GMO Project. In his speech to the overflow crowd, he framed the issue as an initiative by and for the industry. Later, in an interview with the *Organic & Non-GMO Report*, he reiterated his "call to action" and in the process again discursively eliminated NGMOP founders:

> The Non-GMO Project was originally a retailer initiative, but we asked that it be industry-wide, including farmers, processors, manufacturers, distributors and retailers....We will be putting our own products through the process to verify that they are non-GMO. We will also encourage vendors and food manufacturers whose products we distribute to verify their products as non-GMO. (Roseboro 2007a, p.1)

This framing is reinforced on the website, which now introduces the NGMOP as, "a non-profit organization, created by leaders representing all sectors of the organic and natural products industry in the U.S. and Canada" (NGMOP 2008c, online).

Behind the scenes, the struggle for control raged. GID and UNFI repeatedly asked NGMOP members to "give over control of the Standard to the industry" and threatened that without input, industry would likely develop their own certification system.[147] When the group refused to appoint representatives of major food firms to the Board of Directors, GID and UNFI threatened to cancel the Anaheim presentation.

It is unclear to what extent these injunctions or the lure of enrolling major manufacturers convinced members to open the door to industry, but the effect has been profound. The Non-GMO Project's Board of Directors now reads like a who's who of the

[147] Personal Communication, Non-GMO Project, 31 May 2007

natural foods market. Among its members are Joe Dickson (Whole Foods Market), Michael Potter (Eden Foods), George Siemon (Organic Valley), and Arran Stephens (Nature's Path), as well as John Fagan and Michael Funk. Consequently, the certification is explicitly designed by and for major manufacturers. This became clear when six major food firms - Straus Family Creamery, Eden Foods, Lundberg Family Farms, Nature's Path, Whole Foods Market and United Natural Foods – were used to test and "fine-tune the verification process" (Roseboro 2007b, p.1). Soon after the board of directors was re-populated, the Project's founder quit the campaign. He continues to mobilize against GE crops and foods, but no longer believes the NGMOP will achieve this goal.

VI) Assessing the Transition

In light of scholars' recent critiques of third party certification, it is important to assess the effect of the transition first from a retailer-oriented campaign and then from a grassroots to an industry controlled certification. Retail power is many times greater than the sum of consumer choices. As I argue above, retailers are food manufacturers' primary customers. They are the doorkeepers to profits, and can force widespread and rapid change. Certifications, on the other hand, first require groups to stimulate sufficient consumer demand to attract initial participants. Retailers and the broader agrifood industry must recognize that a profitable market exists. However, recognition is hampered by the inconsistency of individual sales. Consumption must reach significant levels across North America before market signals are perceptible.

On the surface, major manufacturers and retailers give the NGMOP some authority and increase the label's credibility, but there are important reasons to be wary of the present situation. Rather than signalling a major step for the anti-biotechnology

movement, it threatens the standard's rigor and further centralizes control of agrifood regulation in the hands of industry. For example, the initial assessment fee has risen significantly since 2006 – potentially pricing-out smaller manufacturers already burdened with the cost of existing certifications - and the originally strict tolerance level has been replaced by shifting thresholds. The current Board of Directors maintains that eradicating GE material (or at the very least a maximum tolerance 0.5% contamination) is the NGMOP's ultimate goal. However, it is also quick to amend statements to this effect with the caveat that the "current agricultural climate," in which the contamination of non GE products with GE material is nearly unavoidable, prohibits a dramatic move in this direction (NGMOP 2007, p. 3). In place of a single strict threshold, the Board established "a series of action thresholds ... to provide realistic interim definitions of non-GMO" (NGMOP 2007, p. 3).

These small changes are significant. The NGMOP initially sought to use consumer and retailer buying power to eliminate GE foods and crops. While this may remain the group's public goal, reliance on industry input and the move from a demand-push to premium-pull system magnifies the already limited transformative potential of certifications and introduces many of the tensions noted by agrifood scholars.

The shifting threshold is particularly worrisome. It tacitly accepts trace contamination insofar as it sets requirements according to what is available. The recent LLRICE 601 and 62 debacles, in which two unapproved variety of GE rice were discovered to be ubiquitous in the conventional long-grain rice supply, underscores a mounting body of evidence documenting the widespread existence of GE traits in purportedly non-GE seed and food stocks (Greenpeace 2007, Vermij 2006, Vogel 2006,

Mellon, Rissler 2004, Bouchie 2002, Villar 2002, Haslberger 2001). Preventing mixing either through cross-pollination or in post-harvest processing practices is quickly becoming impossible as GE harvests increase in geographic extent and volume. Some observers already argue that the complete absence of GE material is no longer "realistic" (Roseboro 2006a, p. 73).[148] As contamination increases, the threshold will increase accordingly. In so doing, it minimizes pressure on manufacturers and growers to find ways to completely eliminate GE material – a necessity if the NGMOP is to significantly slow or prevent the spread of GE technology.

The shifting threshold also opens a space to distance the material implications of "Non-GMO" from the label's popular meaning. Consumers already expect that Non-GMO products are free of GE traits. Indeed, this expectation will drive premiums in the market. However, under the current system thresholds allow a significant amount of contamination, creating a profitable gap that allows major manufacturers to capitalize on consumer concerns without significantly altering their practices.

This gap undermines anti-biotechnology activism in three related ways. First, it obscures genetic contamination – a process with potentially grave ecological and, with the introduction of pharmaceutical crops, health effects (Andow et al. 2004, Mellon, Rissler 2004). In recent years activists have used this issue to successfully slow the introduction of novel GE products, such as Ventria Life Science's pharmaceutical rice and Monsanto's Roundup Ready™ alfalfa. Unless the NGMOP highlights its inability to guarantee zero GE presence – something it has no incentive to do - a Non-GMO label gives the impression that contamination is currently preventable and assures consumers

[148] Indeed, this is the logic behind the high tolerance thresholds for mandatory labelling laws in Europe and elsewhere.

that they have nothing to fear. Consequently, the label will reduce public concern that is essential to opposition groups.

A Non-GMO label also weakens demands for mandatory labelling. This is problematic in two ways. First, labelling demands have kept biotechnology on the state's agenda in recent years. Second, consumers' inability to assess quickly the quality of their food is a materially and discursively compelling fact around which to mobilize public opposition. Not only would a Non-GMO label quell consumer concern, but it would do so without necessarily changing the content of the food supply. In essence, the gap between the label's meaning and effect may prevent radical changes that could occur if individuals continued to be dissatisfied with grocery shelves.

Third, by allowing potentially large amounts of contamination, a shifting threshold undermines efforts to trace the health effects GE foods. With more than 70% of processed food containing GE material (Kimbrell 2007), the Non-GMO market is the only control group against which to judge the long term consequences of GE products. However, people eating Non-GMO would also been vulnerable to negative health effects thereby limiting their likelihood of being attributed to changes introduced through genetic engineering.

This is not to say that a Non-GMO label is meaningless. Non-GMO companies must avoid GE products to some respect and through this search have spurred alternative supply networks. Trying to reduce contamination, actors in these networks like the National Grain and Feed Association, North American Export Grain Association and Organic Trade Association, pressure decision-makers to tighten regulations governing the commercial and experimental release of GE crops. While having only limited legislative

effect, these efforts bring increased attention to the inadvertent spread of GE traits between crops and from crops to wild relatives. Yet companies' concern for regulations and contamination is a function of the requirements of domestic and international markets. China's policy of zero tolerance for the adventitious presence of GE traits is far more onerous than Japan's 5% threshold. A threshold that shifts according to the "reasonable" presence of GE material in Non-GMO products will not stimulate as much regulatory action as would a strict and low tolerance level.

In sum, the NGMOP is now better suited to help companies avoid public criticism then to substantially reorient agrifood production – a problem scholars have repeatedly noted regarding industry-dominated certification (Raynold, Murray & Heller 2007, Renard 2005). Indeed, by requiring manageable change and promising higher prices it opens a space for yet another alternative market, and provides little overt opposition to the present system.

VII) Concluding Remarks: Is there another way to win?

The story of the Non-GMO Project underscores the difficulties of using third party certification as a tactic in agrifood activism. Despite committed efforts to the contrary, the NGMOP was taken over by industry. What was once an effort to push manufacturers to eliminate GE ingredients became an incentive-based project to attract industry with premium prices. Industry control also shifted criteria from what is technically to what is economically possible. On the one hand, this shift increases industry interest. On the other hand, it weakens the NGMOP's ability to prevent the spread of GE products. Moreover, industry control abets certifications' tendency to re-legitimize dominant agrifood actors and reduce public debate insofar as it tempers criticism by satisfying

consumers' perception that they can eat Non-GMO and are thus making meaningful change in the agrifood landscape.

It would be easy to condemn the NGMOP's emphasis on private regulation and call for a greater focus on policy-making. However, the group's story suggests why activists might "choose" this avenue despite its dangers. The current state of affairs results from a set of particular people and events unfolding within a context in which consumer activism is one of few existing options. That said, certification was not chosen because "there is no alternative." While neoliberal agendas, marked by lax regulation and supportive of product commercialization and industry development, circumscribe the range of possible political interventions, the label itself emerged at the behest of certifiers and food manufacturers. In essence, it emerged not from activists, but from institutions that served to gain financially from its implementation.

If certification is not pre-ordained in the neoliberal context, what alternatives exist? A cursory review of the anti-biotechnology movement's successes suggests there are many. In particular, directly targeting retailers' and food manufacturers' procurement policies, or threatening to do so, has forced leading firms to reject GE ingredients. McDonald's refusal of Monsanto's GE potatoes single-handedly ended the crop's development. More recent, Anheuser Busch's threat to stop buying Missouri rice if the state allowed the cultivation of pharmaceutical varieties severely slowed the crops' commercial development. Retail boycotts in Europe have been instrumental in slowing the introduction of GE foods and plants in the US and abroad. Given the power of supermarkets, it is arguable they offer the best point of intervention.

Yet, it is important to note that NGMOP organizers were open to GID's suggestion in large measure because their initial effort was not lucrative enough to attract major retailers. This problem does not require certification; rather it is matter of mobilizing sufficient visible criticism to force movement - as Michael Pollan's successful shaming of Whole Foods into buying local products illustrates (Mackay 2006, Ness 2006). The answer to this dilemma, therefore, should not be a turn to "buycotts", but to boycotts and what Raynolds et al. (2007, p. 149) call a tactic of "name and shame". Moreover, from my conversations with manufacturers and retailers across the United States it is clear that well-timed consumer inquiries (eg. emails, telephone calls, and letters) can affect company policy. Perhaps the solution is for activists to voice their concerns as consumer rather than trying to send signals through purchasing.

Other potentially powerful market tactics include using socially responsible investment funds to redirect capital, or pushing investors' groups to introduce proxy resolutions to corporate boards of directors. For example, on 5 March 2008 the Interfaith Center on Corporate Responsibility called on its members to threaten to retract support for 63 major food manufacturers if they do not publicly "announce that [they] will NOT use sugar from genetically modified sugar beets" (Lowe 2008, online). The group successfully leveraged its $110 billion of cumulative investments in the past to push anti-sweatshop policies in the textile industry (Bartley 2003), and forced Pepsi Inc. to draft policy regarding its use of GE ingredients (ICCR 2007). It also used its network of religious groups to boycott food manufacturers such as Nestle, forcing them to reverse harmful socially and environmentally practices (Ermann, Clements II 1984).

Broadening definitions the "consumer" and "consumer activism" are important. Institutional purchasing programs, like those of retailers and manufacturers, function at much larger scales than individual shopping. Moreover, large institutions such as schools, churches, state agencies, sporting venues or hospitals dependent on public confidence and are quick to respond to potential market losses. As privatization and market management increase in education and healthcare the importance of reputation rises concomitantly. In some ways, therefore, activists can leverage neoliberalization to their advantage, threatening to "name and shame" institutions that do not adopt Non-GMO policies.

My point is not that activists should forgo policy-making and the state. To do so is defeatist and essentially gives up on broader efforts to construct radically different political economic systems that do not reproduce the social and environmental legacies of late twentieth century capitalism. But, believing that there is no alternative to certification is equally defeatist. The market offers many points of intervention – likely many more than I suggest here - and narrowing the focus to one with so many problematic consequences belies what is truly possible, even in a neoliberal world.

In sum, by examining the forces, structures and decisions that intersected in this particular instance, this chapter grounds the politics of food in the lives of real people, occurring in real time. Accordingly, certification was not a strategy decided a priori, but the outcome of "muddling through" a series of political economic contingencies. Our critical gaze might be best focused on the specific situations that re-direct potentially beneficial efforts towards systems that perpetuate the power of elites and provide limited relief from agro-ecological problems.

CHAPTER 5: MATERIAL MATTERS: NON-GMO CERTIFICATION IN PRACTICE

Leaving aside the theoretical concerns raised in chapter 4, there are concrete obstacles that limit the Non-GMO Project's long-term success. The following two chapters explore these challenges and argue that despite organizers' good intentions, the NGMOP is unlikely to attract sufficient manufacturer participation to curtail cultivation of GE crops or the production of GE foods. In this chapter, I begin by examining the implications of using private for-profit certifiers and manufacturers as vehicles of radical agro-technological change. I argue that the profit-motive of certifiers exerts a downward pressure on standards and depoliticizes the market. The second section explores the potential of Non-GMO premiums to "pull" manufacturers into the market. While one cannot ignore the market tendencies described in chapter 4, this section suggests that the "quality" characteristics necessary to develop a premium market for Non-GMO foods do not exist and a lack of consumer awareness and the limited array of available narratives portend no different in the near future. Consequently, the cost associated with certification currently exceeds the financial benefits, creating a fundamental impediment to manufacturer participation. In the third section, I argue that the FDA's continued opposition to negative labelling presents the most important obstacle to the NGMOP. Simply put, manufacturers fear FDA sanction and are unwilling to label products. The NGMOP must challenge the state directly and successfully confront a legacy of threats and reprimands. Ultimately, this chapter asks, what, if any, incentive could a Non-GMO

certification provide manufacturers? What intervention could creating Non-GMO products have in the current political economy of agricultural biotechnology? Although my assessment is not overly optimistic, my intent is not to bemoan the present state of affairs; it is to explore the constraints that complicate efforts to revolutionize the agrifood landscape using third party certification.

I) The Negative Incentive of For-Profit Certifiers

The American Non-GMO market has emerged within a fully developed commercial testing and certification industry. In the late 1990s, international restrictions on GE foods, and the refusal of many leading UK retailers to accept GE products forced US and European manufacturers to seek Non-GMO certification. Finding no internationally recognized process, industry representatives asked Genetic ID, which at the time provided only ad hoc scientific testing for GMO content, to formulate an official standard. In conjunction with the British testing laboratory, LawLABS, GID released CERT ID, the world's first fully integrated Non-GMO certification process in 1998.[149] CERT ID was tremendously successful, largely because of its adoption by the British Retailers Consortium on 3 June 1999. [150]

Since that time commercial testing laboratories and certification firms have sprung up across the United States. Companies such as OMIC USA, Biogenetic Services, and California Seed and Plant Lab provide manufacturers with a variety of services, including supply chain consultation, testing and identity preservation (IP). Further up the certification industry chain, EnviroLogix, Neogen Corporation and Strategic Diagnostics

[149] The standard was officially named CERT ID in 1999.

[150] BRC includes many of the UK's top retailers and food manufacturers, such as Sainsbury, Unilever, Nestles, Safeway, RHM and UB.

develop, manufacture and sell Strip and ELISA test kits directly to food companies, non-profit groups, university labs and official certifying firms. Atop this industry sits Global ID. In addition to certifying and testing products and providing consulting services to potential clients the company is primarily responsible for setting international standards.

The dominance of for-profit, private Non-GMO certifiers is problematic. Competition between certifying firms puts downward pressure on standards and weakens enforcement. As Guthman (2003b, p.144) notes regarding organics: "[For-profit certifiers] traded on making it easier to be organic; they tended to require less paperwork, to limit their inspections, and to certify within a week or two of application."

Recent events suggest that Non-GMO certification will likely take a similar path. With scientific procedures relatively standardized, certifying firms compete based on quick turn around time and fully integrated testing, consulting and certification services. While vertical integration may help keep costs low, it also limits transparency and accountability. Combined with the pressure to process more tests and review more systems in less time, a competitive certifying system may at best allow standards to be relaxed, and at worst, allow gross errors to be overlooked.

For-profit certifiers present yet another quandary for groups opposed to agricultural biotechnology. Profit is only possible if GE and Non-GMO crops coexist. Thus, unlike the original not-for-profit organic certifiers, for-profits have little incentive to advocate on behalf of the movement, and indeed refrain from explicit judgment. Firms market themselves as unbiased and disinterested observers whose services help manufacturers and exporters cope with shifting international regulation. For example, Genetic ID purposefully avoids normative statements, noting only:

> GMOs (genetically modified organisms) are the results of new methods of genetic engineering applied to plant life. GMOs are being accepted by some countries and rejected by others. Regulations requiring labeling of foods containing GMOs have now been adopted in a total of 36 countries throughout Europe, and the Pacific Rim, and are under development in other countries. (Genetic ID 2008, online)

Similarly, NSF, a testing facility which prides itself as one of the few licensed to use Genetic ID's protocols, assists clients in staying ahead of "constantly changing regulatory, industry, and consumer demands regarding Genetically Modified Organisms" (NSF 2004, online).

Impartial language depoliticizes the Non-GMO market and portrays testing as merely another requirement of international trade. While accessing profitable foreign markets drives manufacturer interest in Non-GMO certification, this is certainly not the purpose activists intended. By framing the issue as the *preference* of *some* consumers and *some* governments, certifiers implicitly acknowledge and accept the coexistence of genetically engineered foods with Non-GMO varieties. In so doing they set the stage for Non-GMO to become yet another alternative niche. As Guthman (2003, p.139) notes, the "logic of the niche market...undermines serious questioning of the necessity for and risks of the product or process under scrutiny". Allowing certified Non-GMO products to occupy the same shelves as their genetically engineered counterparts and leaving the fate of either to consumer choice shifts Non-GMO from being oppositional to the dominant agrifood system to merely an alternative food type.

Impartiality is not inevitable. Certifiers are important advocates for change in other realms. For example, California Certified Organic Farmers and Oregon Tilth, two of the United States leading organic certifiers, are actively involved in education, research and promoting organic and small-scale farming methods. Their magazines and

newsletters endorse organic products for ecological and food safety as well as for the benefit of rural communities. Fair Trade certifiers like Transfair USA and the Fair Trade Labelling Organization International have similar roles. Each explicitly promotes the social and ecological benefits of its products. They present Fair Trade as a sustainable and ethical alternative to the traditional economic system. These portrayals are a far cry from Genetic ID's discourse of international regulation and consumer preference. Indeed, Non-GMO certifiers neither directly target consumers nor explicitly or implicitly argue that Non-GMO foods are superior to conventional varieties. Certification is simply a service offered to meet a market requirement, and genetic engineering is a matter of scientific assessment not a socially, ecologically or politically relevant issue. This position is not solely a consequence of the difference between the incentives of for-profit and non-profit institutions. However, organic and Fair Trade non-profit organizations are motivated by non-monetary interests and have much less to lose in the elimination of conventional agricultural and trade practices. The current use of for-profit certifiers obstructs an important avenue for anti-biotechnology activist, eliminating a potential realm of advocacy and depoliticizing the label's critique.

II) Cashing In: The Pull of Premiums?

When I first met with the Non-GMO Project's organizer in summer 2006, I questioned him about the cost of the proposed certification process. My own work with companies struggling to comply with existing Non-GMO and organic certifications suggested that the financial burden of yet another review process would likely create an entry barrier and limit the Project's success. In addition, there is no indication an additional premium is available for Non-GMO foods. As a result, manufacturers perceive certification as a

cost, not as a sales opportunity. For example, when asked how a Non-GMO label should be regulated one manufacturer declared:

> [I]f we had to test every ingredient as it came in, batch number by batch number, lot number by lot number, it would be cost prohibitive for us. I think what we would have to raise the price of the product would be more than what the market would bear. So it would have a very negative effect on our business.[151]

Another opposed even the idea of a label, pointing to the proliferation of certifications and their increasing irrelevance to consumers:

> [Natural food manufacturers] are really talking about label fatigue and that's a real issue. I mean you could look at a coffee label and there's Fair Trade Federation, Trans Fair, USDA, ..., Rainforest Alliance, Smithsonian Migratory Bird - I mean you could literally ... have 12 labels on a can or a package of coffee just for the existing seals. And most of those seals nobody knows .... So, no, it doesn't make sense to develop another label.[152]

A section manager at the same company reiterated this position. In his view, if Non-GMO certification develops along the lines of Fair Trade or organics, participation will be too onerous for many small companies.

I discussed these concerns with my NGMOP informant. He stressed that the group was intent on keeping the price of participation low and Genetic ID had promised a preferential assessment rate to companies. At the time, the group estimated the costs would approximate $250 for each manufacturing plant (NGMOP 2006). In an effort to save money wherever possible, the NGMOP provides training for organic certifiers wishing to include Non-GMO review in their yearly inspections. Additionally, while Genetic ID oversees all certification practices, the NGMOP allows companies to choose testing and auditing facilities that meet their financial and geographic needs.

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[151] Personal Interview, Manufacturer 3, 7 July 2006

[152] Personal Interview, Manufacturer 32, 18 October 2006

The NGMOP must balance legitimacy and rigor with affordability and practicality. This is not easy. A strong standard requires low tolerance for GE material and thus is inherently more costly and difficult for manufacturers to achieve. Yet, if the price of participation is low or the standard is easy, participation will expand too rapidly and erode the label's premiums, thereby decreasing incentives for new entrants. The NGMOP, like all certifying projects, is caught in an economic catch 22: success ultimately erodes the incentives to participate. But, if standards or prices are too high, the cost of participation will limit the NGMOP's impact on the agrifood system. Guthman (2003, 2004) notes similar tensions in the organic market, where efforts to create a market for small growers by codifying meaning and legitimizing organic claims have, in fact, priced out the very growers certification sought to sustain. NGMOP organizers recognized this problem from the beginning and worked diligently to constrain costs without weakening the standard. However, as discussed in chapter 4, they have been unsuccessful.

While GID claims to charge a discounted assessment fee to NGMOP participants, costs are now substantially higher than the original organizers envisioned. According to the "Cost Calculator for Product and Ingredient Manufacturers,"[153] the basic fee for manufacturers with a single facility producing a single product is approximately $1,230. Yet, certification is only one of the many costs of participating in the Non-GMO market. Testing, monitoring and purchasing premium ingredients add significantly to production expenses (Konefal, Busch 2006, Lin, Chambers & Harwood 2000). For companies already struggling to meet other eco-labelling initiatives' financial and technical

[153] Available from: https://www.foodchainadvisors.com/FCGA/FeeEstimator.aspx?ref=nongmoproject

requirements, or simply to remain afloat in an increasingly crowded natural foods market, these are significant barriers. As one manufacturer lamented:

> [Y]ou have to certify every piece of your seasoning for Non-GMO as well as organic. ...[I]t's just really tough...[I]t's gotten to the point where we actually don't certify an organic product that we make because it's too costly to certify it. Because it's made up of several ingredients: corn, beets, spinach, tomatoes. And we have to certify each and every product; and you know, when you make a batch of that it's too costly.[154]

Even for relatively simple products such as milk, testing and tracing materials across the food chain is a major expense. For example, the Straus Family Creamery, of Marshall, California, spent over $10 000 to ensure the purity of only a handful of inputs (Thottam 2007).

All eco-labelling programs require some outlay of resources in time or money. Annual renewal fees for organic certification alone can cost up to twenty thousand dollars depending on the certifying agency, a firm's annual sales and the percent-category of organic food produced (CCOF 2007, WSDA 2006). However, whereas organic certification opens the door to a lucrative quality market, Non-GMO provides little added value. Farm-gate premiums in 2005 for Non-GMO corn were dwarfed by those of the other 8 major specialty varieties, ranging from $0.05 to $0.20 over the standard price of $1.95-$2.05 per bushel (US Grain Council 2006). In comparison, organic corn garnered between $1.00 and $5.00 that same year (US Grain Council 2006). Non-GMO soy premiums are similarly low, estimates ranging from $0.20 to $0.55 per bushel over the conventional price of $6.37 for generic beans (ERS 2008, Roseboro 2006b). Although both premiums have increased over the last few years, they remain far too low to attract a significant number of producers (Roseboro 2006b).

[154] Personal Interview, Manufacturer 37, 2 November 2006

End-product manufacturers also profit little in terms of higher prices or additional sales.[155] Moon and Balasubramanian (2003) found that between 52% and 70% of Americans are unwilling to pay extra to avoid genetically engineered foods. Indeed, polls indicate very few people in the United States know they exist (Hallman et al. 2004, Hoban 2004, Saad 2001). In an annual survey of consumer perceptions, the Pew Initiative on Food and Biotechnology found little change in general awareness of agricultural biotechnology since 2001. Fifty-eight percent (58%) of respondents knew nothing about the subject (PIFB 2006). Even among those who claimed to be aware of GE foods, there was a general lack of understanding of their penetration into the conventional food market: only 26% of those surveyed believed they had ever eaten a GE product (PIFB 2006). With few people cognizant of the presence of GE ingredients in the food supply it would be difficult if not impossible to justify a premium price for Non-GMO products at present.

Studies gauging the North American public's willingness-to-pay for Non-GMO foods suggest that such products have the potential to generate only limited premiums – except in the case of salmon. The specific amount of added value varies between products and the type of engineering traits. In particular, consumers are willing to pay more for Non-GMO products when the alternatives involve animals or animal to plant genetic transfers (Lusk et al. 2004). Estimated premiums range from 10 to 12% for breakfast cereal (Moon, Balasubramanian 2003), 16% for tortilla chips and russet

[155] Additional profits exist at intermediate stages such as distribution and export. Lin et al. (2000) estimate that segregating grain crops between a country and a final sale elevator adds approximately $0.22/bushel for corn and $0.54/bushel for soybeans. However, there is considerable debate over whether these premiums are sufficient to entice grain firms to develop segregated elevator and shipping networks (Bullock, Desquilbet 2002, Konefal, Busch 2006, Bullock, Desquilbet & Nitsi 2000, Buttel 2003). Buttel (2003) speculates that at current prices Non-GMO will be shunted into specialty grain systems and therefore unlikely grow large enough to spur widespread change.

potatoes (Huffman et al. 2003), 5-15% for vegetable oil (Huffman et al. 2003, Rousu et al. 2003) and 54% for Non-GMO salmon (Chern et al. 2002). While such premiums are not insignificant, compared to the average 19-35% premiums EU consumers are willing to pay for Non-GMO cereals (or, more drastically the 168% premiums English consumers are willing to pay on average for Non-GMO foods (Burton et al. 2001)), the US market has limited financial opportunity (Moon, Balasubramanian 2003).

It is unsurprising that very few of the company representatives I spoke with believe that informing consumers of their products' Non-GMO status increases sales, nor did the overwhelming majority believe it to be an important marketing point. Many argued there is simply insufficient consumer interest to justify the costs of another certification. When I asked one representative whether his company would like to participate in a certification program should one be developed, he responded: "I just don't [think]... that there's a large enough market out there to take up package space [for] a Non-GMO type of a label".[156] Even the representative of one of the United State's leading conventional food manufactures - a company who presumably would gain a significant market edge by advertising their lack of genetically modified ingredients – told me bluntly, "[I]t's not valuable to our consumer; They don't care".[157]

Of course, not every manufacturer has such a low estimation of public concern. Many companies have chosen to make Non-GMO claims despite the costs. They do so for two reasons: (1) to maintain their core consumer base of "foodies", who they believe oppose genetic engineering; (2) to capture a competitive edge in the natural food market.

[156] Personal Interview, Manufacturer 21, 5 September 2006
[157] Personal Interview, Manufacturer 14, 27 August 2006

For example, when asked about the impact of her company's labelling policy on sales, the representative of one of North America's leading natural food firms responded:

> I don't think they've increased sales statistically, you know, in a statistically significant way. But ... I think they are extremely important and appealing to...our core consumer, which is the consumer who cares very deeply about purity.[158]

The owner of a much smaller bakery company stated simply: "I don't think it's increased the sales, I think it's just what people would have expected from us".[159] Consequently, while premiums attract manufacturers to organics, the same is not true of Non-GMO: participation stems from a fear of losing market share.

Even when company representatives believe consumers do want Non-GMO products, they often reduced concern to the general demand for organics, natural or "healthy" foods, not an overriding concern for genetic engineering:

> *Robin Jane*: Do you put a label on your products, a statement about GMOs?
>
> *Informant*: You know, we do sometimes but less and less because most consumers understand that if it says organic you just don't have to worry about it. I mean they know it's actually, it's actually beyond Non-GMO; not only is it GMO-Free but it was grown without herbicides or pesticides.[160]

In addition, a majority of manufacturers perceive consumers' interest to centre on health and broadly defined environmental sustainability. Their target audience is not shopping with specific social and environmental justice concerns, but rather a preference for "green", wholesome products:

> I don't think customers go out and shop Non-GMO. I think customers go out and shop to taste. And that if they're in a Whole Foods than it's a given for them that it will be Non-GMO. I do think they turn the package over, like they'll look [at the ingredients]. ...We don't really shoot for a Non-GMO customer, we look for a customer that is into wholesome products that

[158] Personal Interview, Manufacturer 39, 7 November 2006
[159] Personal Interview, Manufacturer 15, 27 August 2006
[160] Personal Interview, Manufacturer 15, 27 August 2006

are good for them. And so what we really do is promote that on the front of the bag.[161]

My investigations suggest that even self-professed Non-GMO activists generally believe that organic and Non-GMO is synonymous, which they are not. If this trend exists throughout the natural food market, then manufacturers have little incentive to take on the added cost of Non-GMO certification.

Konefal and Busch (2006) report similar findings among seed producers, food processors, suppliers, wholesalers and distributors of Non-GMO products. There was a consensus that third party certification increases costs and workloads. Only a third of respondents believed that it had improved their profitability. Among the improvements reported were access to foreign markets, enhanced reputation and credibility, and access to organic certification and the associated premium. Those who reported no profitability in Non-GMO certification argued that margins were simply insufficient to cover additional costs of documentation, testing, equipment cleaning and segregation.

To summarize, the current market for Non-GMO foods offers little incentive to manufacturers. In particular, the ignorance of American public and the dominance of the organic standard hamper efforts to generate a sufficiently profitable market.

Making a Story to Make a Buck

Although significant, a lack of demand for novel products is generally a surmountable obstacle. As Bartley (2003) notes, stable markets for certified products rarely exist prior to the development of standards and labels. Rather, certifiers and manufacturers must carve out a market niche by informing the public of the benefits of quality products and

[161] Personal Interview, Manufacturer 37, November 2, 2006

the problems associated with standard systems of production. In their history of Fair Trade Coffee certification, Levi and Linton (2003) document the effort necessary to construct demand and create a viable market. Certifiers mounted national and international advertising campaigns to educate consumers and lobbied governments, churches and universities to adopt Fair Trade products. These efforts have been very successful, leading to double-digit growth in annual sales. In 2006 alone the estimated retail value of Fair Trade products in the United States was over $499 million euros – a 45% increase over 2005 (FLO 2007).

Carving out a similar niche for Non-GMO will be difficult, particularly given the inclusion of Non-GMO in the National Organic Program. Moreover, the Non-GMO Project does not have a budget to mount US-wide campaigns.[162] While the resources allotted to consumer education will undoubtedly increase with recent changes to the board of directors, widespread success will require a significant advertising drive. Certifiers and manufacturers must not only generate interest in the effects of biotechnology products, they must also educate consumers about the limits of current certification regimes and frame their own products as worth premium prices.

Advice on attracting valued customers fills the pages of industry trade journals. Marketing alternative and "green" products is actually quite difficult because premium prices depend on intangible ecological or social benefits, many of which have no direct connection to the consumer. Thus, natural food retailers and manufacturers are counselled to "tell the story" of alternative food products and "educate" consumers about

[162] The group currently relies on individual stores to display promotional/educational material (which it delivers upon request) and articles in industry trade journals publicize the project's efforts.

the benefits of higher priced goods (Uhland 2006). For example, Steve French warns readers in the *Natural Food Merchandiser*:

> [R]etailers need to understand the trade-offs consumers make in their purchase decision of natural versus organic products....[C]onsumers want the benefit of organically grown foods and beverages, but may not associate those benefits with the term *organically grown.*
>
> Consequently, the need for consumer education in the marketplace is evident. Finding the optimal balance of price, benefits and levels of understanding drive consumer choice among natural and organic products (and will provide the edge over conventional products).... [C]onsumers are willing to pay a premium for organic food and beverages, helping them understand the features of organic should translate into increased sales dollars and continued double-digit market growth. (French 2006, p. 26)

Manufacturers have been quick to follow this advice and many now stress the "story" of their products as a means of capturing the eco-elite market. The representative of a coffee manufacturer made the relevance of a good story in a market flush with cheap GMO alternatives particularly clear:

> [S]pecialty coffee is the dominant coffee consumed in the world and it has established that dominance due to cup quality, a story - the 'taste of place' - and the idea that there are heirloom varieties of coffee that exist on the planet....[T]hose 3 things have established ultra-premium markets. When you introduce GMO into the mix it goes against all of those three selling points. It doesn't have an interesting story, there's no historical relevance of GMOs.[163]

However, with limited space and strict regulations governing what must and what can be printed on packaging, manufacturers seeking to educate consumers are faced with a difficult task. How does one tell the story of Fair Trade, Non-GMO, and organic coffee in three lines? For small companies without the finances to mount national advertising campaigns, the solution is often to distribute leaflets in stores or to rely on certification bodies or state regulatory agencies to mount large-scale campaigns. However, as we have

[163] Personal Interview, Manufacturer 32, 18 October 2006

seen, and will see again shortly, companies can look to neither Non-GMO certifiers nor the federal government for support.

How then can a market for Non-GMO products be created? What stories can be told and to whom? What values will generate premium prices? Difficulties arise not only from the limited understanding of the population, but from the complexity of biotechnology and the limited scientific knowledge of its long-term ramifications. However, as with many alternative foods, manufacturers might draw on environmental, health and socio-economic benefits to sell Non-GMO foods. In the first two instances, evidence of substantial harm from GE products is limited, with most of the current discussion speculative of potential problems. While uncertainty is an important driver of opposition to GE crops, it is not a particularly attractive story, especially when proponents can just as easily speculate about potential benefits. Indeed, research indicates that US consumers would be willing to pay a premium for GE food if it presents possible environmental and health benefits (Lusk et al. 2004, Hallman et al. 2003). However distant these promises are, the result is a battle around possibility, not tangible effects. Moreover, it is easier for non-specialists to understand pesticide reduction or increased beta-carotene than it is to speculate about horizontal gene transfer or genetic contamination.

Focusing on biotechnology's immediate socio-economic impacts is perhaps the best hope for success. As discussed in chapter 1, farmer indebtedness and farm closures contradict agrarian ideologies of independent yeomen. Yet, the link between shopping Non-GMO and preserving independent farmers is tenuous. Unlike organics, which is rooted in agrarianism (Guthman 2004) and marketed by and for small farmers, Non-GMO has no necessary correlation to farm size. In fact, the certification is equally

relevant for conventional producers and similar standards have already been widely used to certify mainstream products destined for the European or Japanese markets.

The current market for Non-GMO, thus, offers little incentive for participation and the immediate future looks no different. To generate premiums in excess of the costs of production certifiers and manufacturers face the Herculean task of educating an ignorant public using a largely speculative body of evidence without the help of official certifying firms. While not impossible, certification costs will continue to limit the market and marginalize small companies who can afford neither testing fees nor the advertising expenses necessary to generate demand.

III) The Regulatory Challenge

Any effort to develop a third party label for food must at some point deal with the requirements set out by the US Food and Drug Administration (FDA) in the Federal Food, Drug and Cosmetic Act (FDCA). To date the Non-GMO Project has not. This oversight threatens the Standard's long-term viability. Since its initial foray into biotechnology regulation in 1992, the FDA has prevented many companies from distinguishing foods produced using genetically engineered ingredients from those without. The Agency is adamant that GE foods are "substantially equivalent" to their conventional counterparts, and that a lack of scientific evidence suggesting that such foods differ "as a class" in composition or effect precludes mandatory labelling.

The FDA has been particularly strict regarding voluntary Non-GMO labelling. In 2003, it challenged milk producers who had labelled their products as free of Monsanto's recombinant Bovine Growth Hormone (rBGH), claiming there is no material difference between milk from treated and untreated cows. Referring to an Interim Guidance

regarding rBGH, issued in 1994, the Agency warned that although manufacturers had the right to label their products, they could not suggest qualitative differences and must include disclaimers outlining official opinion. Specifically, products must clearly state that "[N]o significant difference has been shown between milk derived from rBST treated and non-rBST treated cows" (FDA 1994).

The basis for the FDA's position the 1992 Statement of Policy, subsequently elaborated in the 2001 *Draft Guidance for Industry: Voluntary Labelling Indicating Whether Foods Have of Have Not Been Developed Using Bioengineering* (herein after 2001 Guidance). Under the FDCA, the FDA is charged with regulating and monitoring food labels to prevent misleading and fraudulent claims, such as anything that "fails to reveal facts that are material in light of representations made or suggested in the labelling, or material with respect to consequences that may result form the use of the food" (Section 201(n)).[164]

Beginning from the premise that labels can reveal only facts of material consequence to consumer health or the product's functionality, the 1992 policy on food derived from biotechnology requires labels on genetically engineered food only under the following conditions:

- A food is significantly different from its traditional counterpart such that the common or usual name no longer adequately describes the new food;
- If an issue exists for the food or a constitute of the food regarding how the food is used or consequences of its use;
- If a food has a significantly different nutritional property;
- If a new food includes an allergen that consumers would not expect. (FDA 1992)

[164] For the full Act, see http://www.fda.gov/opacom/laws/fdcact/fdctoc.htm.

Although a majority of the 50 000 written comments sent to the FDA in response to the 1992 Policy requested mandatory labelling of all genetically engineered foods, the 2001 Guidance reaffirmed the original position. The Agency argued that no scientific evidence exists to suggest that genetically engineered foods differ "in any meaningful way" or present greater safety concerns than those developed through other means. Thus, labelling should be left to the discretion of companies (FDA 2001).

The 2001 Guidance directs the use of both positive and negative labels. For companies wishing to reveal the use of GE ingredients, the FDA recommends statements that specify the ways in which a product was engineered. For example, "These tomatoes were genetically engineered to improve texture" (FDA 2001). The Agency specifically prohibits general statements about agronomic benefits that it claims are not relevant to food quality and, more importantly, references to genetic engineering in ingredient lists.

The use of negative labels is significantly more restricted. To begin, acronyms such as GM or GMO are deemed misleading as they refer to the general term "genetic modification", which includes any method for altering the hereditary traits of food crops. In this view, all foods have been genetically modified. The terms GMO or GMO-Free are also prohibited because they suggest that foods contain entire organisms that have been engineered when in most cases only part of an organism is used.[165] Moreover, the Agency suggests that companies avoid the use of "free" on food packaging because the complete absence of genetically engineered material is impossible to determine with present scientific tests and impossible to achieve given the "potential for adventitious presence of bioengineered material" (FDA 2001). Instead, manufacturers are counselled to refer to

[165] The Guidance does exempt seeds and other foods such as yogurts that contain entire microorganisms.

the original seed stock or production methods. For example, "We do not use ingredients that were produced using biotechnology" or "Our tomato growers do not plant seeds developed using biotechnology" (FDA 2001). This last stipulation may not be that troublesome as current rates of cross-pollination and post-harvest mixing have already forced many companies to jettison notions of "freedom" from both policies and labels. Nevertheless, even those products without commercial GE counterparts cannot be designated as "free". According to the FDA, to do so would mislead the public by suggesting that this product is in someway different from other products of the same type.

The most troublesome guideline is the qualification that labels not imply that foods without GE ingredients are in any way superior to their GE counterparts. As we will see shortly, the FDA has interpreted this stipulation very liberally to include everything from the colours and graphics used to the size of text.

This is not the place to debate these policies, although there are many issues that deserve critical review, particularly the justice of shifting the financial burden of maintaining pure stocks to growers and manufacturers of Non-GMO foods. My purpose here is to explore how these regulations impede the development of Non-GMO certification. The FDA does permit certain claims if they can be substantiated by testing or documented segregation procedures, such as that mandated by the National Organic Program (FDA 2001). However, any claim must still meet the guidelines discussed above and, as we will see, this is extremely difficult even when products are certified.

Although still not formally adopted, the 2001 Guidance is institutionalized through the FDA's enforcement practices. The Agency spared no time in mobilizing the new requirements. On 29 November 2001 the FDA sent letters to six companies warning them

that they were in violation of the FDCA. The move came after the Center for Science in the Public Interest (CSPI) notified the Agency of its concerns that "some companies, looking for a marketing advantage, have begun capitalizing on some consumers' conclusions about GE crops by presenting the absence of GE ingredients as a sign of superiority" (CSPI 2001, p. 2).[166] In the complaint faxed to Bernard A. Schwetz, the Acting Principal Deputy Commissioner of the FDA, CSPI argued that the six companies were intentionally misbranding their products with information that "takes advantage of consumers' fears and lack of knowledge about genetic engineering" (CSPI 2001, p.2).

In five of the six cases, CSPI and then the FDA challenged the use of GMO (or GEO), suggesting that this terminology is particularly susceptible to attack. A second concern was that the labels might mislead consumers that products were superior to those containing GE ingredients. The arguments made to this effect are fundamental to the success of any Non-GMO seal, including the size, colour and placement of text and graphics. They were as follows:

- *Spectrum Canola Oil.* The front of the jar has an "attention getting" red circle containing the letters GMO that are struck through with a red line. That graphic strongly implies that GE canola is bad and that this product is superior because it does not contain any of that canola. In fact, GE canola oil is identical to conventionally grown canola oil.

- *Erewhon Wheat Flakes.* This package has a large circle on the front which states "NO" in 1/2"-high upper-case red letters and "GENETICALLY MODIFIED INGREDIENTS" in 3/16"-high upper-case red letters. Those words are surrounded by a multi-

[166] CSIP is a non-profit consumer advocacy organization, focused on food safety, alcohol policy and nutrition. Its twin missions are to "conduct innovative research and advocacy programs in health and nutrition and to provide consumers with current and useful information about their health and well-being" (CSPI 2008, online). Since 1971 the organization successfully campaigned to ban sodium nitrates in cured meats, forced the FDA to adopt sodium labeling requirements on processed foods, and pressured the US federal government to allocate an additional $75 million dollars to food inspection activities. CSPI's newsletter, *Nutrition Action Healthletter,* is the highest circulated health letter in the United States.

pointed sunburst and the words "100% NATURAL." The shopper's eyes are immediately drawn to this large circle and the emphasis on the word "NO", which implies that the absence of GE ingredients makes the product healthier. Thus, the labelling implies that this product is superior because it does not contain genetically engineered ingredients....

- *Healthy Times Oatmeal with Banana Cereal for Baby.* This product states once on the front and four times on the back of the package that it is "NON GMO" or "made without genetic modification." In each instance, the claim is set out to catch the shopper's attention by using a box, different color lettering, or by underlying the word "without" with a curved red line. The overall impression of those statements and devices conveys to the consumer that this product is superior because it does not contain GE ingredients....

- *Earth's Best Apples and Apricots.* This product states six times on the rim of the jar that it has "NO GMO's." In addition, the front-label statement "NO GMO" and the back-label statement "No Genetically Modified Ingredients" are written in large red type; other claims in non-red type state that the product is "certified organic," has "no preservatives," and so forth. Taken together, those statements imply to the consumer that this product is superior, in part, because it does not contain GE ingredients. ...

- *Polaner All Fruit Strawberry.* This product states on the front label in large red, upper-case letters in a bright yellow box that it is "NOW GMO FREE." The placement and portrayal of that claim appear intended to imply that this product is superior to other similar products because it does not contain GE ingredients....

- *Bearitos All Natural Tortilla Chips.* This product states in a red circle in the middle of the front of the package that it is a "Pure Food" and contains "NO Genetically Engineered Ingredients." The placement of the no-GE claim and the use and emphasis of the words "Pure Food" appear intended to imply that this product is superior to other similar products and that the use of GE ingredients would render a food impure....

- *Van's Organic Waffles.* This product states that it contains "Non-GMO Canola Oil" in several prominent locations on the package. That statement appears intended to imply that this product is superior to other similar products that use GE canola (or other GE) oil.

(CSPI 2001, p.4-6)

I quote these claims at length in part because there is no simple way to convey the terms by which labels are assessed, but more importantly because the details raised by the CSPI are of direct relevance to the proposed Non-GMO label (Figure 7).

Figure 7: Non GMO Project Logos

Top: Proposed logo in 2006; Bottom: Current logo as of February 2008
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For example, both the original and current version imply that the product is of superior quality; in the first instance by the use of a multi-pointed sunburst and in the second by the green check mark (the colour suggesting environmental superiority, a potential violation of the "agronomic benefit" clause). Both certainly aim to catch the eye of consumers. In fact, the label is specifically design to convey information quickly about a product's quality. I do not advocate that we adopt such logic; rather, my purpose is to highlight the difficulties that the state may pose for the Non GMO Project.

The November 29th letters requested that companies redesign their labels and submit copies to the FDA as soon as possible. By April 2003, all six labels had been

redesigned (2 have yet to receive FDA approval). The companies, however, did not do so without a fight. In correspondence retrieved through the Freedom to Information Act, the representatives of B&G Foods (Polaner Fruit Spread), Van's International Foods, Hain Celestial Group (Earth's Best) and Spectrum Organic Products challenged the FDA's position. Specifically they rejected arguments concerning consumer ignorance. In a particularly heated exchange, Spectrum's Neil Blomquist wrote to John Forest, director of the FDAs' Division of Compliance and Enforcement:

> Your letter states that consumer focus groups data indicates that consumers do not understand the acronym 'no-GMO,' but I can assure you that the consumers who shop [at] natural food stores do. Natural foods consumers maintain a heightened and informed interest in source, agricultural practices and processing of the foods they buy.... Consumers and trade customers are emphatic about the consumer's right to know whether our products contain GM ingredients, and Spectrum wholeheartedly agrees with their perspective (Blomquist 2002).

Despite the strength of this objection, Spectrum redesigned its labels and replaced the original "attention getting" Non-GMO vignette on the front of packaging with the statement, "Third party verified, this oil is made from canola oil that was not genetically engineered". Redesigning labels in this way is an important obstacle to using the market as a tool of opposition. The subtler statements that the FDA requires contradict the Non-GMO Project's purpose. They are less eye-catching and less likely to generate market demand or concern. Moreover, they take up precious package space and require much more engaged shoppers.

It is unclear how many such letters the FDA has sent since 2001, but those available suggest it is increasingly opposed to negative labelling. In three letters, mailed April 13th and 20th, and May 17th, 2005, the Agency threatened to seize products or enjoin firms'

operation if labels were not altered within a reasonable time.[167] While few in number, these letters have caused many manufacturers to refrain from labelling their products in the United States, even if they undergo rigorous 3rd party review, practice the strictest identity preservation or label their products in foreign markets. One company, for example, exports products to Sainsbury's and Tesco, the UK's leading supermarkets. To do so their products must be verified as containing less then 0.9% GE protein and they consistently produce foods well below this limit. Nevertheless, the company has eliminated all Non-GMO labelling and altered its official policy for fear of regulatory retaliation:

> There are companies that label their products GMO-Free, but little by little- if the volume is big enough where they're being seen, and in our case because we've been doing this for forty-some years, we just don't want to risk it. So, you know, we just basically took GMO-Free off all our products.[168]

Smaller companies are more likely to escape detection and are thus also more likely to label their products then larger manufacturers. Yet many of the smallest companies I spoke with are currently considering or in the midst of altering packaging and policy statements to avoid attracting the Agency's attention. Others noted that their limited market size made it highly unlikely that anyone in the Federal government would take notice of what they were doing.

Compounding manufacturers' reticence is the climate of fear produced by the recent round of letters. Open opposition to the FDA's guidelines or genetic engineering in

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[167] While the FDA claims that its electronic reading room contains all written letters to date, those secured through the FIA are not included. The database is incomplete. The three letters referred to here were directed to French Meadow Bakery, Inc., Field Roast Grain Meat Company and Aunt Lizzie's Cheese Straws, Inc., respectively. Others publicly accessible include numerous letters prohibiting the use of "hormone-free" or "no hormones", in reference to the absence of rBGH in dairy products. Archived warning letters can be found at: http://www.accessdata.fda.gov/scripts/wlcfm/searchwl_new.cfm

[168] Personal Interview, Manufacturer 2, 5 July 2006

general is restricted. Many informants fear that if they challenge the FDA, the Agency will retaliate with undue scrutiny and monitoring. For example, the informant quoted above initially refused to answer my questions about whether or not the company wanted to label its products "on the grounds that [he would] get in trouble [with the FDA]." He went on to lament his inability to discuss the issue, even with his colleagues, because, "you never know who's going to be from the FDA or FTC."[169]

This fear is expressed as palpable anxiety in other instances. In one case a manufacturer refused to speak to me at all (or give me his name) for fear that his statements would somehow get back to federal regulators. Despite my best efforts to convince him otherwise, he said only that he was very careful about what packages claimed. He spoke to me quickly and in a hushed voice, as if he were sharing secrets in a field rife with spies.

Manufacturers' fear of labelling products or even discussing the issue does not bode well for the development of an industry-wide, highly visible Non-GMO label. The FDA successfully stymies efforts and will continue to pressure companies that try to make Non-GMO claims. Given that the current label incorporates many of the elements previously prohibited - it is eye-catching, provocative, and avoids lengthy explanatory clauses – it is unlikely to emerge undetected. Thus, federal approval is a major obstacle to the Non-GMO Project effort to transform agrifood production.

IV) Concluding Remarks

In the introduction to this chapter, I raised questions concerning the type of incentive offered by the NGMOP and the potential of this incentive to influence agricultural

[169] Personal Interview, Manufacturer 2, 5 July 2006

biotechnology and the food market. My analysis suggests that the awareness and concern for GE foods is currently too low to generate sufficient profit. In a market flush with new labels and certification, manufacturers are reluctant to adopt another costly program without a guaranteed return. At the same time, however, it is clear that companies will react to consumer pressure to protect their reputation and sales. The challenge then is to induce them to use a Non-GMO label instead of emphasizing organics.

The few companies brazen enough to label their products indicate that premiums are not necessary to construct alternative markets. There are other carrots to offer; specifically, a competitive edge in a crowded sector. Moreover, as the NGMOP organizers recognized, manufacturers can be pushed into the market using retailer purchasing power or threats of consumer boycott. Replace the carrot with the stick. These tactics, however, bring their own problems. In particular, if used only as a tool to capture a larger share of the natural food market, the Non-GMO label risks concentrating even more of this market in the hands of larger firms. With insufficient premiums to cover the cost of certification, smaller companies are unlikely to participate. They will be left behind, unable to compete with this new "quality".

Without a premium to offer, what kinds of intervention could the NGMOP have in the agrifood political economy? Again, my assessment is pessimistic. Before all else, the NGMOP must navigate the FDA's prohibitions. However, even if they are able to do this, relying on for-profit certifiers introduces pressures against widespread change. Competition between laboratories emphasizes speed and ease of use, not careful analysis and robust enforcement. More important, certifiers have no incentive to advocate for the elimination of GE crops, in fact, coexistence is in their interest. Non-GMO certifiers thus

depoliticize Non-GMO foods, presenting them as a niche and certification as necessary to access foreign markets. These portrayals silence the ecological, social and political concerns Non-GMO foods represent. They hollow-out the market's oppositional potential, leaving it merely an alternative to GE food on the supermarket shelf.

There are, therefore, impressive barriers to creating a Non-GMO market in the near future. Greater still are the barriers to a market with the power to do anything but drive a new niche. However, even this alternative market faces obstacles that challenge its potential. In the next chapter, I explore the effect of gene flow and GE contamination on the meaning and practice of Non-GMO certification.

CHAPTER 6: COMMODITY CROPS, CONTAMINATION AND BIOLOGICAL BARRIERS

Contamination of crops, ingredients and seeds is the biggest obstacle to Non-GMO certification. Conservative estimates suggest that upwards of 50 percent of North America's corn, soy and canola seed stocks contain unwanted GE material (Mellon, Rissler 2004). Even when stocks are "pure", seed spilling from passing trucks, blown or transported by animals from neighbouring fields or inadvertently mixed in post-harvest processing, can contaminate food. In 2005, GeneWatch UK and Greenpeace founded the GM Contamination Registry to monitor and record such incidents.[170] Since that time, the Registry has grown to include more then 142 publicly documented events, and it is widely acknowledged that the actual rate of contamination is significantly higher.

The recent contamination of American long grain rice stocks by two unapproved varieties of GE rice, BayerCrop Science's Liberty Link RICE 601 and 62 (LLRICE) illustrates contamination's financial and political repercussions. On 18 August 2006, secretary of agriculture Mike Johanns announced that the USDA had found trace contamination in commercial samples from Missouri and Arkansas.[171] Rice futures plummeted, dropping 10% in two days, costing growers upwards of $150 million (Elias 2006, Vogel 2006). Many European nations recalled foods and seeds, and both the EU

[170] Available at: http://www.gmcontaminationregister.org/

[171] Contamination has since occurred across the United States, and nineteen European countries have reported that shipments have tested positive: Austria, Belgium, Cyprus, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Poland, Slovenia, Sweden, Switzerland and the UK. LLRICE 601 was also found in the United Arab Emirates, Dubai, Kuwait and the Philippines and in food aid shipped to Ghana and Sierra Leone (Greenpeace 2007).

and Japan closed their doors to non-certified US exports. While loss of these export markets hurt manufacturers and bulk commodity dealers, the deepest cuts were felt by seed farmers, many of whom had to bear the cost of testing their entire 2006/2007 stocks or destroy them (Bennett 2006, Laws 2006). In response, rice farmers mounted a class action suit against Bayer on 28 August 2006 seeking compensation for lost revenue and increased costs of testing, certifying and developing new varieties.

How varieties not approved for human consumption ended up in commercial stocks is still unknown. Rice has a relatively low rate of cross-pollination and Bayer claims to have ended all field trials of the GE varieties in 2001 because of opposition from American rice producers. If true, then the LLRICE 601 and 62 events are shocking illustrations of the long-term implications of open-air field trials of GE crops and the obstacles facing the Non-GMO Project. Events like LLRICE 601 and 62 highlight the difficulty (or impossibility) of achieving purity in the contemporary food production system. At best, contamination complicates sourcing strategies for manufacturers and introduces additional technical requirements. These added costs are significant, and reduce many manufacturers' ability and desire to participate in Non-GMO markets. At worst, however, contamination exerts upward pressure on tolerance levels and reduces whatever impact certification might have on the cultivation of GE crops. Thus, any certification program aimed at restricting GE crops must confront the propensity of biological elements to co-mingle in the field and factory.

In this chapter, I argue that crop biology and the current distribution and processing infrastructure lead to contamination and thus prevent the development of a robust Non-GMO certification. Adventitious presence (AP) dissuades firms for participating,

globalizes food networks and deepens contractual arrangements to the disadvantage of small, resource-pour companies. Contamination also complicates Non-GMO claims and limits the spread of consumer activism insofar as it is shaping the placement, size and type of label used. In making this argument I endeavour to show how the adoption of market mechanisms gives nature new relevance to environmental and social justice activism.

The chapter proceeds as follows. After situating the work within discussions of the political economy of nature in section 1, section 2 explores three contamination vectors, paying particular attention to the biological component of each. Examining pollination, volunteerism and post-harvest mixing, I argue that it is currently impossible to contain genetic material and exclude GE traits from Non-GE pathways. With this in mind, section 3 asks what this means for the NGMOP, and particularly the Non-GMO standard. Drawing on the reflections of manufacturers, I argue that contamination undermines the oppositional meaning of the NGMOP and introduces market trends that contradict the broader alternative foods movement and anti-globalization movement from which anti-biotechnology activism stems. Specifically, contamination is (1) driving a new, less prominent labelling geography, (2) disembedding food production and heightening downstream control of farming practices and (3) weakening the Non-GMO standard. Consequently, NGMOP members must take nature seriously. It is not enough to focus on the happenings of supermarkets and grocers, current organizers must keep an eye on field and factory as well.

Given the effects already visible, I conclude the discussion by reversing the question of labelling – that is proposing a move from negative, to mandatory positive

labelling. While nature undermines the power of the first, contamination in conjunction with GE labelling may support activists' efforts to highlight the ubiquity GE traits in food and push major manufacturers to reject such products. But first, let us set out what others have said about the problem of nature.

I) The Problem of Nature?

Unearthing the obstacles and opportunities nature presents to capitalist production has preoccupied geographers and agrarian scholars for some time (Kloppenburg 2005, Prudham 2005, Boyd, Prudham & Schurman 2001, Henderson 1998, Goodman, Redclift 1991). Of primary importance is the idea that the processes and elements of natural systems shape the institutional organization, geography and practices of natural resource industries. Agriculture and the recalcitrance of peasant forms of production (eg. the family farm) figure prominently in these discussions. According to the widely cited Mann-Dickenson thesis (Mann, Dickenson 1978), the biological time of plant growth, the perishability of crops and the specificity of land, impede flows of capital such that agricultural is unattractive to complete capitalist transformation.

Recognizing the existence of natural obstacles, scholars explore how firms reliant on nature-based industries navigate these blockages. Mann and Dickenson (1978) and Henderson (1998), for example, propose a territorial process through which capital successfully overcomes biological waiting time by shifting labour and money, respectively, with the seasonal geography of production. Goodman et al. (1987) propose the dual strategies of "approriationalism" and "substitutionalism" in which firms attempt to carve off elements of production (eg. pest regulation, fertility, seed production) and sell them back to producers or develop industrial substitutes for natural ingredients (eg.

margarine for butter). In a similar view, Kloppenburg (2005) suggests the importance of capturing regulation and harnessing scientific trajectories. Accordingly, the ability of agribusiness to direct public science into hybrids, decrease public agricultural development and establish patent rights transformed seeds into commercially viable commodities.[172]

From this perspective, biotechnology and the associated political economic complex is simply the latest attempt to circumvent natural obstacles. Looking back on his early work, Goodman (2003, p. 222) admits to believing that genetic engineering was capitalism's final triumph through which it would sweep "away the *technological* foundations of the recalcitrance or exceptionalism of agriculture". While Goodman's optimism is tempered, other analyses are quick to highlight the distinctive transition in agrifood production and capitalism more generally that has come with genetic engineering (Boyd 2003, McMichael 2000, Buttel 1999). Accordingly, in political economic practice, biotechnology has hyper-concentrated global capital, further dislocated farmers from the means of production and propelled the liberalization of trade and the extension of property rights across the commons.

As profound as these implications are, recombinant DNA techniques are not the whip that will subdue biological recalcitrance. In fact, the ecological tendencies of GE crops to co-mingle in field and factory is now an opportunity for a new form of primitive accumulation through judicial means (Prudham 2007). Moreover, as the following discussion illustrates nature continues to obstruct capital accumulation for food

[172] The offspring of F2 hybrids have significantly reduced yields making on-farm seed saving economically inefficient.

manufacturers and curtail efforts to restrict and redirect financial flows in the agrifood sector.

It is important at this point to distinguish "extractive", "cultivating" and "transformative" industries. Works in the political economy of nature generally postulate that the first two are tied to natural processes in unique ways. This is certainly true, but this approach obscures the ways nature reverberates through the lives of commodities, particularly foods (Fitzsimmons, Goodman 1998). Scholars have been far less apt to ask, how nature matters to Kraft, Whole Foods or Nature's Path? The development of, what I call, "discursive" industries, or firms using proprietary language as a major accumulation strategy (eg. certifiers and natural food manufacturers), renders this silence all the more audible.

Recent works in agrifood studies suggest that nature is increasingly a discursive and material site of struggle in the food system (Morgan, Marsden & Murdoch 2006, DuPuis 2000, Murdoch, Marsden & Banks 2000). Indeed, the rise of green consumerism turned the idea of nature and the principles of environmentalism into profitable accumulation strategies. A commodity's "naturalness" not only embeds production in particular places and the necessities of biological reproduction, but opens a space for the creation of surplus value. For example, in the present discussion, the premiums that current organizers hope to generate are based on the conception that Non-GMO foods are more "natural" than their GE counterparts. Yet, as I illustrate, selling this "naturalness" is hampered by the materiality of biological systems.

Thus, the following discussion adds new dimensions to the "problem of nature" (Boyd, Prudham & Schurman 2001, p. 557). Specifically, it suggests that nature matters

in important ways to certifiers and by extension activists endeavouring to redirect commodity production through consumption.

II) Contamination Pathways

At present, genetic engineering is largely restricted to commodity grains, such as corn, soybeans and canola.[173] Thus, GE natures are undifferentiated, mass produced crops that move through a system based on the rapid distribution of standardized elements. These biologic and industrial characteristics create three openings for GE and non-GE traits to mix: (1) cross-pollination between GE and non-GE populations; (2) germination of volunteer GE varieties; and (3) mixing during mass transportation and storage.

Let us begin with sex – or pollination in the botanical world. While every crop has its own breeding characteristics and rate of outcropping, none can be fully contained within agro-ecosystems (Treu, Emberlin 2000). Soy is presumed to present a low-risk of cross-pollination (Bullock, Desquilbet & Nitsi 2000). Its pollen is heavy and the plant relies predominantly on self-fertilization. Nevertheless, many seed stocks in the US and France have been contaminated (Greenpeace 2003); contaminated food has been found in Germany (European Commission 2006), India (Chawla 2001) and Ireland (Food Safety Authority of Ireland 2003); and volunteer Roundup Ready™ soybeans are posing increasing problems for Argentinean farmers (Bradford 2004).

Corn and canola on the other hand, are high-risk crops, with pollen dispersals of many kilometres (Treu, Emberlin 2000). Corn relies almost exclusively on out-crossing and the plant enrols wind, animals (generally bees) and gravity to transport its genetic

[173] Engineered varieties of rice, wheat, and alfalfa were also introduced with various success and small markets exist for papayas, squashes, peanuts and sunflowers.

material. Male tassels release between 14 and 40 million grains over a period of 2 to 14 days (Miller 1985). The exact scale of the species' reproductive geography depends on climatic conditions, stand height and density, topography and crop variety (Treu, Emberlin 2000). Nevertheless, it is still possible to outline a general sphere of genetic influence. Studies of cross-pollination between GE and non-GE corn have detected contamination at distances of 600ft (Thornison 2001) to over 1600 feet (Olsen, Rossiter & McGuire 2003). The relatively large size of corn pollen means that pollination rates are highest within 40-50 feet (Burris 2002), however, out-crossing has proven impossible to prevent even at a distance of 1650 feet (Thornison 2001).[174]

Canola, a member of the brassica family, is predominantly self-pollinating yet field and laboratory trials report out-crossing rates between 5 and 41 percent (Treu, Emberlin 2000). Like corn, canola plants enrol wind and insects to disperse their large, heavy and sticky pollen. Estimates of contamination rates vary widely depending on the experimental plot size. Using a 9m diameter plot of GE canola in the centre of a 1.1ha field of a non-GE variety, Sheffler et al. (1993) found a 0.0003% out-crossing rate at a distance of 47m. Timmons et al. (1995) and Thompson et al. (1999) found significantly higher rates of contamination at the field and regional scales, respectively. When planted in plots approaching the typical field size, pollination frequency remained high even at a distance of 2500m (Timmons et al. 1995). At the regional scale (70km^2), Thompson et al. (1999) found a consistent dispersal radius of 4km, with pollination rates of 5% at this distance.

[174] Out-crossing refers to the introduction of genetic material from outside the breeding line. This includes the movement of genes from domestic crops to wild populations, between crop populations, and even between individuals of supposedly self-pollinating species.

Bees play a particularly important role in long-distance pollen flow in both corn and canola. In fact, bee colonies are often used by canola farmers to increase pollination rates (Ramsey et al. 1999). In both cases, however, use of GE pollen by honeybees threatens honey production and represents a critical source of contamination for all products using this ingredient (Malone 2002, Smythe, Khachatourians & Phillips 2002). For example, in 1999 the Canadian honey industry incurred a severe blow when the EU rejected shipments after it detected the presence of trace GE material. Shortly thereafter, the EU banned all Canadian exports because producers were unable to guarantee the purity of their product. The Canadian Honey Council estimates the loss of this market has cost the industry more then $5.3 million a year (Smythe, Khachatourians & Phillips 2002).

Containing the genetic material of GE crops is thus extremely difficult in open agro-ecosystems. Proponents have suggested various methods for preventing cross-pollination, including planting buffer strips around GE plots, staggering plantings to offset the timing of pollination events (Thornison 2001), restricting plantings to greenhouses or laboratories and genetically sterilizing seeds. The efficacy of such techniques is highly debated. For example, in its 2004 report a National Academy of Sciences task force concluded that both established and theoretical methods could not assure complete containment of GE traits. The group advised the biotechnology industry to devise significantly more robust monitoring and remediation prior to further product development (NAS 2004).

Even Monsanto, which publicly assures growers that identity preservation is possible (and necessary to avoid charges of patent infringement), recognizes that trace amounts of commercial biotechnology traits in conventional or organic seed are

"unavoidable" (Monsanto 2004). US regulators hold a similar view. In 2006 the FDA supported the biotechnology industry's petition and formally accepted adventitious presence as a normal and safe element of commodity production (FDA 2006, FDA 2001). Unfortunately, the acceptance of AP by policy makers will only likely reduce monitoring and enforcement pressure and increase the rates of contamination.

Volunteer GE plants present a second means of contamination. Many plants, including corn, soy and canola enrolled environmental and biotic resources in their effort to move their progeny to distant locations. Geographically elongated commodity networks bring new tools to this effort, such as trucks, barges, planes and shared harvesting machinery. It is common for fertilized seeds to fall from passing trucks or be transported by animals, birds and humans from one field to another. The introduction of herbicide tolerance privileges those GE seeds that manage to find new spaces to colonize and growers have found it increasingly difficult to control these weedy introductions with traditional rotations techniques.

Canola is particularly susceptible to weediness. Even prior to the introduction of GE varieties, growers doused fields with herbicides to ensure that volunteers did not contaminate subsequent harvests of wheat or barley. The advent of Roundup Ready™ and similar herbicide tolerant varieties has forced many growers to return to more toxic broad-leaf weed killers or begin deep tilling programs that increase already impressive rates of erosion from fields (Canola Council of Canada 2005). Losing access to Roundup (and other glyphosates) also adds significantly to costs of production. The Ontario Ministry of Agriculture Food and Rural Affairs estimates that controlling volunteer herbicide tolerant canola in soybean fields increases per-acre costs from $9 to between

$20 and $30 (Cowbrough 2005). With the advent of volunteers tolerant to multiple herbicides, as for example the UK government's environmental advisor, English Nature, found on the Canadian prairie, control costs will surely rise precipitously (Orson 2002).

Contamination, either through undetected GE volunteers or cross-pollination threatens the purity of seed stocks and thus has cross-generational repercussions which further obstruct the development of a robust (and political economically transformative) Non-GMO certification program. Pioneer Hi-Bred International, the world's largest seed firm, is already unable to guarantee that its products are free of genetically engineered traits. In a letter accompanying the company's proprietary soybean seeds, Pioneer VP Jerry Armstrong, states:

> Pioneer Hi-Bred International, Inc. validates that the following soybean products were developed using traditional plant breeding without the use of molecular genetic modification techniques.... However, grain traits can be mingled mechanically in the grain handling process of genetically in the course of pollination. Thus 100% purity, either in genetic make-up or in the absence of foreign material content is currently not achievable for any agricultural product, including soybean seed (in Kimbrell, Mendelson 2004, p.15).

The inability to access "pure" seed stocks at a large scale is an insurmountable obstacle to the Non-GMO Program's success. Growers might be able to rely on small, secluded firms or greenhouse seed production to secure their primary inputs but these stocks will likely be cost-prohibitive.[175] Since the risk of contamination is in part scale dependent – that is, the larger the scale of production the more land is needed to grow seed stocks and the more likely the plants or seeds will come in contact with GE varieties in field or

[175] It is important to note that Non-GMO certification is fundamentally different from the National Organic Program in this regard. The NOP is process based, meaning that certification hinges on a grower's efforts to reduce contamination not the amount of adventitious presence. Seed stocks might be "Non-GMO" but there is no standard AP threshold for organic or conventional seed and tolerances vary widely. The Non-GMO certification is product based and thus necessitates the development of a more stringent seed market.

transport – the market for Non-GMO seeds is spatially and economically constrained. Unless non-genetically engineered varieties replace current GE stocks in significant quantities, larger producers will be highly vulnerable.

As Armstrong's letter points out, nature's obstacle to the Non-GMO market is also the result of the interaction between crop physiology and a distribution and processing system designed to handle relatively undifferentiated bulk commodities at massive scales. IP pathways exist to separate food- from feed-grade grains and maintain the integrity of specialty varieties. Yet, spatial separation is limited to the holding silos and transportation containers used at one moment, leaving a range of opportunities for post-harvest mixing. In their assessment of the economic feasibility of Non-GMO segregation in the current system, Bullock et al. (2000) detail an unending list of possible sources of contamination. For example, after navigating a number of shared trucks and harvesters on the farm, grains collect in a dump pit at the county elevator, where they wait to move to an elevator. This inelegant process opens the shipment to co-mingling at numerous points:

> At the bottom of the dump pit is an area called the boot, where the grain sits until it is carried up and away by a leg (a large belt with buckets attached to it). A small amount of grain is usually left at the bottom of the boot where the leg's buckets do not reach. To get ride of this grain, an employee would have to remove the grate, and climb down into the pit to clean the boot. Loose pieces of grain could also get caught in the leg. Additionally grain dust (small particles of grain chipped off from the grain as it is moved by machine) gathers in the leg. The only way to clean such dust would be to disassemble a leg, which would take many hours of worker time, and for practical purposes is rarely if ever done. (Bullock, Desquilbet & Nitsi 2000, p.9-10)

Indeed, the entire commodity system is designed to keep varieties reasonably clean not "kernel clean" and the minuteness of the natural objects with which it is dealing makes any attempts in this direction extraordinarily difficult.

At present, the only way to prevent grain from seeping through the cracks in the system (and those in the walls, buckets and legs) would be to dedicate a separate infrastructure to GE and Non-GE varieties (Bullock, Desquilbet & Nitsi 2000).[176] Although such a distinct pathway is emerging at a very small scale, its development will necessitate an enormous increase in demand or sufficient production volumes to justify the extraordinary expense of building new silos and creating a separate network of technologies and actors. Moreover, even in the small existing market, the total absence of GE traits is impossible and firms tolerate contamination of various degrees.[177]

In sum, the socio-naturalness of GE crops – their reproductive biology and their conformity to the dictates of the mass market - intersects with agrifood systems to prevent segregating genetic traits. The flip side is, of course, that contamination is in part a product of types of crops currently available. Were the market dominated by zucchini or turnips, the natural obstacles and the rates of contamination would be quite different – a fact that only underlines the importance of nature's materiality.

III) "Natural" Obstacles

Obstacle 1: A Truthful Labelling Geography

Contamination, whether through cross-pollination, in-field volunteers or post-harvest mixing, obstructs efforts to raise consumer awareness and create demand through labels. To begin, the inability to ensure the integrity of non-GE ingredients is shaping where and what information graces food packaging and which companies are willing to make

[176] In an extreme example of this Archer Daniel Midlands, a leader in international grain production has ceased to produce, buy or handle any GE grains out of fear that their shipments will be rejected by the European market (Buttel 1999).

[177] For a full list of Non-GE suppliers see the 2008 Non-GMO Sourcebook. Available at: http://www.non-gmoreport.com/books_newsletters/non_gmo_sourcebook.php.

claims. The appearance of "honesty" is a key characteristic of the natural food market and the sector is marked by discourses of defetishizing foods and unveiling the conditions of production. For many of my informants, these are not hollow marketing ploys. The choice to label products is part of an effort to be a "trustworthy" member of the community. Consequently, many informants are reluctant to use "GMO-Free" or "Non-GMO" labels because they cannot avoid contaminated stocks – even if they believed this contamination is below recognized tolerance levels. As a cookie manufacturer told me:

> Our goal is 100% GMO-Free but there is a level of control we don't have and we don't want to make claims we can't control...even though we've done everything we can do to prevent it.[178]

Similarly, a rice grower and processor confessed he simply cannot label his products nor tell his customers that they are GMO-Free because non-contaminated grain is a "biological impossibility."[179] A tofu manufacturer expressed similar reticence. When I asked about whether or not he would like to label his products, he told me with profound regret:

> [W]e can't say Non-GMO and put those words out there because unfortunately using that is not defensible in court...because wind can blow contaminated genetically modified seeds to an organic or GE-Free field and have an effect on that field. And so, you know, if you test your products and it comes out as, you know, 1% or something GE, even though you purchased completely non-GMO ingredients...you can't [label]. So we are not going to take the risk of saying Non-GMO.[180]

Yet, manufacturers continue to pay the added costs of sourcing non-GE ingredients and must in some way assure their customers they oppose biotechnology. They do so in four ways. First, companies are replacing labels with lengthy policy statements on

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[178] Personal Interview, Manufacturer 10, 9 August 2006

[179] Personal Interview, Manufacturer 40, 13 November 2006

[180] Personal Interview, Manufacturer 8, 28 July 2006

websites and in marketing paraphernalia. Second, in the place of the much simpler Non-GMO icons, manufacturers are adopting long, cumbersome statements. For example, some state, "we use soybeans that were not produced by the use of biotechnology" or "produced without genetically engineered ingredients". Others simply write "Non-GMO" in small print before corn and soy by-products on the ingredient panel. These statements are part of a new labelling geography in which claims are no longer prominently displayed on front panels and box-tops, but take a subtle position on the sides of packages and ingredient lists. Of the 23 companies I interviewed that currently label products, only 5 boldly display their claims; of the remaining 18, 7 mention GMOs on side panels, 6 in ingredients lists and in 4 cases claims are hidden from direct view on back panels. As discussed in chapter 5, some of the responsibility for label placement and type rests with the FDA. However, my interviews also suggest that many manufacturers would use less catchy statements or remove statements altogether irrespective of state intervention.

A fourth way manufacturers are circumventing Non-GMO labelling is by relying on consumers (mis)understandings of the USDA Organic seal. Subsuming Non-GMO labels within organic is obviously problematic for groups working to create a profitable distinction between the two. Moreover, the NGMOP's goals are not achievable through the National Organic Program (NOP). To exert sufficient pressure against the spread of GE crops, a Non-GMO certification must limit contamination at all points in the commodity chain. This requires consistent testing and particularly testing of final products. The NOP, however, is processed-based and final food quality is not measured. For example, the organic standard prohibits the use of certain synthetic pesticides but the presence of these same pesticides on final products is not measured. Similarly, organic

growers and manufacturers are required to show they did not intentionally use GE varieties and can adequately trace their products through segregated pathways; the presence of contamination in final foods is irrelevant. Consequently, organic and GE crops can co-exist in very close proximity, limiting the NOP's utility for curtailing agricultural biotechnology.

That manufacturers avoid prominent, pithy claims (whether because of FDA sanction, cost or honesty) is also troubling. Labels do their political-economic work by easily communicating information and allowing consumers to quickly distinguish between products. Placing information on the back of packages and using small print does convey information, but only to those consumers who are actively searching for products free of genetically engineered ingredients. It generates neither demand nor concern. In the words of Aaron Stephens, founder and CEO of Nature's Path, a leading organic cereal producer, "You can't put a long sentence in three-point type on a label and have any kind of consumer recognition" (in Barlas 2001, p.94).

The same is true for producing elaborate policy documents. Truthful explanations of the limits of production practices are laudable. However, company websites can only reach individuals who actively search them out. At best, they provide new information to consumers already interested in the ecological and social context of food production. This new labelling geography therefore is not a means of propelling the issue of agricultural biotechnology into the mainstream.

Obstacle 2: Disembedding Agrifood Networks and Deepening Control

Many companies avoid genetically engineered ingredients even though they do not use Non-GMO labels. Unfortunately, contamination is shifting the American food sector in

ways antithetical to the broader alternative foods and anti-globalization movements from which much anti-biotechnology activism stems – particularly if we understand these to include a desire to localize food production, shorten economic relationships, curtail the internationalization of commodity networks and reduce tendencies towards corporate concentration and the privatization of factors of production.[181]

First, the ubiquitous low-level contamination of grains stocks is globalizing ingredient sourcing and disembedding alternative foods from their local or national context. For example, faced with what he perceived as the impossible tasks of finding uncontaminated corn in the United States, an oil manufacturer transferred production to France where agricultural biotechnology is highly restricted. He did the same with canola and soy. While uncontaminated sources of the latter two ingredients exist in North America, the manufacturer argued that using European suppliers:

> Makes it less logistically complicated because Europe is a much more reliable source for GE-Free crops. And, you know, the potential for problems is *so much* lower.[182]

The owner of a "soy dairy" did the same. By the late 1990s the increasing contamination of US corn made sourcing domestic starch impossible. When his long-term supplier tested positive and could not find ways of eliminating GE traits, the company turned to the Australian market. As my informant noted: "It's the only world island that has corn that is GMO-Free." To which he added emphatically, "There is no good source of Non-GMO, organic corn in the United States. That's how bad it is!"[183]

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[181] I am aware there are many different perspectives within both these movements, including efforts to improve labour conditions, reduce pesticide use, and increase animal welfare regulations. However, efforts to "localize" food production increasingly preoccupy academics and activists and localization is arguably the overarching theme of alternative food politics (Allen et al. 2003).

[182] Personal Interview, Manufacturer 10, 9 August 2006

[183] Personal Interview, Manufacturer 11, 10 August 2006

A third manufacturer also reliant on Australian corn echoed this sentiment. When asked why he used such a distant source he replied frankly "[B]ecause we don't trust US corn products."[184] Indeed, Ken Roseboro, editor of the Non-GMO Sourcebook, the United State's only major Non-GMO trade publication, advises manufacturers to either "find suppliers in other countries" (Roseboro 2006a, p.73) or forego efforts to find uncontaminated US stocks. In his words: "Zero tolerance is not realistic" (Roseboro 2006a, p.73).

This is not to say that all Non-GMO companies are using international sources. Many rely on organic suppliers and the small number of domestic Non-GMO grain handlers. While Cargill and Archer Daniel Midlands have dedicated Non-GMO lines, much of the Non-GMO grain used in the United States is imported from Europe, Australia and Brazil.[185] Indeed, the bulk of Non-GMO grain used in the country is imported from overseas. As I noted above organic is not commensurate with Non-GMO and collapsing the two markets does not necessarily stymie agricultural biotechnology. Moreover, the implementation of a strict certification threshold will most likely eliminate organic sources that allow inadvertent contamination of seed and grains.

International sourcing networks are not in and of themselves problems for the Non-GMO Project except to the extent that they create a barrier to participation and relieve some of the pressure on domestic manufacturers to produce non-genetically engineered crops in the United States. Sourcing internationally and setting up new commercial relationships over distant spaces is not easy. Smaller companies, in particular, complain

[184] Personal Interview, Manufacturer 12, 11 August 2006
[185] Personal Interview, Non GMO Market Specialist, 15 September 2006

that the process saps precious resources and substantially increases the cost of production.

The tendency for certifications to impose new economic and labour burdens that counter the market decentralization and financial redistribution they are intended to create is well documented (Guthman 2007, Mutersbaugh, Klooster 2005, Guthman 2004, Freidberg 2003). In the case of the emerging Non-GMO label, distinctions between the sourcing practices of larger and smaller companies are already visible. Smaller firms tend to forego Non-GMO suppliers and rely on organic certification or other traceability documents to underwrite labels and claims. This is particularly true for newly established firms or those with limited distribution that do not have the financial or human capital to access a dedicated Non-GMO supply chain. As discussed below, larger, well-established firms are able to source internationally or control agricultural inputs and on-farm and down-stream practices. Larger firms are also more likely to test ingredient batches and force suppliers to conform to specific tolerance levels, making them better positioned to adapt to a new certification. Thus, the contamination of American stocks threatens to concentrate the market in the hands of large multinational firms who have access to existing Non-GMO networks or can afford create new ones.

A second consequence of contamination is that it deepens the existing vertical integration of agrifood production. In their effort to find ingredients free of GE traits, many informants have taken greater control of the factors and conditions of production. Some established direct contracts with farmers that specify seed stock, buffer size, the types of chemicals a grower can use and the frequency of genetic tests. For companies that already have high degrees of vertical integration, contamination has added new

specifications to existing relationships. In an extreme example, one manufacturer created a proprietary seed line and a private seed production network to ensure food purity. As contamination increases, particularly in commercial seed lines, firms are only more likely to enclose their own production pathways.

Again, for the Non-GMO Project, vertical integration is not necessarily of any consequence. Yet, opposition to agricultural biotechnology is infused by agrarian ideology and for many groups and individuals the purpose of eliminating genetic engineering is to stop the proletarianization of American farmers – goals the movement shares with a range of alternative food groups (Brown, Getz 2008, Guthman 2004). Deepening contractual arrangements and vertical integration are antithetical to such objectives. While contract farming can benefit growers in circumstances where distributors must compete for limited supply (Imbruce forthcoming) or when contracts ensure a consistent market for harvests, a significant amount of scholarship suggests that vertical integration ultimately shifts the balance of costs and risks to producers and magnifies the cost-price squeeze with disastrous social and ecological consequences (Morgan, Marsden & Murdoch 2006, Freidberg 2003, Boyd, Watts 1997, Goodman, Sorj & Wilkinson 1987).

Eliminating corn, soy and canola is another strategy used to circumvent the rampant contamination of crops and third way Non-GMO foods are transforming the North American food system. Discussing the difficulties of maintaining "zero tolerance", one informant confessed:

> Yah, it's been tough with corn. In fact, we had so many contaminated batches and it was just so devastating, for the farmers especially, that we just took corn out of our ingredient panel. ...[B]ecause of the contamination with corn, you know with the cross-pollanizing and everything we were not

> able to secure a sustainable amount of Non-GMO corn and we ended up last year switching out and using wheat malt and barley malt instead. So we don't have any corn in it.[186]

Re-formulating involves much more than substituting one ingredient for another. Recipes for commercial foods often include numerous processed derivatives used to achieve a consistent texture, taste and visual appeal (not to mention a long, stable shelf life). Altering even one constituent can significantly alter fundamental properties. In a market where consumers expect regularity and uniformity any change is quickly detected and can damage a product's reputation. The costs of advertising changes and developing new packaging are high and further marginalize small firms.

Reformulating ingredient lists does not increase the potential market for certification nor does it necessarily offset GE acreages. Shifting from corn to wheat or barley, for example, does not mean a corollary shift in land use. In fact, with the increasing demands of the ethanol market, switching from corn might actually benefit producers who can now redirect production to this lucrative and less contested network.

Moreover, as discussed in chapter 5 the FDA strictly prohibits Non-GMO claims, particularly on products that do not have GE counterparts. According to the 2001 Guidance:

> [A] statement may be misleading if it suggests that a food or ingredient itself is not bioengineered, when there are no marketed bioengineered varieties of that category of foods or ingredients.... To not be misleading, the claim should be in a context that applies to the food type instead of the individual manufacturer's product.

On 29 November 2001 the Agency put this regulation into practice, and warned 3 manufacturers their products were in violation of the 2001 Draft Guidance because "to

[186] Personal Interview, Manufacturer 14, 27 August 2006

our knowledge, there are no bioengineered varieties of any of the ingredients in the product". Fearing further sanction, the companies – Healthy Times, US Mills, Inc. and B& G Foods, Inc. – capitulated and removed the offending labels or reworked them into much longer and less prominent statements.

The FDA sent six letters that November and an untold number in the years since, citing various violations and threatening companies with seizure or injunction if they did not take immediate action. As noted, the warnings sent shockwaves through the natural food sector and many of my informants are fearful of FDA retaliation. Indeed, the state is one of the greatest obstacle to the development of a Non-GMO certification program. Somewhat ironically, the ubiquitous contamination of US grains stocks is one of the basis upon which the FDA prohibits any claim of "freedom", including Non GMO - a fact that only further highlights nature's role in thwarting the anti-biotechnology movement's efforts limit the spread of genetically engineered traits.

Obstacle 3: Diluting Standards

Ultimately, contamination shapes standards and has a determining role in the impact of the NGMOP's on the market for GE crops. The FDA is unfortunately correct. Claims that products are entirely free of genetically engineered material are impossible given the limits of scientific detection methods and the adventitious presence of GE traits. Polymerase Chain Reaction (PCR) tests detect the presence of recombinant DNA in amounts as small as 0.01% of a sample. Less expensive ELISA tests can detect proteins at levels as low as 0.1%. Thus, there is no way of assuring the complete absence of engineered traits when GE and non-GE crops are grown, processed or handled in close proximity.

The limits of detection methods are of little consequence in practice given that regulators and manufacturers argue that such tolerance levels are impossible (Charter, Elliott 2007). After a the British Retailers' Consortium announced that it would begin labelling products containing GE material in 1999, the European Commission set a 0.9 percent limit for AP. Regulators argued that a lower standard would be cost-prohibitive for producers. Other countries have chosen to set the bar far higher. Japan, for example, allows up to 5 percent GE material and Switzerland and Brazil allow 3 and 4 percent, respectively (Roseboro 2006c).

A similar rationale holds sway in the NGMOP. According to the draft standard, while "absence of all GMOs is the target", "current risk of contamination makes it necessary to establish quality management systems that assure that GMO contamination stays within acceptable bounds" (NGMOP 2008a, p.10). The stipulation of "acceptable bounds" is crucial. The group sets an "Action Threshold" of 0.5% GE presence for human food – significantly lower than most thresholds attempted to date. However, it also gives participants 5 years to reach this threshold over which time the industry will be governed by "the most stringent conditions practical at that time" (NGMOP 2008a, p.15). Under present conditions this means a 0.9% threshold for foods, 1.5% for animal feed, and the exclusion of micro-inputs from assessments and minor ingredients from traceability and testing requirements.

It is too soon to tell whether the Standard will reach its ultimate 0.5% goal, yet, what is certain is that basing interim assessments on economic "practicality" renders the Standard vulnerable to upward pressure as contamination increases. The interim variances were originally devised to entice larger manufacturers to participate in the

NGMOP. However, in doing so NGMOP members opened a space for the market to undergo similar a conventionalization to that of the organic market. At present, segregated Non-GMO pathways are small and the massive quantities of stocks needed by leading American manufacturers are highly vulnerable to contamination as they flow through, or in close proximity to conventional networks. A possible side-benefit of certification is the diversification of food production and the decentralization of commodity flows. However, it is foreseeable that larger manufacturers will capitalize on "practicality" to raise tolerance levels and avoid major restructuring. Considerable and consistent effort on the part of NGMOP organizers will be necessary to ensure that contamination does not dilute the label to the point that it refers only to a well intentioned (or not) effort on the part of manufacturers, not the meaningful absence of recombinant DNA.

In sum, nature plays a significant role in the development of any Non-GMO program. Certification in this realm hinges on the ability to segregate and distinguish Non-GMO ingredients (and whole foods) from their genetically engineered counterparts. However, in their effort to transmit DNA to successive generations and their interaction with a commodity system designed to relatively indiscriminately handle bulk grains, GE plants actively obstruct the possibility of maintaining clear genetic boundaries. Insofar as certification is supposed to bring with it premium prices and a competitive edge, nature remains an impressive obstacle to the flow and accumulation of capital in the food sector. More importantly, by restricting the financial and logistical ability of manufacturers to participate in the program, nature is also an obstacle to social mobilization and alternative food activism. Indeed, a meaningful standard may be a "biological impossibility".

IV) Concluding Remarks: Matters Material and the Future of Certification

The last two chapters reviewed some of the major financial, political and biological obstacles activists face in their effort to establish a credible and effective certification program. The analysis extends that in chapter 4 where I traced the Non-GMO Project's problematic history and outlined the dangers inherent in third party certification. Throughout the discussion I have tried to remain hopeful about the NGMOP's potential, however, redirecting agro-ecological practice using labels seems to be a Herculean task. With little economic incentive to offer manufacturers and a persistently ignorant public, certification is an unattractive endeavour, even for large firms. Food produced without genetic engineering is not easily spun into tales of social or environmental justice and a quick resolution to this problem is unlikely.

Furthermore, the state, through the FDA, systematically closes the possibility of negative labels. The trepidation that permeates the alternative food sector is significant. Manufactures fearing retaliation censor their comments, stifle discussion within the industry and thereby prevent a critical mass of interest necessary for the certification to become an attractive and competitive advantage. In combination with the high costs of implementing segregation practices and manufacturers' desire to truthfully represent their products, the FDA's position seriously limits demand for certification. The Non-GMO Project, therefore, must take seriously the obstacles before them. They face not only an unengaged public but a hostile state committed to the commercialization and promotion of biotechnology products.

NGMOP organizers must also take seriously the natural and technical systems in which the certification is embedded. Developing a new label is as much about generating

demand and market force, as it is about controlling what happens in the field and factory. Again, unlike other process-based certifications, which govern human action, Non-GMO relies intimately on breaking the reproductive tendencies of non-human elements. A robust program would govern the practices within Non-GMO fields *and* those in neighbouring and even, in the case of the transfer of pollen by wind or animals, quite distant fields. It would necessitate isolating grain, developing new infrastructure and seed farms and investing in strict testing and monitoring procedures across the food system.

I specify a "robust" program. It is quite possible to create a standard much like the Organic label, which demands only practical efforts to avoid contamination. But if this were the case, why develop a new label? What would be the effect? There are, of course, important educational impacts. A Non-GMO label might reveal the extent to which genetic engineering has permeated in the foodscape. It would highlight the issue on grocery store shelves and potentially bring it into millions of kitchens across the United States. Indeed, this is why biotechnology firms and food manufacturers adamantly oppose positive labelling. However, a standard that does not deal successfully with increasing rates of contamination or is subject to upward pressure in the name of "practicality" will not generate the degree of pressure necessary to restrict genetic engineering or spur the food industry to demand radical regulatory shifts. Coexistence is not preferable and, indeed, it is not possible; plants are simply far too promiscuous.

My purpose in discussing the Non-GMO Project is not to dismiss market tactics or labelling altogether. There are alternatives. In particular, positive labels (ie. disclosure of GE ingredients) are likely to be more influential for three reasons. First, as demonstrated by the almost complete elimination of GE products in Europe after the

mandatory labelling of any food containing more that 0.9% GE protein, mandatory disclosure is a tremendous deterrent for food manufacturers. American food manufacturers are well aware of the consumer backlash that would likely follow a similar law in the United States. For example, the Grocery Manufacturers of America opposes positive labelling because it would dissuade consumers and "impair the long-term viability" of agricultural biotechnology (GMA 1999). These are well founded fears. Speaking for major food manufacturers, Austin Sullivan, Senior vice president of corporate relations at General Mills argued in a televised debate sponsored by the Pew Initiative on Food and Biotechnology:

> [W]e know that there is a negative connotation that it [positive labeling] would be interpreted as a warning. ... These [GE] products currently don't provide any consumer benefits, so from our standpoint, from a marketing standpoint, there's nothing we can say that makes this a benefit to you. And so when you combine the warning that people have, the fact that we can not overcome that by saying 'Here is this important health benefit that you', we would not want to label the products. If we were forced to do that, as we have been in other jurisdictions, we and indeed ...the food industry, [would] not want these products anymore because we do not want to label our products negatively. So the effect is to drive GMO ingredients out of those marketplaces (Sullivan in PIFB 2002).

Thus, unveiling the presence of genetically engineered traits would seriously curtail the market for GE crops and products and force biotechnology firms to shift their focus from input (ie. yield enhancing) to consumer and environmental traits. Full disclosure shifts the burden of advertising and promotion to biotechnology firms, who would have to justify genetic engineering to manufacturers and the public. Second, whereas negative labelling relies on incentives, niche markets and premium prices, positive labels rely on monitoring and enforcement, thereby avoiding many of the social justice issues raised in chapter 4.

Third, unveiling the ubiquity of GE traits in foods would raise the issue far better than a negative label, which does not necessarily give consumers an accurate picture of either the number of GE or non-GE products and which may easily be ignored as a new "foodie" fad. The shock of suddenly (as suddenly as things happen in the food system) seeing that almost every product in a grocery cart contains genetically engineered material is an extremely powerful event that cannot be reproduced with negative labelling. In this moment, consumers are made viscerally aware of the technology's spread and those who are currently ignorant are provided repeated introductions. The shock holds immeasurable importance for the creation of demand for Non-GMO products. A Non-GMO certification could flourish under such conditions as the fear of market losses would force manufacturers of conventional products to abandon GE suppliers.

Therefore, labelling *is* promising for activists attempting to control the spread of genetically engineered crops and foods, however, only if such attempts redirect the neoliberal, free-market logic that supports an incentive-based Non-GMO certification and instead focus on engaging the state and developing new labelling regulations. Such a shift faces similar opposition from an industry-backed state and runs contrary to the current wave of neoliberal structural changes, however working towards such goals forces the issue onto the agenda of food manufacturers, policy-makers and the media. It in turn forces biotechnology companies to publicly defend their products and justify the current state of affairs. In sum, incentives can never be as important as laws and groups must take seriously the challenges of working within the current socio-natural and political economic environment.

FINAL THOUGHTS: RESISTANCE AND CONSUMPTION IN THE BIOTECH CENTURY

This work began by implicating the agricultural biotechnology industry in global neoliberalization. However, unsatisfied with the absence of substantial critical engagement with the context and significance of opposition to the industry and its practices, I endeavoured throughout this discussion to examine the intersection between activism and the political economic structures within and outside the foodscape. Now, after six months of field-work, a year and a half of writing and publishing and over four years wrestling with the topic, what can I say about anti-biotechnology politics in California and the United States?

To begin, quite frankly, while anti-biotechnology activism is rooted in opposition to neoliberalization, free trade and corporate power, activists also reproduce neoliberal logics, particularly the reverence for individual choice and market environmentalism. The prevalence of "voting with your dollar" illustrates that neoliberalism is in no way a uniquely corporate (and state-sponsored) project and highlights how deeply its logics penetrate everyday life. The most obvious example is, of course, the NGMOP's blatant acceptance of free market rationality and the focus on pulling manufacturers into the market with premium prices. Yet, even the rank-and-file activists who choose to shop at CSAs or independent grocers help reproduce an economic determinacy that facilitates arguments about green markets and free trade in ecological resources. Voting with your

dollar is a neoliberal conceit; but it is a conceit that is now so deeply ingrained in contemporary life that we must take its problems and possibilities seriously.

Neoliberalism is not the only ideology creeping through the tactics of anti-biotechnology groups. By perpetuating connections between women and food, portrayals of nature as pure and separate from human society and family farmers as moral guides or unwitting heroes, GE Free Sonoma and the broader anti-biotechnology movement reproduce patriarchy and the racial and class prejudices rooted in Western environmental activism. Contrary to the movement's goals, these discursive frames also limit awareness of both environmental complexity and genetic engineering. In doing so, they open spaces for industry proponents to launch successful arguments and render groups vulnerable to claims of "ludditism".

Given that opposition groups reproduce elements of the very system they oppose, the question becomes: how much is too much? At what point do the unintended consequences of actions eliminate their utility? The answer to this question will certainly vary across situations and people. However, it behooves activists and academics to think carefully about what they are willing to give up for small victories. To ask, how small of a space am I willing to carve out in the fight for social justice and (agro)environmental sustainability?

To speak only of the reproduction of problems, however, would be to miss the true potential and benefit of anti-biotechnology activism. The second important insight of this project is that opposition to GE food and crops is changing the political economic terrain in the US and the trajectory of agricultural biotechnology. Groups like GE Free Sonoma and the NGMOP are increasing awareness of the issue and strengthening calls

for regulation and greater public participation. While they reproduce some common sense, their campaigns also challenge fundamental assumptions about the causes of hunger, the role of agri-business and the social and ecological costs of contemporary food production. Rank-and-file activists extend these campaigns through a daily barrage of ridicule and criticism of the industry voiced to anyone that will listen. More important, anti-biotechnology activism highlights the rising power of corporate actors and provides an avenue to mobilize a critical mass of people against neoliberalization.

Acting out opposition to genetically engineered crops introduces people to alternative economies and opens the door to agricultural and political economic change. There are, of course, pitfalls to consumer activism, which I review in a moment. However, if we accept that the tactic is diverse, includes both shopping and engaging directly with food system actors and refuse to limit it to certification and labels then we open our eyes to a true potential of using the market to advance social change.

The third insight that comes from this dissertation is that anti-biotechnology activism in California has particular significance for the broader political economy and agrifood politics. The loss in Sonoma fundamentally changed the political terrain. While a few groups continue to push for moratoria, the movement is largely shifting gears towards more market-based tactics. Everyday activism is taking greater prominence and interest is increasing for projects like the NGMOP. Organizing continues in Sonoma, but efforts now split between developing GE Free institutional purchasing program at schools, hospitals and churches, and advocating for tighter regulation at the state level. I cannot predict the ultimate effect of this transition, but Sonoma's defeat and the emergence of a national legislative efforts to transfer jurisdiction of seed and nursery

stock to state legislatures – so called preemption bills - clearly mark new period of anti-biotechnology politics (Roff 2008).

Finally, the two case studies examined in the preceding chapters suggest the diversity and complexity of anti-biotechnology activism. The movement includes a range of actors and interests, like grassroots organizers (from various domains), rank-and-file volunteers, food manufacturers, distributors, grocers, organic and Non-GMO certifiers, political representatives and farmers. Weaving the two cases together suggests the importance of the relationship between the tactics of different actors and the coincidence of multiple levels of action working at once. Consequently, to understand the potential of anti-biotechnology politics, we must examine the movement as a whole – we must look at how success in one domain may prompt or limit that in another. The efficacy of each tactic is not independent of the success or failure of others. For example, everyday activism in Sonoma emerged from the GE Free campaign: organizers educated the rank-and-file, provide the space and training to cultivate activist practices, and energized the county's population. In doing so, they shaped the meaning and purpose of anti-biotechnology efforts.

The reverse, however, is equally true. The practices of everyday activists – their speaking, shopping and eating – create a space for organized campaigns and strengthen the overall movement. The alternative systems, institutions and relations that participants help foster are evidence to others that a different reality is possible. Thus, in simply living their politics and actively working against GE foods and the political economy they represent, everyday activists provide the example to which organizers can point to

mobilize a reluctant or sceptical public. Similarly, some everyday activists are the consumers needed by the NGMOP and other market-focused campaigns.

In addition, successful tactics draw from the political and social context of the site of opposition. Anti-biotechnology groups benefit from the San Francisco area's existing agriculture and cultural characteristics. Grassroots and everyday activity is easier here than elsewhere – a fact my informants understand well. Thus, not only do activists' everyday resistances buttress organized campaigns, but both are supported by embedded cultural, economic and political geographies.

Organized and everyday action can also work at cross-purposes. For example, a Non-GMO label would reduce the need to shop at farmers markets and CSAs. In essence, as much as it would increase the presence of GE issues in the grocery store and make it easier for consumers, it would also diminish the political pressure for positive labelling and stymie development of alternative economic relations. Therefore, a victory in one domain may weaken the movement as a whole.

A similar word of caution is necessary regarding food localization. Reducing activism to accessing local food or creating safe spaces free of GE crops can trend towards creating a defensive localism and reducing important organized work at national and international levels. In essence, localization can become protectionism, with activists happy to exist in their own haven and let the rest of the world fend for itself. In focusing too much on everyday actions, and particularly consumption, activists can also loose sight of the importance of policy-focused campaigns and inadvertently reinforce the individualism and economic reductionism of the neoliberal political economy at the core of issue they oppose. Again, we might win the battle over consumers' freedom of choice,

but in the process we might loose the war against free market ideology and excess corporate power.

Given the importance of consumption in activists' toolkit and the problems this tactic brings, a final discussion of its merits is warranted. Indeed, what should be the role of consumption in anti-biotechnology activism, the broader alternative foods movement and opposition to neoliberalism? I can offer only tentative answers. It will depend on the goals and opportunities available to each group. From my position as a participant at an organizational and everyday level and as an scholar looking at the movement, I believe that choosing between foods in the same supermarket aisle offers only a temporary fix and will likely deepen extant neoliberal shifts and the agricultural, social and ecological problems that result. New certifications, labels or brands are merely new avenues of profit. In the context of increasingly lax regulations, the food system will continue to concentrate in the hands of a few multinational firms (Morgan, Marsden & Murdoch 2006, Boyd 2003). While a new, ecologically responsible and socially equitable breakfast cereal-maker might initially temper production practices, without a concerted effort on the part of the state to prevent mergers it will likely be sucked up by the few big players in the food economy. Sadly, even if companies remain independent, the pressures of competition and innovation will eventually drive down profits (as they already have in the organic market) forcing producers and manufactures to cut the same corners as the conventional market.

But what of agricultural biotechnology? Consumption can shift the trajectory of genetically engineered food. Indeed, the threat of mandatory labelling continues to give

the technology a tenuous hold in the American food system. Opposition by European retailers, driven by consumer rejection, has severely curtailed the industry's advance on that continent. Fearing consumer backlash, McDonalds and its biggest supplier McCain, single handedly prevented the commercialization of Monsanto's GE potato. It is conceivable, given a different context, that the emergence of a strong Non-GMO market could weaken demand for GE ingredients in the United States. However, labels, certifications and a new market will not counter the neoliberal trends the anti-biotechnology movement ultimately challenges. Even if we imagine a food system without rBGH, high fructose corn syrup or Roundup Ready™ soybeans, this food system need not look dramatically different from that of the 1980s.

Yet, we should not abandon consumer politics altogether. To do so would ignore an enormous part of daily existence. In the totality of consumption - that is how we go about thinking, speaking, choosing, eating and knowing food – is the basis of existence and thus the foundation of social and political economic life. If Marx can tell us anything, it is that how we service our basic human needs structures how we view the world and our place in it. Thus, social movements opposing neoliberalization, agrifood industrialization and the attendant GE technologies would be best to focus not on what people buy, but where they buy it. To urge people to think critically – that is be philosophical - about their choices. To become engaged in the world they are helping to reproduce. At best, they should try in any way possible to shift people from seeing their power in terms of the contents of their wallets or cupboards, to how they live their lives and the choices they make as citizens and residents. Actions speak louder than money.

As a universal and basic element of existence food practices offer an unmatched opportunity to alter common sense. I set out in the beginning of this project to challenge the assumption that political economic systems are transformed by eating differently; to question the cliché, "We are what we eat." However, this old adage has held up remarkably well under scrutiny. I would add only that we are not just what we eat, but the entire ways in which endeavour to service our basic need to consume.

My analysis may be unwelcome for individuals who endeavour to shop Non-GMO or who diligently buy organic and Fair Trade products. My purpose is not to criticize these practices. They matter. They do shift food production and distribution. My point is that their benefits are only temporary in a system where the free market is valued above social and environmental regulations. If changes are to last, they must be accompanied by very different ways of interacting with agricultural and the actors that bring food from field to table.

I also do not mean to reduce activism and opposition to neoliberalism to food consumption. This is only one struggle in a very long front in a much longer war of position (Gramsci 1972). While we keep one eye on our daily lives, we should also try, whenever possible to eke out concessions from the state. There can be no revolution from the aisle, without emancipation from that aisle.

As is the case with every research project, there are limitations and gaps in my analysis. I highlight four here as a means of suggesting future avenues of investigation. First, there are the obvious problems of a non-representative dataset and a limited sample size. While my purpose was not to provide definitive statistically grounded analysis of

the movement, a broader sample would enable deeper understanding of the range of lived everyday practices. Moreover, my dataset is purposefully limited to Northern California (although I have a select group of interviews from other parts of the United States). A complete picture of anti-biotechnology activism warrants a broader analysis of the similarities and differences between regional pockets and a systematic exploration of the ways that groups articulate and distribute information.

Second, this project is grounded in the unique context of California and particularly Sonoma and the San Francisco Bay area. It is important to ask whether the types of resistance activities available to my informants are reproducible elsewhere. The simple answer is, not to the same extant. Geography and income complicate practices. My informants acknowledge this problem. However, the number of farmers' markets and CSAs is growing across North America and it is increasingly possible to eat outside the supermarket. The question should not be, can the practices in Sonoma be reproduced identically across space, but how can communities living in different contexts devise ways to resist dominant hegemonic structures? The point of my analysis is to suggest that creating different social and economic relations is the most important thing, not necessarily joining a CSA.

The third limitation of this project is that I was unable to contact the full range of actors involved in my case studies. In particular, because of timing, I was unable to speak with the organizers of the new Non-GMO Project. I plan in future to return to the field and deepen my exploration of the logics and practices that are driving the certification forward. I have already been in contact with one representative and I am eager to

continue watching as the group struggles to forge a new market. I am also hoping that my analysis will help organizers think critically about their choices.

The final limiting factor is, in fact, a marvellous characteristic of the politics of agricultural biotechnology in the United States: it is emergent and quickly evolving. As I sit and write these words the California Senate is considering bill AB 541, which would protect farmers from patent infringement when crops are contaminated by patented traits.[187] If enacted, it would be the first such bill in the United States. Even with this law, the Californian government is committed to commercializing agricultural biotechnology products and there has been little shift the promotion (and funding) of research and development, nor in the overarching regulation of GE products. Thus, while the dynamics outlined in this dissertation persist, the field is dynamic and little victories are won constantly (and struggles lost). In the future, I plan to explore AB 541 and other similar judicial and regulatory decisions across the United States. For now, this "limitation" suggests the imperativeness of this project. With the field as unsteady as it is, it is essential that tactics and strategies are constantly analyzed and refined, and obstacles and opportunities highlighted.

In conclusion, this dissertation is both a timely and crucial intervention into the politics of opposition to agricultural biotechnology and the broader movements around alternative foods and neoliberalization. My analysis complicates understandings of political economic change and activists' current strategies. At the same time though it suggests the power of simple everyday practices to confront corporate control and reconfigure social and political economic relations. Beyond the neoliberalization

[187] The bill also establishes mandatory crop sampling procedures that significantly hamper the ability to firms to freely enter the property of suspected violators.

literatures, my work speaks to the intersections between nature and capitalism; food and race; and the ways in which power flows between actors. For example, it illustrates how nature, as a package of imaginaries and as material elements, obstructs progressive efforts and how white spaces can be spaces of hope. Moreover, it suggests the ways that farming, and particularly family farming, remains at the forefront of the American consciousness and the ways in which agricultural imaginaries drive political economic change. Finally, the project suggests the fundamental need to carefully consider the understandings, practices and goals of individuals engaged in struggles for social justice and environmentally sensitive economic practices. Most of all, however, my work speaks to activists and academics involved in the tremendous fight against agricultural biotechnology. There is an alternative, there is hope, and our actions will continue to be crucial determinant of social and environmental relations in the years to come.

The End

APPENDICES

Appendix 1: Interview Schedule – Social Movement Leadership

GE-FREE ACTIVISM: SOCIAL MOVEMENT LEADERSHIP
SIMON FRASER UNIVERSITY, BURNABY, B.C., 2006

Robin Jane Roff (rroff@sfu.ca)

Date: _____ (dd/mm/yyyy) Time: _____ Location: _____
Organization: _____
Respondent: _____ *(optional)*
Position: _____ *(optional)*

1. History and Organization

1.1 When was your organization established?

1.2 Why was it created? Was there a specific event/issue that triggered the foundation of your organization?

1.3 What do you think is the most successful means of mobilizing people to be concerned about GE?

1.4 Do you cooperate with other groups on a regular basis?

2. Genetically Engineered Foods, Crops and their Problems

2.1 What does your organization see as the most pressing problem(s) of genetically engineered foods and crops?

2.2 How would you characterize the current struggle against agricultural biotechnology in the United States?

3. Tactics and Strategy

3.1 What are your organization's goals?

3.2 What are the predominant tactics that you have used so far in this struggle? (e.g. lobbying, confrontation/protest, education, boycotts)

3.3 Why did you choose these tactics?

3.4 Which tactic(s) have been the most effective?

3.5 Do you have a long-term strategy or are actions taken as events arise?

4. Food companies and the Foodscape

4.1 What would you like to be the ultimate outcome of the struggle against agricultural biotechnology?

4.2 How do you envision the ideal future of American food production?

4.3 Do you think that we will achieve this?

4.4 What do you think the role of food companies is in this struggle? Consumers? Citizens? Farmers? The government?

5. Opportunities and Constraints

5.1 What, in your experience, are the major obstacles to the success of the anti-biotechnology movement in the United States?

5.2 What do you think is needed to improve the likelihood of success?

Appendix 2: Interview Schedule – Rank-and-File Activists

GE-FREE ACTIVISM: KNOWLEDGE, PRACTICE AND CONSUMPTION
SIMON FRASER UNIVERSITY, BURNABY, B.C., 2006

Robin Jane Roff (rroff@sfu.ca)

Date: _____ (dd/mm/yyyy) Time: _____ Location: _____

1. Background

1.1 In what year were you born? _____ 1.2 Gender: M F

1.2 Where did you spend the greatest part of your childhood and adolescence?

_____

1.3 What is your occupation? _____

1.4 Of the following list, which is your highest level of education? High school ____ Trade School ____ Some college ____ 4-year degree ____ (area: _____) Masters ____ (area: _____) PhD ____ (area: _____)

1.5 What is your marital status? Married/Common Law ____ Single ____ Divorced ____ Separated _____

1.6 Do you have children? Yes No 1.7b How old are they? _____

1.7 Do they currently or periodically live with you? Yes No

1.8 Other than your children, do you currently live with other people? Yes No

If yes, what is their relation to you?:_____

2. Activism Background

2.1 What is your association with GE-Free Sonoma? _____

2.2 Approximately how long have you been involved in the anti-biotechnology movement? _____

Was GE Free Alameda/Sonoma your first involvement in the movement? YES NO

(If no) What group(s) were you involved in before this one?_____

2.3 How did you first learn about the California GE-Free movement?

_____

_____

_____

_____

3. Opinions regarding GEFs

3.1 If you think back to the beginning of your involvement in the movement, what first triggered your concern about genetically engineered food and biotechnology?

3.2 What do you see as the most pressing problem(s) of genetically engineered foods?

3.3 Has your participation with GE-Free Sonoma increased your awareness of these problems? Yes No

3.4 Are there any benefits to agricultural biotechnology or genetically engineered food?

a) Could there be any benefits?

3.5 What do you think are the most important ways that a community can solve the problem(s) of GEFs?

3.6 What do you think are the most important ways that YOU can help solve the problem(s) of GEFs? *(ask only if their answers above are broader than individual action)*

3.7 What would you like to see in place of the current food system? What do you envision as a better food system?

3.8 Do you think that we are moving towards this future? How/ Why not?

4. Activism Practice

4.1 Has your involvement with GE-Free Sonoma or the broader anti-biotechnology movement impacted your thoughts or behaviours? *(If yes, prompt to elaborate and specify impact of GEFA/S)*

Has it impacted your daily life? YES NO

4.2 Are you, or have you been, involved in any other type of food-based activism, such as the Slow Foods movement, direct marketing groups (CSAs, Farmers Markets), or vegetarianism/veganism? Yes No

If yes, please list:

4.3 What type of anti-biotechnology activities have you practiced in the past?

4.4 *(if they don't mention this)* Do you try to avoid GEFs? How?

a) Does this require a lot of time or effort? *(prompt to be specific: reading labels, going to different stores, not buying certain foods)*

b) What, in your experience are the biggest obstacles to avoiding GEFs?

c) Are there times and/or places that you cannot avoid GEFs? How do you feel when this happens?

_____
_____
_____
_____
_____

(if don't eat GE-Free) Why don't you try to avoid GEFs?

_____
_____
_____

a) *(if applicable)* Would you avoid them if it were easier to do so? YES NO

5. General Food Practices

5.1 Where do you buy the majority of your groceries?

_____

a) How many stores do you go to for your weekly shopping? _____

b) How often do you eat take-out or at restaurants in a week? _____

c) Do your concerns about food influence where you buy your food? How?

_____
_____
_____

5.2. Do you do most of the food shopping for your household? Yes No

5.3 Are you responsible for buying food for people other than yourself? Yes No

5.4 How often do you buy food in a week? _____

5.5 (*Follow up)* Is there one major day for food shopping? Yes No

5.6 How would you characterize the type of meals you eat? (home-made, microwave, restaurant etc.) _____

5.5 How would your describe your general shopping practices? For example, to you make a list? Are you an impulse buyer? Do you plan meals?

_____
_____
_____

5.6 What qualities are important when you consider/plan foods to eat (e.g. low fat, organic, fresh, price, convenience, locally grown/made, GE-Free etc.)?

5.7 When you are actually in the store/at the market, what would you say are the most important factors in your decisions?

Would you like me to mail you a copy of this study when it is finished? Yes No

Appendix 3: Interview Schedule – Conventional Food Manufacturers

AMERICAN FOOD MANUFACTURERS
GMO POLICY
Simon Fraser University, Burnaby, B.C., 2006
Robin Jane Roff (rroff@sfu.ca)

Note: GE refers to genetically engineered or genetic engineering depending on context

Date: _____(dd/mm/yyyy) Respondent Position: _____

1. Company Background

1.1 When was your company established?

1.2 Approximate number of employees?

1.3 Number of brands?

1.4 Publicly traded company?

1.5 Subsidiary of a larger firm?

1.6 Approximate % products certified organic?

1.7 Type of product certified organic?

1.8 Approximate % products certified GE-Free?

1.9 Type product/ingredient GE-Free?

2. GE Policy

2.1 What is your company's official policy regarding genetically engineered ingredients?

2.2 Why was this policy developed?

2.3 When was this policy developed?

2.4 Why, in your opinion, do you think American companies are choosing to go "GE-Free"?

3. Consumers

3.1 Do consumers ask your company questions about GMOs?

a) How have they communicated their questions to you?

3.2 In general, is your company concerned about rising opposition to genetic engineering in the United States?

3.3 How has/is your company responded/ing to these concerns?

3.4 Has your company ever been directly approached by anti-biotechnology activist groups?

i) group:
ii) time period:
iii) location:
iv) type of activity:

3.5 How did you respond to these events?

4. Labelling

4.1 There are currently no standards regarding the use GE-Free (etc.) labels in the United States. Do you believe that the Federal government should create such a standard? Why or why not?

4.2 If you would like to see more regulation, what would you like to see regulated?

5. Wrap up

5.1 Do you think that agricultural biotechnology has or will benefit American food manufacturers? Why/Why not?

5.2 Do you think that agricultural biotechnology has or will benefit your company specifically? Why/Why not?

Appendix 4: Interview Schedule – Non-GMO Food Manufacturers

GE-FREE MANUFACTURERS: STRATEGIES, MOTIVATIONS AND PRACTICES

Simon Fraser University, Burnaby, B.C., 2006
Robin Jane Roff (rroff@sfu.ca)

Note: GE refers to genetically engineered or genetic engineering depending on context

Date: _____(dd/mm/yyyy) Time: _____ Location: _____
Company: _____ Respondent Position: _____

1. Company Background

When was XXX established? _____ (year) Number of employees _____

Type of products: Number of brands:

Publicly traded company? _____

Subsidiary of a larger firm? _____

% Products Certified Organic _____ Type product CO: _____

% Products GE-Free _____ Type product/ingredient GE-Free: _____

2. Food Trends

2.1 At present, what would you say are the (emerging) trends in US food?

_____

_____

_____

2.2 What techniques does your company use to stay abreast of consumer demands/concerns?

- ☐ trade journals: *(list)* _____
- ☐ consumer reports *(independent or in-house)* _____
- ☐ focus groups
- ☐ marketing agencies
- ☐ Emails and direct communication with consumers
- ☐ Other: _____

2.3 Of these, which is the most important? _____

3. GE Policy

- 3.1 What is XXX's official policy regarding genetically engineered ingredients?

  _____

_____
_____
_____

3.2 When was this policy adopted? _____

3.3 Why was this policy adopted?

_____
_____
_____

3.4 Were there any specific events that contributed to your decision to go GE-Free? *(please describe)*

_____
_____
_____
_____

3.5 Prior to the implementation of your policy, did consumers voice concerns over your use of GEIs? How?

_____
_____

3.6 Do they do so now? _____

3.7 Did these inquiries influence your decision to adopt a GE-Free policy? _____

3.8 Has XXX ever been directly targeted by anti-biotechnology activist groups?

a) group:
b) time period:
c) location:
d) type of activity:

3.9 In your opinion, did these events impact XXX's decision to adopt its GE-Free policy?

_____
_____
_____
_____

3.10 Does your company participate in any anti-biotechnology advocacy? (e.g. sponsor activist groups, lobby the government, membership in an industry group that advocates etc.) *If yes, please describe*

_____
_____
_____

3.11 Do you think the US anti-biotechnology movement has influenced food industries? How?/ Why not?

_____
_____
_____

4. Labelling

4.1 Do you label your products as GE-Free, GMO-Free etc? _____

(if yes) What label do you use? _____

4.2 Why did you choose to/not to label your products?

_____
_____
_____
_____

4.3 Does your company use any other special labels/claims on its products? ____

- ☐ Vegan
- ☐ Kosher
- ☐ Heart Healthy
- ☐ Organic
- ☐ Natural
- ☐ Wholegrain
- ☐ Low Fat
- ☐ Other: _____

(LABELED)

4.4 There are currently no standards regarding the use GE-Free (etc.) labels so what exactly does your label mean? Does your company have internal guidelines regarding the amount of GE material that is acceptable under this label?

_____
_____
_____
_____
_____

4.5 Do you believe that labelling your products has increased sales? _____

(UNLABELED)

4.6 Would you like to label your products GE-Free? Why/Why not?

_____

_____

_____

(if yes) What is currently preventing you from doing so?

_____

_____

_____

(ALL)

4.7 Do you believe it is important to regulate GE-Free labelling? Why/Why not?

_____

_____

_____

(if yes) a) What exactly do you think should be regulated? *(e.g. tolerance levels, language)*

_____

_____

_____

b) What tolerance level would you prefer? (1%, 5%, 10% etc) *(note the EU's standard is currently 1%)*

_____

5. GE-Free Production Practices

5.1 Did the decision to go GE-Free require XXX to alter any manufacturing or sourcing practices? *(if yes: please describe in as much detail as possible) (if no: Why not?)*

_____

(if yes) How long did it take to alter your practices in these ways?_____

5.2 How do you ensure that your ingredients and final products are GE-Free? *(ID preserved products? Genetic testing? Containment procedures?)*

_____

_____

5.3 Are your products certified GE-Free? If so, by whom? _____

5.6 What proportion of your ingredients comes directly from the following?

Farmers: _____
Processing-manufacturers (raw (e.g. grains)): _____
Processing-manufacturers (final product): _____
Wholesalers (trade): _____

5.7 Are these long-term or fluctuating relationships? _____

5.8 How frequently do you change suppliers? _____

5.10 Approximately how many of your ingredients come from other countries? _____

5.11 Which ingredients? _____

5.12 Where are they from? _____

5.13 From whom do you buy them? *(i.e. farmers, processors, wholesalers)* _____

5.14 Do you have direct ingredient contracts with farmers? _____

(if yes)

a) In these do you specify what products and practices they can use? _____

b) In general, what you're your specifications?

_____

_____

_____

6. Assessment of Transition

6.1 Given the experience of XXX, would you say that implementing a GE-Free policy is difficult?

_____

_____

_____

_____

6.2 Has going GE-Free has benefited your company? If so, in what way?

_____

_____

_____

6.3 What in your experience are the major obstacles to 'going GE-Free'?

_____

_____

_____

_____

6.4 What could be done to make the process easier?

_____

_____

_____

7. Wrap up

7.1 And finally, why do you think it is important to produce GE-Free products?

Appendix 5: Coding – California Organizer Interviews

1. History of GE Free movement and Californian anti-biotechnology movement

2. Perceptions of other GE Free movements (e.g. Mendocino, Humboldt)

3. Reasons for failure of Measure M
    - Vaccines
    - Opposition's scare tactics & lies

4. Perception of "victories"

5. Concerns re. agricultural biotechnology
    - Corporate control
    - Uncertain consequences/ Scientific imprecision
    - Environmental effects/ agricultural effects

6. Discourses – *I used this category to index responses to my direct queries about campaign literature*
    - Farmers and farming
    - Environmental consequences and nature
    - Monarchs
    - Women and children
    - "Frankenfood"/ Food safety

7. Ways to run an effective campaign

8. Vision of desired future political economy/ food system

9. Benefits of biotechnology/ refutation of "luddite" portrayals

Appendix 6: Coding – Rank-and-File Activist Interviews

1. Concerns regarding agricultural biotechnology (3.1 & 3.2)
    - Corporate control
    - Academic capitalism
    - Economic health of Sonoma
    - Farmers' rights
    - Food safety
    - Irreversibility of contamination/introduction
    - Lack of oversight
    - Lack of scientific understanding
    - Environmental effect/ effect on "nature"
    - Effect on the Third World

2. (Potential & actual) benefits of biotechnology (3.4)

3. Types of everyday activism – *defined as what individuals actually do to avoid GE foods and what they would like to be able to do*
    - Actual Practices (4.3, 4.4)
        Eating GE Free
        Accessing local food or growing their own
        Educating others
        Making public statements or recruiting friends
        Wearing GE Free
        Legislative or policy oriented
        Other

    - Effect of Participation on everyday practices (4.1)

    - Perceived possible community activism (3.5)
        Local/ community food resources
        Increase education
        Labelling
        Legislative/ public policy
        Media outreach
        Other

    - Perceived possible personal activism (3.6)
        Consumption focused
        Education and outreach to friends
        Legislative/ public policy

4. Expressions of privilege to live in CA etc.

5. Types of GE Free Sonoma Activities – *what individuals did while participating directly with GE Free Sonoma*

6. Obstacles to Eating GE Free (4.4c)
    - Contamination
    - Lack of labelling – *this was reserved for specific mentions of labelling*
    - Lack of awareness – *this was discussions of a general lack of awareness of what food contained GE ingredients and the ubiquity of GE foods in on supermarket shelves*
    - Power of corporations
    - Price of GE Free food

7. Emotional reactions to obstacles to activism (4.4c)

8. Locations of difficulty (4.4d)
    - Restaurants and eating out

9. Visions of the future food system – *I used this category to index all the responses to question* (3.7)
    - Perception of achieving future food system (3.8)

10. Portrayal of Farming – *I used this category to index specific references and depictions of farming and visions of alternative agricultural future. In a few cases informants offered these descriptions prior to my prompt in question 3.7. This category also includes comments about conventional farming that were made without prompt. It differs from the statements coded in the "agrarian" and "local" sections in 14, which illustrate general, spontaneous comments about organic, small-scale farming, community and local food.*
    - Alternative and Organic
    - Conventional
    - Farming in general

11. Portrayals of different biotechnology actors
    - Corporations
    - Monsanto
    - The Farm Bureau
    - Supermarkets (Conventional and Independent)
    - The state (Federal and Californian)

12. Refuting "Feeding Hunger" discourse

13. Refuting "luddite" discourse

14. General statements of common sense constructions – *I used this category to index normative statements of farming, corporations, nature and food. The sub-categories emerged organically as I read through the transcripts.*

- Agrarianism – *these were largely statements about protecting organic or small-scale farmers*
- Corporate control
- Nature/ human-environment relations
- The local

15. History of GE Free movement in Sonoma and California
    - History of Measure M
    - Manner of entrance into the anti-biotechnology movement (2.3)
    - Reasons for failure of Measure M
        Vaccines
        Yes on No
        Inability to attract mainstream consumers and media
    - Descriptions of film screenings
    - Emotional reaction to failure of Measure M
    - References to Mendocino GE Free

Appendix 7: Coding – Manufacturer Interviews

1. Labelling
   - Type of label (4.1)
   - Meaning of label used (4.4)
   - Benefits of labelling (4.5, 6.2)
   - Costs of labelling (4.2)
   - Reason for labelling products (4.2)
   - Reason for not labelling/ Obstacles to labelling (4.2, 6.1)
     - Non-GMO subsumed in organic label
   - Fear of FDA retaliation
   - Desire to label unlabeled products (4.5)
   - Comments on label regulations (4.7)

2. Motivations for Non-GMO policy (7.1, 3.3 – 3.9)
   - Activism – *This category refers to using the label to make a political statement of non-tolerance*
   - Company and/or personal philosophy
     - Concerns re. unintended consequences
     - Politics of biotechnology industry
     - Environmental consequences/ "against nature"
   - Consumer concern re. GE foods
     - Specific event that triggered awareness of concern
   - Norm of natural food market
   - International regulation
   - Requirement for organic certification
   - Retailer requirement
   - Product differentiation

3. Obstacles to participation in 3rd party certification (6.3, 6.4)
   - Lack of consumer awareness of GE foods
   - Marketability of Non-GMO foods/ Inability to charge a premium
   - Finding sources
   - Contamination of supplies
   - Cost of certification
   - Labour involved in certification
   - Lack of standardized/reliable testing procedure
   - The Federal government (FDA)
   - No obstacles

4. Emerging Trends (2.1)
   - Convenience
   - Healthy eating

- Local
- Organics
- Simply produced/ few ingredients
- Small business
- Traditional/ artisan foods

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