

Fighting “Frankenfoods”: Industry Opportunity Structures and the Efficacy of the Anti-Biotech Movement in Western Europe

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This article analyzes how a new social movement against genetic engineering in agriculture managed to turn a major industry upside down. While the social movements literature has long recognized the importance of external context for the success of social movements, it has paid little attention to the institutional logic and features of targets other than the state. Here I argue that an undertheorized aspect of external context, namely, industry structures, is a primary factor explaining why the anti-biotech movement in Western Europe was so effective. As conceptualized here, industry structures are composed of economic, organizational, and cultural features, and function to enhance or constrain social movements' efforts to change industry behavior. Bringing these structures into our purview and recognizing their significance for activist struggles can significantly advance our understanding of social movement efficacy in this age of globalization and increased corporate power.

Over the last two decades, the large life sciences corporations that represent the core of the agricultural biotechnology industry have made enormous investments in getting their new technologies out of the lab and into the marketplace. They have built up a technology platform in genetically modified organisms (GMOs), taken out patents on them, solicited government approval, and established access to the seed distribution systems needed to deliver their intellectual property to farmers. In its effort to establish this new technological path, the industry has been strongly supported by many advanced industrialized country governments, which see biotechnology as crucial for developing their nations' “knowledge based” economies and augmenting their global economic competitiveness (Gottweis 1998; Wright 1994).

Given the size of the corporations that comprise the core of the agricultural biotechnology industry and the encouragement they have received from powerful Northern governments (especially the United States), it is not surprising that genetically engineered crops were hailed as the next agricultural revolution when they entered the market in 1996. But what *is* surprising is the fact that since 1998, an industry that initially seemed to have a bright and promising future has made a number of changes that suggest it sees itself as under attack. In June 1998, Monsanto Corporation invested \$5 million in an advertising campaign designed to convince the Western European public of the benefits of genetically modified (GM) crops. In November 1999, seven of the largest life sciences firms came together to form a new industry alliance—the Council for Biotechnology Information—to improve the public image of the

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technology and of the biotechnology industry (Barboza 1999, 2000). In early 2000, several of these firms began narrowing their R&D investments to focus only on the United States's four major crops (corn, soy, cotton, and canola) and began taking a less "bullish" stance toward the technology (Barrett 2000; Belsie 2000; Bernton 2000; author interviews). In both Western Europe and the United States, the industry began to participate in stakeholder dialogues and "listening sessions" with its most ardent critics (Gilbert 2002; Krueger 2001). In early 2002, Advanta Seeds closed the doors of its GM crop testing laboratory in the Netherlands after concluding that GMOs would not be profitable in Western Europe for another five to ten years (*NRC Newspaper* 2002). But perhaps most significantly, the industry undertook a major economic restructuring. Between 1999 and 2001, three of the world's largest life sciences companies put their agricultural divisions up for sale, signifying an end to the "integrated life sciences" model based on the synergies among the chemical, pharmaceutical, and agricultural sciences.¹ By 2001, much of the flow of venture capital into agricultural biotechnology had dried up (Sechler 2001).

What can explain these sudden shifts in the behavior and fortunes of the agricultural biotechnology industry? In contrast to what happened to the nuclear power industry with Three Mile Island and Chernobyl, no major public health disaster occurred in the sector. Nor was there any serious environmental crisis caused by the technology, although there certainly have been a few scares. And while the U.S. economy did experience a recession that started in 2001, this downturn cannot explain the shift from bull to bear market in the agricultural biotechnology sector because it *postdated* most of these industry changes and affected the economy across the board. Finally, unlike Enron, Arthur Anderson, or WorldCom, none of the major players in the industry imploded from within, or got caught in some major legal wrongdoing. So what did go wrong?

In this article, I argue that the changes in the agricultural biotechnology sector are largely related to the activities of a social movement opposed to the use of genetic engineering in agriculture, or the "anti-biotech movement," for short.² What rendered the anti-biotech movement so effective in reversing the industry's fortunes in the late 1990s, I contend, is that it strategically exploited certain key vulnerabilities of the industry. These vulnerabilities derived from the specific relations of dependency among the actors comprising the industry's "commodity chain," the competitive behavior of certain of these firms, and the sensitivity of the commodity the industry was producing. Also critical to the movement's efficacy was the cultural and political context in Western Europe in which the struggle over biotechnology evolved. This context, which included a powerful cultural sensibility around food and a recent history of several serious food scares, made it possible for activists to turn consumers away from this new technology *en masse*. In sum, it was a combination of strategy, industry vulnerabilities, and political-cultural context that jointly explain the efficacy of anti-biotech activism in Western Europe in the 1990s.

While social movement scholars have usefully theorized the role of political and cultural factors in shaping and explaining movement emergence and outcomes, the social movements

1. The post-1998 period has been one of dramatic restructuring in the life sciences sector, with numerous buy-outs, sellouts, and mergers. In December 1999, two major industry players, Astra Zeneca and Novartis AG, announced their plans to merge into a third company, Syngenta, and to shed their agricultural divisions (Sorkin 1999). In March of 2000, after its stock price fell by half in 1999, industry giant Monsanto was compelled to merge with Pharmacia & Upjohn, which then spun off the agricultural part of the company so it could put it up for future sale (Barrett 2000). In late November of 2000, Aventis announced plans to sell its agricultural division, Aventis CropScience, a deal that was finally negotiated with Bayer AG in November 2001 (Aventis 2001) (*Wall Street Journal* News Roundup 2000). In 2002, Pharmacia divested itself entirely of Monsanto.

2. I use this term with some misgivings because of the wide range of positions that different activist groups take toward the technology. While some groups and individuals take an extreme position ("not on planet earth"), others are not opposed in principal, but want to see the technology better studied and regulated, and subjected to greater democratic debate. I urge readers to keep this important qualification in mind.

literature has largely ignored the significance of industry structures, culture, and organization in explaining movement efficacy. Yet, as this case study of the Western European anti-biotech movement will reveal, such industry characteristics are a critical determinant of movement efficacy when the primary target of opposition is corporations, rather than the state. Indeed, given the growing frequency of social movement struggles against firms and industries in this age of globalization and increased corporate power—e.g., sweatshop struggles such as the Nike and Gap campaigns, or environmental movement attacks on Mitsubishi and Shell Oil—it would seem a particularly important task to bring industry structures into our purview and to recognize their significance for social movement efforts to bring about social change.

In analyzing the process and outcomes of the challenges social activists have waged against the biotechnology industry, this study also contributes to a nascent literature that seeks to bring together sociological scholarship on social movements with scholarship on organizations (Armstrong 2002; Clemens 1997; Lounsbury and Ventresca 2002; Lounsbury, Ventresca, and Hirsch 2003; Moore 1999; Moore and Hala 2002; Rao 1998; Schneiberg 2002). While much of that literature has focused on the ways in which social movements shape the processes of organizational change, this study shows not only how social movements shape organizational behavior, but also how extant organizational structures (in this case, industry structures) influence social movement strategies and outcomes.

The following section briefly discusses the existing scholarship on social movement efficacy, which has oscillated between explanations that emphasize internal movement characteristics and those that privilege the “political opportunity structures” movements face. I argue that as the influence of the political opportunity structures perspective has grown, attention has come to be focused almost exclusively on the state as the target of social movement opposition. While there was good reason for this, in that the field’s intellectual trajectory followed the course of real historical change, including the rise of the modern state (Tarrow 1989), and concerned itself with the primary battleground of many of the most important social movements of the 20th century, the historical context for social movement organizing has changed, and movements are increasingly aiming at non-state targets, including corporations and transnational institutions (Keck and Sikkink 1998; Smith 2001; Wapner 1996). It is thus vital that we turn our attention to these other targets of collective action and theorize *their* institutional logics and critical features from the perspective of social movements.

The third section seeks to do this for corporate and industrial targets, which have received only minimal attention in the social movements literature. More specifically, I draw upon insights from organizational sociology and the literature on corporate campaigns to identify four key elements of the industry/corporate environment that social movements face. The remainder of the article is devoted to my empirical case. The fourth section provides a narrative analysis of the GMO struggle in Western Europe, while the fifth section analyzes *why* Western European anti-biotech activism was so effective, developing the argument outlined above in greater detail. The final section offers some concluding observations.

The data on which the empirical portion of this article is based come from multiple sources. Most important is the extensive press coverage of the GMO issue in European and U.S. newspapers and magazines, which was systematically documented by the anti-biotech movement in Europe and made available on the Web and on various listservs. To ensure that no significant articles or events were missed, I also did an independent search of *The New York Times* and several major English-speaking newspapers in Europe: *The Wall Street Journal* (European and U.S. editions), the *Guardian* (London), and the *Independent* (London). These media sources were complemented with organizational descriptions, position statements, and press releases available on movement, industry, and government websites; and from first-hand activist accounts.³ Finally, information was gleaned from several important secondary

3. Some such accounts are published, and others take the form of the author’s personal interviews with several movement activists who were directly involved in the European struggle.

sources, including Daniel Charles' excellent book, *Lords of the Harvest*, and Les Levidow's and Derrick Purdue's works on the European anti-biotech movement. (A more specific list of data sources is provided in the bibliography.) The methodological approach draws on these data sources to construct a narrative analysis and account of events. As with any historical conflict, the relationships among events are complex, interdependent, and occasionally opaque; actors are often motivated by multiple (and sometimes conflicting) concerns and interests, and causality is neither simple nor singular. My explanation embraces this complexity, recognizing the ongoing interaction and interdependence among three key explanatory variables: movement strategy and tactics, industry structures, and cultural context.

Theories of Social Movement Efficacy

Social movement scholars have long debated what makes social movements effective in their efforts to bring about change. On one side of the debate sit those who emphasize factors that are largely *internal* to a movement, such as movement structure, organization, and strategy (Gamson 1990; Ganz 2000; Steedly and Foley 1979); the ability to mobilize resources such as popular support, political allies, and money (Jenkins 1983; McCarthy and Zald 1977); and a movement's success in issue "framing" (Snow and Benford 1988; Snow et al. 1986). Another recent variant of an internal explanation draws attention to a social movement's "strategic capacity," or the likelihood that a social movement organization will develop an effective strategy (Ganz 2000).

In response to such "internal" explanations has come a large body of literature pointing to the importance of the broader political context in which movements develop. The influential "political opportunity structures" (POS) literature, which became prominent in the 1980s, suggests that the emergence and efficacy of social movements depends largely upon the *external* environment, and in particular, on the structure of political opportunities that movements face (Eisinger 1973; Ferree and Hess 1985; Jenkins and Perrow 1977; Kitschelt 1986; Kriesi et al. 1992; McAdam 1982; McAdam, McCarthy, and Zald 1996; Meyer 1990; Nelkin and Pollak 1981; Tarrow 1989, 1994; Tilly 1978). Such political opportunity structures are defined by the relative openness/closure of the institutionalized political system, the stability or instability of the elite alignments that undergird a polity, the presence or absence of elite allies, and the state's capacity and propensity for repression (McAdam 1996). Some authors also recognize a cultural element to political opportunities (Nelkin and Pollak 1981), in that culture typically shapes people's expectations of political institutions, their sense of their rights as citizens, and their sense of their own power (Gamson and Meyer 1996). In recent years, movements' cultural activities have also been recognized as creators of new political opportunities, as new interpretative frameworks and meanings begin to take hold (Gamson and Meyer 1996; Jensen 1995; Klandermans and Johnston 1995; Zald 1996).

While the emergence of the POS literature offered an important corrective to studies that had minimized the significance of external structures and context, it also served to focus attention on the state and the political sphere as the central targets of social movement organizing, thereby eclipsing the significance of other targets and institutional spheres. In many ways, this emphasis was justified, since it was in the political arena in the advanced industrialized countries—the home of these scholars—that much contentious action was taking place. The U.S. civil rights movement, the anti-Vietnam war and women's liberation movements, and the environmental, anti-nuclear, and gay rights movements, all sought to achieve change primarily by targeting specific administrations, political parties, the legal system, and different elements of the state apparatus. Even the U.S. labor movement saw the state as an increasingly important vehicle for achieving its goals, at least after World War II, when the political climate for unions became temporarily more favorable (Voss and Sherman 2000). Thus, for the scholars who studied these movements, a focus on the political arena made sense.

Over the past three decades, however, several critical shifts—in national politics, in the global political economy, in information technologies, and in movements themselves—have created a new context for organizing, as well as a diversification of the actors and institutions targeted by social movements. In the case of national politics, the 1980s marked a period of attack on the legitimacy of the Keynesian, social welfare state. Governments around the world engaged, more or less willingly and with varying degrees of political commitment, in processes of economic liberalization, industry deregulation, and sharp retrenchment of their welfare state activities (Colclough and Manor 1993; Dasgupta 1998; Peck and Tickell 2002). In many countries, including the United States, governments became increasingly hostile to demands for social and economic equality, workers' rights, and environmental regulation and protection, while the rights and power of corporations grew. Facilitating growth in the power of the corporate sector was a partial shift in the locus of regulation from the national state to supranational regulatory institutions and regimes such as the World Trade Organization, the World Bank, and the International Monetary Fund, as the neoliberal revolution weakened certain powers of the nation-state and privileged those of trade-oriented, global institutions (McMichael 1999; McMichael and Myhre 1991). Collectively these trends rendered the state a less auspicious target for social movements. Many activists began to turn their attention to other, seemingly more promising targets, including corporations, on the one hand, and supranational institutions, on the other (Juravich and Bronfenbrenner 1999; Keck and Sikkink 1998; Manheim 2001; Perry 1987; Shaw 1999; Smith 2001).

Two additional changes contributed to this diversification of social movements' central targets of attack. The first was the advent of the Internet, which radically altered the nature and geographical reach of social movement organizing, making it easier for movements to keep track of corporations and multilateral institutions operating in disparate parts of the world (Costanza-Chock 2003; Keck and Sikkink 1998; Schulz 1998). The second was the emergence of the "New Left." Those who came of age during the U.S. civil rights, anti-Vietnam war, and women's movements and were radicalized by these experiences brought a different set of life (and often class) experiences, different values and worldview, and different skills and professional credentials to organizing than those comprising the "Old Left" and industrial labor movements of the 1930s and 1940s. These skills, experiences, and values shaped the way they approached organizing, and enabled them to develop strategies and tactics befitting a wider range of opponents (Manheim 2001; Schurman and Munro 2002; Voss and Sherman 2000).

What all this suggests is that scholars of social movements need to follow the course taken by many contemporary movements and activist groups, and "decenter" the state. While states are and will unquestionably remain critical targets of social movements, other societal institutions and arenas (Friedland and Alford 1991) need to be examined more closely for the ways in which *they* may be influencing movement strategies, efficacy, and impacts. In the following section, I focus on the corporate and industrial spheres in order to theorize how *industry structures and cultures* shape the environment that social movements face. While many social movements have recognized the importance of industry-related factors in developing their strategies, the social movement literature has yet to give this institutional arena the same degree of emphasis.⁴

4. The labor movement, for example, has historically targeted corporations directly. In the late 1970s, a new kind of corporate attack was developed within the labor movement which has since come to be known as the "corporate campaign" (Perry 1987). The first full-fledged union corporate campaign was launched against the clothing manufacturer, J. P. Stevens (Manheim 2001). Manheim's history of corporate campaigns identifies 162 different campaigns launched by labor from 1974 to 1999; his data also show a marked increase in the use of corporate campaigns after 1992 (see pgs. 62-64, and Appendix A). For a fascinating account of a particularly successful corporate campaign, see Juravich and Bronfenbrenner's (1999) account of the United Steelworkers/Ravenswood struggle.

Theorizing Industry Structures

As social movements seek to change firm and industry behavior by applying pressure directly on industry actors, they confront an environment shaped by industry characteristics, economic and institutional relationships, and the normal or culturally resonant way of doing and seeing things in an industry. These “industry structures” confer particular strategic openings and closures on social movements and render firms and industries more or less vulnerable to social movement actions. At any given historical moment, such industry structures will appear as exogenous to social movement challengers, but like all social structures, they are socially constructed and transformed over time as different groups of interested actors, regulatory and normative institutions, and cultural practices interact. Industry structures are thus deeply embedded in existing institutional practices and relationships, the larger political economy, and culture, operating at a variety of levels (e.g., within industries and firms, within regulatory institutions and professional organizations, at the level of the broader society).

I argue that at least four types of industry structures are relevant from the perspective of social movements attempting to alter firm or industry behavior. The first involves the *economic and competitive behavior of firms in an industry*.⁵ Within this category are included such phenomena as firm efforts to protect or capture market share, efforts to maintain the stability of markets (Fligstein 1996, 2001), and efforts to protect the value of existing investments (e.g., in company brands, firm reputation, infrastructure, technology). For example, we might expect social movements to be able to avail themselves of particular strategic openings as “industry incumbents” seek to enhance (or simply protect) their dominant market positions, or as industry challengers endeavor to unseat industry leaders or carve out new market niches (Fligstein 2001; Hannan and Freeman 1989). (“Industry incumbents” are those occupying a dominant position in an industry, while “industry challengers” are firms who are seeking to unseat those incumbents.) More concretely, to the extent that a social movement’s efforts to change firm behavior in an industry meets up with a “challenger firm” that is willing to risk departing from current industry conventions to try and capture a new market niche, we might expect these efforts to yield greater success. Moreover, to the extent that *other* firms in that industry decide to mimic this maverick firm, leading to a process of “institutional isomorphism” (DiMaggio and Powell 1983), we might expect the effectiveness of this tactic to be enhanced. As shown below, this is exactly what happened in the food retail sector in Europe, when one challenger firm decided to go “GMO-free.”

Strategic opportunities may also result from the presence of firms with particular vulnerabilities that can be isolated from the pack and put on the defensive. This was the case with the Ravenswood Aluminum Company (RAC) in West Virginia, which was subjected to an intense and highly innovative transnational corporate campaign by the United Steelworkers of America in the early 1990s (Juravich and Bronfenbrenner 1999). Although it was a combination of moves that ultimately led RAC to give in to many of the union’s demands in the summer of 1992, prime among them was the union’s success in exploiting the nefarious reputation of the company’s primary (albeit behind-the-scenes) shareholder, Marc Rich, who was a major tax evader and fugitive from justice in the United States.

Firms’ efforts to ensure their own viability as well as the stability of markets may also create strategic openings for social movements (Fligstein 2001). Part of firms’ efforts to ensure their own survival will involve the attempt to protect—and if possible, enhance—the value of existing assets. Thus, firms and industries in which brand names and/or firm reputations are very important should be far more vulnerable to attack than industries composed of numerous, anonymous firms producing generic products. The reason is straightforward: firms that have invested heavily in establishing their reputations and brand names place great value on

5. This is obviously related to the number and relative size and market power of firms in an industry, one aspect of what economists refer to as “industrial organization.”

safeguarding those investments, and perceive the cost of threats to these investments as being very high (Henson and Northern 1998). Indeed, this is what Kathryn Sikkink (1986) found in her analysis of Nestle's decision to adopt the WHO/UNICEF International Code of Marketing of Breast Milk Substitutes in 1981, under pressure from the International Nestle's Boycott Committee and other infant formula critics. According to Sikkink, a central factor influencing Nestle's decision was the company's concern about its reputation. Reputational risk was also an apparent worry in McDonald's 1991 decision to phase out its use of polystyrene foam packaging after it came under attack by U.S. environmental groups (Wapner 1995). The significance of brand names and their value to firms is underscored by the fact that the activist groups that have sought to change industry practices in the past have invariably—and quite consciously—targeted “household name” corporations, such as Nike, Kathy Lee Gifford, Mitsubishi, Home Depot, Wal-Mart, Eastman Kodak, Chevron, Toys 'R Us, and KFC (Manheim 2001; Vogel 1978).

A second relevant type of industry structure derives from the *relationships among actors in an industry's larger “organizational field” or system*. A critical insight of the organizational sociology literature is that industries and firms, like other types of organizations, do not exist in a vacuum, but operate in the context of much larger networks of organizations, relationships, social structures, and meanings which collectively serve to shape their operating and cognitive environments and performance (Lounsbury et al. 2003; Scott 2001). In Paul DiMaggio and Walter Powell's classic formulation, an *organizational field* refers to “those organizations that, in the aggregate, constitute a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies, and other organizations that produce similar services or products” (DiMaggio and Powell 1983). Two important elements of an industry's organizational field include the actors who collectively comprise a firm or industry's “commodity chain” (Gereffi and Korzeniewicz 1994; Hopkins and Wallerstein 1986), on the one hand, and those who occupy relevant positions in the state, on the other.⁶

The specific *relations of power and economic dependency* among the actors along an industry's commodity chain are hypothesized to determine the effective pressure points in the system. More specifically, industries that depend upon a small number of companies or industries as the sole buyers and users of their products should be more vulnerable to a market assault than industries with a larger and/or more diversified range of buyers and outlets. The reason is that firms that are characterized by narrowly based markets have fewer possibilities for re-channeling their output. In addition, the strength and “thickness” of inter-firm relationships is likely to affect firm/industry vulnerability in another way. To the extent that a firm or industry has many economic ties with another firm or industry, it should be less willing to sacrifice that business relationship in the face of a social movement challenge. The reverse is also true: firms or industries that are less closely bound up with one another should have less to lose—and possibly, considerably more to gain—by dissociating themselves from firms or industries that have come under criticism and attack. There is also an important personal element to these relationships: Firms are composed of people, who often form important social relationships with one another. These relationships are likely to shape firms' degrees of commitment to one another as well.

Union and other (anti-)corporate campaigns have clearly recognized the significance of unequal relations of dependency in their use of pressure tactics on firms that have weak relationships to their primary targets. This is evident in the “how to” literature on corporate campaigns (Alinsky 1989). For instance, in its corporate campaign against International Paper in the late 1980s, Local 14 of The United Paperworkers' International Union (UPIU), led by anti-corporate campaign strategist, Roy Rogers, targeted the Bank of Boston and Coca-Cola

6. By *commodity chain*, I refer to the firms and industries that are necessary for a particular industry to realize the value of its investments, either by providing a direct market for its output or by getting its products to a market. Note that this is a slightly different definition than that used by much of the commodity chain literature.

(Manheim 2001). According to Manheim, “Rogers attributed this strategy to his effort to leverage players with limited stakes in a dispute, who would therefore be relatively easy to move, into points of pressure against the primary target, whose actions the union alone was powerless to influence.”

The other element of an industry’s organizational field with implications for industry vulnerability is an industry’s relationship with the state. Industries generate divergent amounts of employment, wealth, and tax revenues, which render them of varying economic importance to the state. They may also be important for national security or political reasons. Industries that are perceived to offer significant economic, national security, or political benefits to a state (or ruling party) should receive greater state protection against challengers. A case in point was President Ronald Reagan’s willingness to intervene on behalf of U.S. airline companies when the U.S. air traffic controller’s union, PATCO, organized an industry-wide strike against the airlines in the early 1980’s.

The relationship between state regulatory agencies and particular industries is also likely to affect the prospects for effective social movement action. Industries with strong lobbying associations and strong ties to the state or to particular political elites offer less attractive targets than their counterparts with fewer such ties, and/or a lesser degree of “regulatory embeddedness.” Abstracting away from *individual* industry-state relations to *national styles of regulation*, states vary quite dramatically in their relationship with, attitudes toward, and treatment of industry (Evans 1995). All of these elements of state-industry relations are likely to shape the openings and closures faced by social movements.

Corporate cultures represent a third type of industry structure that is relevant to social movement challengers. By *corporate cultures*, I refer to the prevailing systems of meaning and norms of appropriateness held at the firm and industry level, i.e., the explicit and taken-for-granted norms and practices of business behavior. Corporate cultures can vary along geographical lines, as well as by industry, across firms, and over time. As Saxenian’s work has shown, for example, the corporate culture that developed in Silicon Valley’s informatics sector was very different than the one that emerged along Route 128 in Boston (Saxenian 1994). Corporate culture also varies across industries: What is considered normal or accepted practice in the textile industry differs from what is normal practice in pharmaceuticals. Individual firms also have their own corporate cultures, often reflecting the personality of a company founder (e.g., Bill Gates of Microsoft, Phil Knight of Nike), primary shareholding family, or CEO. Corporate cultures are hypothesized to be important *first*, because they influence social movements’ strategic decisions about which firms to target (Sage 1999); and *second*, because they affect how firms perceive, interpret, and respond to changes in the larger social and political environment, including to specific demands made by social movements. More generally, corporate cultures are likely to influence whether firms or industries will agree to make changes aimed at satisfying challengers, what form those changes will take, and whether and how they will choose to fight back against attacks. All will affect the efficacy of social movements.

For example, in a fascinating exploration of why the Knights of Labor “failed” as a social movement, Kim Voss (1996) writes:

Perhaps the reason the Knights collapsed completely, while the new broad-based unionism in Britain and France survived, *has more to do with the consciousness and actions of employers*, than with the consciousness and actions of workers. Perhaps employers in the United States organized more rapidly, brought more resources to the battle, and fought more bitterly than their European counterparts. Perhaps, in other words, it is time to turn the old arguments about the “exceptionalism” of American labor on their head. (P. 241, my emphasis)

While Voss doesn’t directly address the hypothesis that variations in employer culture may have explained these differing reactions to workers’ unionization efforts, her analysis hints at this possibility. According to Voss, “while a few ‘unrepresentative’ British employers founded

associations specifically to destroy the new unions, most 'had little stomach' for 'American Style' union busting, with its attendant unrestrained brutality and lawlessness.' British employers were ever ready to grumble about the unions and resent them for most of their industry's ills' . . . but few were ready to pursue a 'knock down drag out fight' to defeat them" (Voss 1996: 242, quoting Alan Fox [1985]).

Individual firm cultures are expected to have particularly important implications for how firms interpret and respond to external pressures, demands, and cultural currents, as well as for the public commitments they make, which can potentially be used against them. Indeed, variation in corporate cultures across firms may provide specific openings for social movements to ally with specific firms, or may lead to special opportunities for movements to apply pressure, when, for example, a firm proclaims to embrace a certain set of values that it can reasonably be accused of failing to uphold. The first situation (of firm-movement alliances) is illustrated by the McDonald's Corporation's willingness to form a joint task force with the Environmental Defense Fund in 1990, to work on environmental issues (Lubetkin 1991). The second situation is illustrated by the anti-sweatshop movement's attack on clothes manufacturer, Jessica McClintock. McClintock had long prided herself on her concern for social justice, a fact that was explicitly used against her in the anti-sweatshop campaign (Shaw 1999: Ch. 2). More generally, to the extent that social movements can raise questions about the gap between a firm's public proclamations and its actual behavior, they can cast doubt upon its "organizational legitimacy" (Suchman 1995). This may help elicit new firm and industry behaviors.

A final element of industry structures derives from the nature of the goods and/or services an industry produces. Firms or industries that make products that are known to have negative health effects (e.g., toxic chemicals, or the DES given to pregnant women), that are ubiquitous in the environment or that cannot be easily avoided (e.g., nuclear waste), and/or that widely offend people's moral sensibilities (e.g., sex trade in children, inhumane treatment of nursing home patients) should offer more favorable organizing opportunities than firms and industries whose goods and services are not seen to be as problematic. The National Resources Defense Council and U.S. Public Interest Research Groups' successful attack on the apple industry's routine use of Alar is a good example of the organizing opportunities offered by an apparently dangerous food product. After these groups organized a major public outcry about Alar's use on such a heavily consumed product, Uniroyal Chemical Company, the firm that produced Alar, withdrew it from the market (Wapner 1995).

To sum up, industry structures—defined in economic, organizational, cultural, and commodity-related terms—comprise an important but undertheorized set of opportunities and constraints for social movements and other activist groups seeking to change corporate behavior directly. In order for these groups to have the most powerful impact, however, firm and industry vulnerabilities must be recognized as such, and effectively seized upon by activists. At the same time, because they form only a *part* of the context in which social movements are embedded at any given moment, industry structures will matter primarily *in interaction* with other social structures, social actors, and political opportunities. This was clearly illustrated in the case of the GMO struggle in Europe, which I turn to next.

The Struggle over GMOs in Europe

While many people associate opposition to agricultural biotechnology with the public controversies of the 1990s, the movement initially developed in tandem with the technology. In 1974, only a year after two California biologists developed the technique of "recombinant DNA," or gene splicing, a few North American scientists and citizens began to worry about the health and environmental risks associated with these new technologies (Krimsky 1982). Although the first efforts to address these issues took a local form, the conflict quickly shifted

to the national and international levels as the technology developed and more people became aware of it. The issues concerning the early activist community also grew, from the risks posed to lab scientists and the environment from the “accidental releases” of these new organisms (Krimsky 1982), to concerns about gene patenting, corporate concentration, loss of biodiversity, and the potential impacts on countries of the South (Doyle 1985; Fowler et al. 1988; Kloppenburg 1988; Kloppenburg and Kenney 1984).

In Western Europe, the first groups to get involved in the issue were the German Green Party, Greenpeace-Switzerland, the UK Green Alliance, the UK Genetics Forum, the International Coalition for Development Action (which later gave rise to Genetic Resources Action International, or GRAIN, in Barcelona), and the Intermediate Technology Development Group in the United Kingdom (Emmott 2001; Hobbelink 1991; Levidow 1999, 2000; Purdue 2000). Most of what these groups did during the first fifteen years of struggle involved the mobilization of counter-expertise (Purdue 2000). The bulk of the movement’s energy was devoted to questioning the adequacy of the science used to make regulatory decisions, using scientific and legal means to pressure government agencies for better regulation, and challenging the extension of intellectual property rights law to life forms (Emmott 2001; Purdue 2000). Although these tactics signaled to governments and industry that somebody was watching, they did little to dampen the industry’s enthusiasm for the new technology.⁷

At the end of the 1980s, the first genetically engineered food products made it through the regulatory process to become a commercial reality. The first product approved by the U.S. Food and Drug Administration was chymosin, a genetically engineered bacteria used to make cheese. Chymosin was followed by bovine somatotropin, a growth hormone given to cows to induce them to produce more milk, and the Flavr Savr™ tomato. But the most significant approval was a new group of commodity crops that could resist the toxic effects of specific herbicides. When Monsanto’s RoundUp Ready™ soybeans received U.S. Department of Agriculture approval and came on to the market in 1995, conditions for organizing changed dramatically.

As soon as the U.S. biotech industry began gearing up to send its soy to Western Europe, European activists sensed that they faced a new organizing opportunity (McNeil 2000). Organizations that had been broadly focusing on issues of sustainable agriculture, the environment, plant patenting, and the loss of biodiversity fixed their attention more fully on GM food, attracted in part by opportunities for an increased flow of resources.⁸ Several European NGOs established major new campaigns around the GM food issue, and many started working in coalitions (Levidow 1999; Purdue 2000). Around the same time, a number of new organizations, including Friends of the Earth-Europe, Greenpeace International, the British Soil Association, and Confédération Paysannes in France, joined the struggle. In 1996, Greenpeace International gave a huge boost to the anti-biotech movement when it decided to dedicate fifteen full-time campaigners and a highly dynamic campaign coordinator, Benedict (“Benny”) Härlin, to its new GM food campaign (Stecklow 1999).

Between 1996 and 1998, the movement against genetic engineering gathered steam, particularly in France and Great Britain. A particularly catalytic event occurred in the fall of 1996, when Monsanto was readying itself to send its GM soy to Europe. In the early summer of that year, an executive from the British biotech company Zeneca, Simon Best, flew to Saint Louis to meet with Monsanto CEO, Robert Shapiro. Drawing on his own experience introducing the first GM product into the British market (a genetically modified tomato paste),

7. NGOs’ decisions to rely on a politics of counter-expertise during the first phase of mobilization were dictated by two important realities. One was the difficulty of generating widespread public alarm when most of the threats activists were talking about were still hypothetical. Second, the fact that the movement comprised many natural and social scientists, policy experts, and lawyers meant that the skills and credentials of this group better prepared them for this type of political work than for grassroots organizing (Schurman and Munro 2002).

8. In 1995, for instance, the Goldsmith Trust, a large environmental foundation, started financing a major campaign against GM foods in Britain. Among those receiving its support was the Genetics Forum, a coalition of 31 different organizations involved in anti-biotech work (Purdue 2000).

Best urged Shapiro to label RoundUp Ready soy before he shipped it to Europe, and to advise consumers it would be coming. At harvest time, however, Monsanto and U.S. grain processors ignored Best's advice, combined the GM soy with conventional soy, and sent it to Europe unannounced and unlabelled (Charles 2001). According to one anti-biotech organizer, the activist community was outraged and interpreted Monsanto's decision as purposely flouting Europeans' desires to know what they were eating (Schweiger 2001).

Anti-Biotech Organizing Strategies After 1995

Reflecting the new blood and energy flowing into the European anti-biotech movement after 1995 and the important fact that GM food was now a commercial reality, the anti-biotech movement altered its strategies and tactics. Although the mobilization of expert knowledge continued to be important, activists embraced a broader repertoire of contentious action (Tilly 1978). Drawing on its experience with the environmental and toxic waste movements, the more theatrically prone arm of the movement engaged in numerous symbolic acts of protest. When the first U.S. ships carrying GM soy arrived into several European ports in 1996, for example, Greenpeace activists met them in flotillas of dinghies, prevented them from docking, and unfurled large banners calling for a ban on GM food imports (Charles 2001; Stecklow 1999; Thomas 2001). In another stunt, a group of activists dressed themselves up as "Super Heroes Against Genetics" and took over the headquarters of Monsanto UK, wielding plastic swords and adorned in capes, tights, and underpants. A third group of Greenpeace activists slipped in to the 1996 World Food Summit in Rome and stripped off their clothes to reveal naked bodies brightly painted with anti-GM slogans (Charles 2001). Movement members also started destroying GM test crops in farmers' fields. In one well-publicized case of "bio-sabotage," two protestors illegally pulled up field trials of a GM corn crop that had been planted close to an organic farm in Totnes, England. The British Soil Association and other groups organized in support of the arrested protestors and the farmer who was taking the government to court for the GMO trials, and used the legal system and the media to turn the case into a *cause célèbre* (Thomas 2001).

These symbolic and direct actions were combined with new grassroots organizing campaigns aimed directly at consumers. In Britain, anti-biotech groups leafleted food consumers at grocery stores, organized local meetings to discuss and debate the issue, and wrote letters to local newspapers about the dangers of GM foods. Friends of the Earth UK, the Soil Association and the Women's Environmental Network, among other groups, launched sophisticated consumer campaigns aimed at pressuring food processors and retailers to stop using and selling GM foods. They consciously targeted a handful of big food retailers and attempted to play one retailer off against another in an effort to force the major supermarket chains to reject GM food (Friends of the Earth UK 1999a, 1999b; Genetics Engineering Network 2001; M2 Communications Limited 1998). In March 1998, this tactic yielded its first major victory when Iceland Foods, a large frozen food producer and supermarket chain in Britain, agreed to eliminate all GM foods from its shelves and to ensure that its own-label products would not contain GM ingredients (BBC News 1998). Iceland's move represented the beginning of a major shift in the industry (see below).

Another strategy the activists employed was to target one particular agricultural biotechnology company, Monsanto, in a highly aggressive anti-corporate campaign. Both in Europe and abroad, activists engaged in numerous direct and symbolic actions against the company, referring to it as "Mutanto" and "Monsatan" and publicly lambasting its motives and history. In the United Kingdom, activists lodged a long list of complaints to the British Advertising Standards Authority about the veracity of the claims Monsanto was making in its "educational" advertising campaign on biotechnology, complaints that were well publicized in the press. For reasons I will explore shortly, the Monsanto campaign had a powerful effect on the company as well as on the agricultural biotechnology industry more generally.

A final weapon the movement mobilized against the industry and technology—and one that crosscut all of the tactics just described—was a discursive one. The anti-biotech movement expended enormous energy constructing and communicating alternative frames through which people would interpret and apprehend these new biotechnologies. To counter the industry's portrayal of agricultural biotechnology (and itself) as environmentally friendly, activists reframed genetic engineering as a serious threat to the environment, mobilizing metaphors such as genetic pollution and "Frankenfoods," to describe it. In contrast to the industry and governments' claims of safety, activists stressed the dangers biotechnology posed to the human body, accusing the industry of trying to force feed people unsafe and untested GM food (Levidow 2000; Schweiger 2001; Specter 2000). In an especially strategic move, activists linked the continent's horrifying experience with "mad-cow" and Creutzfeldt-Jakob diseases (CJD) (its human variant) to the unknown risks posed by genetic engineering, simultaneously playing on the public's fear of another public health disaster and on its strong distrust of food safety authorities (Levidow 2000; Woolf 1999). Activists also impugned the life sciences firms' motives, accusing the industry of valuing corporate profit over people and seeking to patent the "building blocks of life" as a means of gaining control over the world's food supply.

Impacts on Public Opinion and Government Policy

Largely as a result of these activities and the massive media coverage the issue received from the press, Europeans' awareness of GM food increased markedly after 1996, and public opinion began to turn firmly against it. Whereas the vast majority of Europeans were generally agnostic about agricultural biotechnology in the early part of the decade, "widespread public ambivalence about GM foods . . . [gave] way to widespread public hostility" by the decade's end (Gaskell et al. 2000:938). Between 1996 and 1999, the fraction of the publics in Greece, Luxembourg, Belgium, and Britain opposed to GM food rose over 20 percentage points, with changes in Portuguese, French, and Irish public opinion not far behind (Table 1). By 1999, only one-fifth of Western Europeans were strongly supportive of GM food and only a third were supportive of GM crops (Gaskell et al. 2000, Table 2).

The shift in British public opinion was especially marked. According to a private study commissioned by Monsanto, British attitudes toward GM foods grew dramatically more negative between 1997 and 1998, rising from 38 percent to 51 percent of the population (Greenberg 1998). By the summer of 1998, only 14 percent of the British public was found to be "happy" with the introduction of GM foods, and 96 percent wanted them labeled (*The Economist* 1998). Helping to push British consumers away from biotechnology was a widely read letter published by Prince Charles in the London *Daily Telegraph*. In it, this sympathetic elite noted that he personally would not eat GM food knowingly or feed it to his family. "I happen to believe that this kind of genetic engineering takes mankind into realms that belong to God and God alone," the prince also penned (Charles 2001; Stecklow 1999).

The fact that no GM food-related disaster had occurred to change public opinion points strongly to the impact of the movement. Stated differently, had activists *not* made agricultural biotechnology into a public issue, it is hard to imagine that this shift in public opinion would have occurred.

In the summer of 1998, consumer calls to food processors and retailers skyrocketed (Charles 2001), reflecting the emergence of a widespread resistance toward GM food among consumers. Over the coming year, many food processors and supermarket chains followed the lead set by Iceland and moved to clear their shelves and brands of GM ingredients and products (see Table 2). Among them were Sainsbury's and Tesco's, the two largest food retailers in the United Kingdom (Henson and Northern 1998, Table 1), and Unilever, the world's largest food manufacturer (Waugh 1999).

With anti-biotech activism on the rise and public attitudes moving decisively against agricultural biotechnology, several EU governments were forced to alter their regulatory positions

Table 1 • Changes in Public Attitudes Toward Genetically Modified Foods in Western Europe, 1996–1999

Country	Opposition to GM Food		Percentage Change
	1996 (% opposed)	1999 (% opposed)	
Austria	69	70	1
Sweden	58	59	1
Denmark	57	65	8
Norway	56	65	9
Greece	51	81	30
France	46	65	19
Germany	44	51	7
Luxembourg	44	70	26
Italy	39	51	12
Britain	33	53	20
Belgium	28	53	25
Portugal	28	45	17
Ireland	27	44	17
Finland	23	31	8
Netherlands	22	25	3
Spain	20	30	10

Source: Adapted from Gaskell et. al. 2000, Table 5. Data are based on the 1996 and 1999 Eurobarometer survey on biotechnology. The surveys are based on a multi-stage random sample of national residents aged 15 and over. The total sample size within the EU is 16,082 people.

on the technology.⁹ Although most individual Western European governments and the EU governing body had looked favorably upon biotechnology during the early 1990s, they began to change their positions in 1997. The country to most substantially alter its position was France, which went from a sympathetic treatment of crop approval requests to a position of severe regulatory caution (Carr 2000). Britain also moved away from its formerly liberal treatment of GMO crop approval requests. In June 1999, the European Union as a whole amended its regulatory framework for GM crop approval, Directive 90/220, in a more precautionary direction.¹⁰ Although no official moratorium was put in place, these decisions effectively represented the start of a *de facto* moratorium on new crop approvals in Europe. The moratorium had a powerful influence on keeping new GMOs out of Europe and served as an important political complement to the retail market closure described above.

The shift in public opinion with respect to GM foods in Western Europe together with the aforementioned market and policy changes had tremendous reverberations across the Atlantic. They cost the U.S. farm sector millions of dollars in lost trade revenues (Goldberg 2000b; U.S. Department of Agriculture 2000a, 2000b), shook up U.S. farmers and grain traders (Goldberg 2000a, 2000c; Knight 1999), and led to some significant institutional changes in the agrofood system (Schurman 2003). But their most significant effect was to throw the industry into a major economic tailspin, as detailed in this article's introduction. By 2000, it was no longer clear that agricultural biotechnology had a bright and promising future or was

9. This discussion is based on the work of Les Levidow and Susan Carr, at the Open University in the United Kingdom.

10. Among the specific changes made to the framework were the addition of a new requirement that all GM products be labeled before they could be approved, and a provision that member states would have to assume responsibility for ensuring the "traceability" of GMOs at all stages (Carr 2000; Charles 2001).

Table 2 • Major European Food Processors and Supermarket Chains to go “GMO-Free” (Partial List)

<i>Firm Type</i>	<i>Action Announced</i>	<i>Date Announced</i>
Supermarket chains		
Iceland	Will no longer use GM ingredients in own brand products	March 18, 1998
Carrefour	Will no longer use GM ingredients in own brand products	February 5, 1999
ASDA	Will no longer use GM ingredients in own brand products	February 13, 1999
Mark's and Spencer	Will no longer use GM ingredients in its products	March 15, 1999
Sainsbury's	Will no longer use GM ingredients in own brand products	March 17, 1999
Co-op	Will no longer use GM ingredients in own brand products	March 18, 1999
Waitrose	Will no longer use GM ingredients in own brand products	March 18, 1999
Tesco	Will no longer use GM ingredients in own brand products; will label all other products that contain GMOs	April 27, 1999
Food processors		
Unilever UK	Will no longer use GM ingredients in its products in Britain	April 27, 1999
Nestle's	Will phase out GM products as soon as possible	April 28, 1999
Cadbury-Schweppes	Will phase out GM products as soon as possible	April 29, 1999
RHM	Will stop using GM corn and soy in their products	May 7, 1999
Northern Foods	Will ban GM ingredients	May 8, 1999
Hazelwood Foods	Will eliminate all GM ingredients from frozen food line by year's end	June 16, 1999

Sources: BBC News 1998, 1999b, 1999c; Lean 1999a, 1999b; Roberts 1999; Waugh 1999.

a good place for investors' money. How and why the movement managed to turn around the industry's fortune is the question engaged next.

Explaining the Efficacy of the Anti-Biotech Movement

There are three, mutually reinforcing reasons why the anti-biotech movement in Europe had such a large impact: the first involved the strategic behavior of activists, which took advantage of certain key industry weaknesses; the second involved the industry's structural vulnerabilities themselves; and the third was the political-cultural context in Europe.

The Strategic Behavior of the Movement

Comprised of seasoned activists whose organizational base included successful and mature NGOs such as Greenpeace, the Women's Environmental Network, and Friends of the Earth (Purdue 2000), the anti-biotech movement approached its task in a highly strategic manner, and with a well-honed sense of culturally appropriate tactics. It was no accident that

the movement chose Monsanto to be its chief whipping boy, for instance, or that it focused so much of its energy on consumer organizing. Indeed, many of the strategies the movement mobilized took explicit advantage of the biotechnology industry's vulnerabilities.

As noted in the preceding section, one of the moves the movement made in the latter part of the 1990s was to launch an anti-corporate campaign against Monsanto. Although there were a wide range of companies the movement could have attacked, including biotechnology firms that were far better known to Europeans than this U.S. corporation, activists seized upon Monsanto for a reason. From a movement perspective, Monsanto offered three benefits as an industry target: it was the global industry leader, it had put all of its eggs in one basket, and it was uniquely aggressive and arrogant.

In 1996, Monsanto embarked upon a new corporate strategy that involved selling off its main chemicals businesses and using the money to finance a major move into the life sciences sector (World Resources Institute 2001b). Toward the goal of becoming the world's leader in agricultural biotechnology, Monsanto aggressively moved to acquire firms with "technical competencies and assets deemed critical to its success" (World Resources Institute 2001a). Over a three year period, it went heavily into debt by financing \$8 billion worth of firm acquisitions (Boyd 2003; Specter 2000). Between 1996 and 1998, Monsanto acquired or bought major shares of Asgrow Agronomics, a global leader in soybean research and seeds; Holden's Foundation Seeds; Agroceres, a leading Brazilian corn seed company; Cargill's international and seed distribution operations; Plant Breeding International; and DeKalb Genetics (Charles 2001; World Resources Institute 2001a).¹¹ In May 1998, the company announced plans to purchase Delta & Pine Land, which controlled 70 percent of the U.S. cotton seed market and was co-holder of a patent on a new GE technology that rendered seeds sterile after a single use (Stecklow 1999).

By virtue of going on this enormous and debt-funded spending spree, Monsanto made itself an attractive target for its opponents. One wing of the anti-biotech movement, the U.S./Canada-based RAFI (Rural Advancement Fund International), had been watching the industry's moves closely and regularly communicated its analysis to activist groups worldwide. In RAFI's eyes, Monsanto was trying to seize control of the world's food supply by gaining control over the world's seeds and preventing farmers from engaging in the age-old practice of seed saving and replanting, with the help of its new "Terminator" (seed sterility) technology. Indeed, only one week after Monsanto announced its plans to buy Delta & Pine Land, RAFI issued a press release accusing the company of trying to strip away farmers' last means of retaining any self-sufficiency and turn them into "bioserfs" (RAFI press release, quoted in Charles 2001).¹² It was thus with purpose that activists pounced on Monsanto in 1998. As Lord Melchett, head of Greenpeace UK's campaign against genetic engineering, admitted: "Of all the companies in this business, Monsanto is the most committed to agricultural biotechnology. They are no worse than Dupont. But Dupont can survive without GMOs, and I don't think Monsanto can. So we . . . had an opportunity with them that we did not have with anyone else" (Specter 2000).

Monsanto was also an appealing target because it possessed many of the features that Europeans associate with "the ugly American"—arrogance, cultural insensitivity, and a belief that "our way is better." Monsanto had stormed into Europe like a bull in a china shop, making one cultural gaff after another in its dealings with the European public and governments. As noted above, for example, instead of listening to the European biotech industry's warnings that it label its GE food products and respect the "right to know" of consumers, Monsanto forged ahead and sent its crop to Europe unlabeled, certain that it would not make any difference. Afterwards,

11. Acquiring seed companies was a critical part of most agricultural biotechnology firms' strategies because it is through the use of these companies' high quality breedstock that an agricultural biotechnology firm gets its products into the market.

12. Monsanto never actually gained ownership of the Terminator technology because antitrust regulators rejected its attempt to buy Delta & Pine Land in 2001 (Charles 2001).

Monsanto's CEO Robert Shapiro openly admitted that the company had made a mistake in its handling of its European market entry. "Our confidence in this technology and our enthusiasm for it has widely been seen, and understandably so, as condescension or indeed arrogance," said Shapiro in a public broadcast at a Greenpeace-sponsored conference in 1999. "Because we thought it was our job to persuade, too often we forgot how to listen" (qtd. in Specter 2000). For all these reasons, Monsanto was an invaluable target for making biotechnology into a public issue, and for enabling activists to vilify both the firm and the technology simultaneously.

As noted above, another central movement strategy involved consumer education campaigns and in-store leafleting. While these consumer campaigns and educational efforts did not always provide correct information to consumers, they were successful in alerting consumers to the fact that a new type of gene technology was being used to produce their food, and in mobilizing people to express their opinions about it. Such consumer-aimed campaigns were critical for putting European supermarkets on the defensive.

The movement's widespread use of symbolic actions played an important role in stimulating the consumer revolt that eventually occurred. Greenpeace was particularly skilled at carrying out eye-catching publicity stunts, and Greenpeace activists, particularly Benny Härlin (the leader of Greenpeace's anti-GMO campaign), were masters at attracting the klieg lights of the media. The considerable media attention given to the issue in the late 1990s served to increase the public's awareness of GM food, which augmented the movement's efficacy. As headlines containing the words, "Frankenstein foods," "genetic contamination," and "Terminator technology" graced newspapers and magazines across the continent, the public learned that GMOs were entering the food supply and not everybody was happy about it. These tactics, together with the movements' supermarket and grassroots organizing campaigns, created a strong consumer awareness of GMOs and helped mobilize the public against them. As I show in more detail below, these activist strategies interacted with various industry features to induce the retail sector to change its course.

Industry Structures

The second set of factors that facilitated the movement's efficacy derived from the industry's organization, structure, and culture, which created critical weaknesses activists could exploit. An important feature of the agricultural biotechnology industry's organization was the relationship among the actors that put GM food on consumers' tables—or, in the terminology of organizational sociology, in the biotechnology industry's "organizational field."

Agricultural biotechnology firms do not sell their genetically engineered seed technologies directly to final food consumers, but to farmers, who plant and grow them. Farmers in turn sell their crops to grain elevators or handlers (such as Archer Daniels Midland or Cargill), who then sell the grain to food processors, who transform it into a range of products from bread to cooking oil to baby food. These goods are then sold to food retailers, including supermarket chains, the fast food industry, and restaurants. It is from these retail outlets that most people in the advanced industrialized countries obtain their food. It is also *through* these retail food outlets that the agricultural biotechnology industry distributes the vast majority of its goods. Indeed, unlike the rubber or plastics industries, which produce products for a wide variety of uses and markets, most GM seeds (the main product of the agricultural biotechnology industry) are used to produce food for human consumption. Even the corn and soy that go into making animal feed is ultimately used for human consumption, in the main. Consequently, even though final food consumers are not the *direct* customers of the life sciences companies (and for a time, did not even register on the latter's radar screen), activists could use consumer pressure on food processors and retailers to hurt the firms producing these new gene technologies. As we saw above, that is exactly what they did.

The impact of the movement's consumer-oriented activism was augmented by the highly competitive character of the food processing and supermarket sectors. The supermarket sector

has experienced a significant process of growth and concentration over the last twenty years, and has come to be dominated by a relatively small number of very large and powerful firms that compete fiercely amongst themselves for market share (Heffernan 2000; Henson and Northern 1998). The food manufacturing sector is also very competitive in character. Had these industries been monopolies or even less competitive oligopolies, they might have been less sensitive to consumer concerns.¹³ But in both of these “final consumer”-oriented sectors, the customer is considered king.

Both of these industries, furthermore, were dominated by firms that had invested heavily in building up their brand names and company reputations (Henson and Northern 1998). For companies such as Sainsbury's, Marks and Spencer's, Nestle's, and Cadbury-Schweppes, whose names and brand names are household words, the price of losing two of their most important sources of organizational legitimacy—the public's confidence and trust—was perceived to be very high. As evidence of this fact, when the anti-biotech movement mobilized a serious threat to these companies and their brand names through the use of consumer pressure and through frequent public criticisms of their policies, these firms took that threat seriously.¹⁴ While GM foods may not have been viewed as particularly alarming by the people who ran these corporations, they were also not worth risking their company's reputations over, if a GM product later became associated with a significant health threat or a company came to be viewed as insensitive to consumer safety concerns. As President and CEO of Novartis's Gerber baby food division put it when explaining why his company decided to go GMO-free, “I have got to listen to my customers. So, if there is an issue, or even an inkling of an issue, I am going to make amends. We have to act pre-emptively.” The company's vice president for research, Jan Relford, was even blunter: “The parents trust us; if they don't trust us, we are out of business” (Lagnado 1999).

The willingness of the food processing and retail sectors to desert the agricultural biotechnology industry and its large-scale investment in GMOs was clearly enhanced by the unequal relations of dependency that existed between these two groups. That is, while the agricultural biotechnology companies cannot survive, much less thrive, without food processor and retailer willingness to buy and sell their products, the reverse is *not* the case: food companies and supermarkets can easily survive without selling GM foods. Hence, when the pressure became intense, it was not that costly for European processors and retailers to say “no” to GMOs. Had more been at stake for them economically, they would likely have worked harder to change consumers' negative perceptions of GM foods. Indeed, a central reason why the U.S. agricultural biotechnology industry was able to survive at all in light of this food retailer and processor reaction was that the reaction was confined to Western Europe. Had it spread to any other major markets, the agricultural biotechnology industry surely would have been in extremely serious trouble.¹⁵

The early decision by frozen food producer and retailer, Iceland Foods, to publicly renounce its use of GM ingredients in a highly competitive retail environment further aided the movement's efforts to keep new genetically modified foods out of Western Europe. Although

13. In direct contrast to monopolies, oligopolies are often highly competitive, although that competition may take a variety of forms (product quality, service, or price). Only when oligopolistic firms are in collusion does competition abate; such collusion is notably difficult to maintain, however.

14. Particular groups in the movement, such as Friends of the Earth, were frequently quoted in the media on the topic of supermarket behavior vis-à-vis GMOs. They also maintained a *de facto* scorecard of retailer behavior, congratulating firms that made decisions they favored, and heavily criticizing firms that were reluctant to budge on the issue.

15. The possibility that Europe will “teach by example” is the main reason why the U.S. agricultural biotechnology industry has responded so aggressively to the EU governments' new regulatory stance on GMOs, as outlined in Section 4. In April of 2003, the agricultural biotechnology industry succeeded in getting the U.S. Office of the Trade Representative (OTR) to bring a WTO court case against the European Union over this issue. The U.S. OTR's willingness to do so is obviously a reflection of the industry's relationship with the state, another “industry structure” of importance. In this case, it is clear that this particular industry structure (state-industry relations) had tended to favor the biotechnology industry, rather than weakening it, from the perspective of the movement.

it appears to have been more of a fortuitous move for the movement than an explicit strategy to target a weak link among retailers, Iceland's repudiation of GMOs played an important role in augmenting the movement's efficacy.

While Iceland was among the smallest of the large supermarket chains in the United Kingdom (Henson and Northern 1998), it had no desire to stay in that position. In fact, it can easily be argued that Iceland had little to lose and a lot to gain from becoming the first supermarket chain in the United Kingdom to go GMO-free. As an industry underdog, there was a powerful economic incentive for Iceland to distinguish itself from its peers. If Iceland were the first supermarket chain in the United Kingdom to go GMO-free, it had the potential to gain a "first mover" advantage in the industry. That Iceland CEO Malcolm Walker saw its *de facto* alliance with the anti-GMO forces as a means of distinguishing itself from the competition and garnering a large market share is clear from a comment Iceland's CEO, Malcolm Walker, made to the BBC in 1999. During this press interview, Walker boasted that while he was pleased "that the campaign . . . we started has now been taken up by other food retailers and . . . manufacturers," Iceland was still the "only national food retailer whose complete own label range is guaranteed" to be free of GM ingredients (BBC News 1999a).¹⁶ In the period following its policy change, Iceland did appear to capture a first mover advantage on GMOs. Only one year after Iceland banned the use of GMO ingredients, a BBC news report noted that the company's "pioneering ban on GM foods . . . helped [it] to record a 10% sales rise" (BBC News 1999a).

Himself part of (a changing) British society and culture, CEO Walker also appeared to have strong personal misgivings about GM food technologies, a fact that was reflected in the company's corporate culture. In one interview, Walker described genetic engineering technologies as "terrifying" (BBC News 1998), while in another, he disparagingly referred to GMOs as "Frankenstein foods" (BBC News 1999a). But whether Walker was primarily motivated by the hope of gaining an edge over his competitors or by his own personal unease with the technology, his decision to break ranks with other supermarket chains and to paint Iceland as a socially responsible corporation as a result, dramatically increased the pressure on *other* food manufacturers and retailers to change their GM food policies. Once Iceland claimed the high moral ground on the issue, in other words, the morality and "customer responsiveness" of other companies was thrown into question. The great uncertainty associated with this new technology and the potentially high costs of falsely assuming its safety also presumably contributed to the institutional isomorphism that occurred in food processing and retailing with respect to GMOs. Had Iceland not folded, the other supermarket chains presumably would not have had to fold either.

Last but not least, the *nature of the product* created an important opening for the movement. Food is a highly sensitive commodity, and touches off loud alarms for many people. Food, after all, is ingested, and becomes "who we are" in quite a literal sense. It is also something that can be produced in many different ways, offering consumers the possibility of rejecting a particular food technology. The industry may have forgotten these facts, but activists did not. Indeed, activists moved the "foodness" of the biotechnology issue to center stage in their framing of the issue and used food's corporeal qualities to generate widespread public concern. It did not matter whether these claims were scientifically supported; what mattered was the power of the suggestion that GM food *might not* be healthy, and Europeans' tremendous sensitivity to the issue.¹⁷

16. This raises the interesting possibility that the rhetoric of the anti-biotech movement actually became a resource available to firms for market competition, which was used to disrupt and realign the retailers' market. I am grateful to James Holstein for raising this point.

17. An interesting contrast can be made with the movement's decision *not* to make the genetically engineered drugs produced by some of the very same companies into an issue. Because drugs are used by people whose health often depends on them, the movement sensed early on that consumers would not be willing to challenge the use of this technology in drug production. Another revealing contrast is with the Nike campaign, which has taken aim at a commodity that has a very different meaning to consumers. Although the Nike campaign has succeeded in getting the company to change some of its policies (agreeing, for example, to allow external monitors in its factories), these achievements

In the case of the anti-biotech movement, there was another fateful aspect of the “food as commodity” characteristic as well. In contrast to previous agricultural innovations, genetic engineering is widely perceived as a technology that allowed humanity to cross the species barrier in ways that had been impossible before. As scientists began manipulating plant and animal genomes with the new GM technologies, they were seen to be breaking new ground in society’s relationship to nature. As Daniel Vasella, chairman of the Swiss life sciences firm Novartis, recognized, “This is not just about plants. It’s about our myths, our history and culture. It’s about what we put in our mouths and in our babies’ mouths. . . . What is more basic—and what could be more frightening—than playing with that?” (Specter 2000).

*Political-Cultural Context*¹⁸

The political and cultural context in which the movement operated in Europe also played a significant role in explaining the anti-biotech movement’s efficacy. One aspect of that context was the powerful cultural significance that food and agriculture hold for many Europeans. National cuisines in many Western European countries are a rich source of pride for people, and form a critical part of their histories, cultures, and identities. It is no accident that Italy gave birth to the “slow food” movement in the 1980s, or that mealtime in Greece, Spain, and France forms a central part of people’s social and familial lives. Western Europeans’ close physical proximity to the countryside also increased people’s sensitivity to the agricultural biotechnology issue (Schweiger 2001).

Related to these sensibilities was a growing European antipathy for U.S. “food imperialism.” Biotechnology corporations, especially Monsanto, were widely perceived (and actively portrayed) as trying to shove a dangerous technology down people’s throats, whether or not they wanted it (Schweiger 2001; Specter 2000). That the U.S.-based life sciences industry chose to forge ahead with its plans to introduce GM food regardless of people’s questions and concerns exacerbated the European public’s antipathy toward these new technologies, and toward the corporations that were so aggressively pushing them. Increasing the tensions around U.S. food imperialism was the fact that in 1998, the U.S. government had waged a major trade war against the EU in the World Trade Organization over Europe’s right to refuse hormone-treated U.S. beef imports (Josling 1999). From the public’s perspective, it appeared that U.S. corporations and the U.S. government were trying to dictate how and what Europeans would eat.

Last but by no means least, the decade of the 1990s had brought to the continent several major food scares, including “mad cow” disease, Creutzfeldt-Jakob disease, the discovery of dioxin in animal feed, and a rash of illnesses associated with Coca-Cola. Creutzfeldt-Jakob disease had a particularly devastating and terrifying impact in the United Kingdom, leading to almost 700 human deaths in the 1990s.¹⁹ As suggested earlier, activists had strategically used these events to build on people’s inchoate fears of GM food, and of their governments’ inability to assure them of a safe food supply. Indeed, when a 1995 Eurobarometer survey asked fifteen thousand Western Europeans whom they trusted to provide them with information about environmental issues, only 12 percent described “public authorities” as credible, and a mere 2 percent said that they believed the information supplied by industry (European Partners for the Environment 1999). Environmental NGOs (non-governmental organizations),

have come more from the pressure college students have exerted on university administrators than from Americans’ willingness to participate in a mass boycott against Nike. Clearly, the value of wearing “the swoosh” is judged by many consumers to be higher than the cost of wearing goods produced under sweatshop conditions.

18. Although there are significant differences among European countries in this regard, I gloss over these for reasons of space, and focus instead on the commonalities.

19. These figures are for the period from 1990 to 2000, and come from website data compiled by a CJD surveillance and monitoring unit based at the Western General Hospital in Edinburgh, Scotland. See www.cjd.ed.ac.uk/figures.htm (“CJD Statistics” 2003).

by contrast, were ranked as the “most credible” sources of authority, followed by scientists and consumer associations. Hence, when activists communicated their messages about the environmental and health risks of agricultural biotechnology, the arrogance of U.S. corporations, and the ineptitude and corporate biases of certain Western European governments, their messages fell upon open ears. The weight of these activist attacks in the context of a strong public distrust of government also presumably explains why certain EU governments were effectively willing to sacrifice their own biotechnology industries and defy the U.S. government by tightening up their GMO regulatory policies. From these governments’ perspective, their organizational and political legitimacy rested on it.

Conclusion

The social movements literature has long recognized the importance of a social movement’s external context, or its “operating environment,” as a factor impinging upon the emergence and the efficacy of social movements. Over the last several decades, we have learned much about the ways in which different political and institutional configurations can create important political openings and closures for social movements, imbuing their efforts with more or less success. There has also been a valuable attempt to “bring culture in” to prevailing conceptions of political opportunities in recent years. Whether defined as national political cultures (Nelkin and Pollak 1981) or as the shared beliefs and assumptions that shape particular groups’ understandings of the world (Klandermans and Johnston 1995), the literature has usefully clarified how culture can be seen as a constraint on social movements’ organizational forms and modes of political action, as well as an important political resource upon which social movements can draw.

While the emergence of the political opportunity structures perspective can be credited with keeping social movement scholars from mistakenly viewing social movements and their constitutive organizations as inhabitants of their own insular worlds, this article has suggested that it has also led to an overemphasis on the state as the target of social movement claims. While the state and the political-institutional sphere are and will continue to be important targets for social movements, I have argued that historical conditions have changed in such a way that we are now seeing more and more direct efforts to challenge and change the behavior of corporations. Furthermore, it is not just the expected cast of characters—labor and union movements—that are initiating these firm and industry-related confrontations, but other types of activist groups, from environmental NGOs to gay rights networks, as well.

Given the growing importance of corporate targets and the dearth of attention paid to them in the literature, this article was partially devoted to specifying their key contours and institutional logic from the perspective of social movements. Toward this goal, and drawing upon organizational sociology and activist literature on corporate campaigns, I offered a concept of “industry structures” and specified some of the sources of variation therein. To the extent that industry organization and culture vary, I argued, social movement efficacy against corporate adversaries will vary as well. Stated somewhat differently, certain industry structures will create openings for challengers, while others will make it harder for social movements to gain headway against their adversaries in the corporate sphere. In the particular case examined here, anti-biotech activist strategies interacted with the competitive pressures affecting firms in the food processing and food retail sectors to augment the movement’s power. The movement’s capacity to exploit several other industry vulnerabilities, including the audacious behavior of one of the industry’s leading firms and its dependence on a food-sensitive public, also helped explain its achievements in the 1990s.

This last observation highlights another important point, which is that industry structures are typically only *one* of a number of factors that explain why social movements are—or are not—successful in particular circumstances. Industry structures provide a context in

which contentious action occurs, and thus are significant to the extent that social movements interact with them, either consciously or inadvertently. Other features of a movement's operating environment obviously matter too, as was the case here with the continent's recent history of food scares and several European governments' poor handling of them.

Returning to the broader concept of industry structures, several research challenges lie ahead. One is to identify more precisely which sorts of industry characteristics matter most for social movements, whether certain characteristics are necessary and/or sufficient, and to what extent generalizations can be made. Answers to these questions will obviously require more empirical research on specific social movement–industry struggles. A second challenge is to develop a more adequate theoretical framework for understanding state–industry relations, and their significance for social movements. Although I have taken some steps in the direction of specifying how an industry's relationship to the state could be important, these relationships take a variety of forms and require in-depth knowledge of particular state bureaucracies as a basis for theorization. The related theoretical and empirical challenges become even more daunting when we recognize that many firms and industries (including the industry analyzed here) operate *transnationally*, and are thus regulated by a *multitude* of states. Thus, the web of industry–state relationships that needs to be understood from the perspective of social movement challengers is complex.

A third arena that would benefit from future research relates to how industry structures (including corporate cultures) change as a result of their interaction with social movements. While movement-induced industry change was not a central focus of this study, it was clearly evidenced in the way that European retailers altered their behavior after being targeted by opponents of the new GM technologies. Although many scholars have recognized the inherent dynamism of industry structures and culture, more work needs to be done to understand precisely *how* activist pressure instigates change in industrial organization and firm behavior.

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