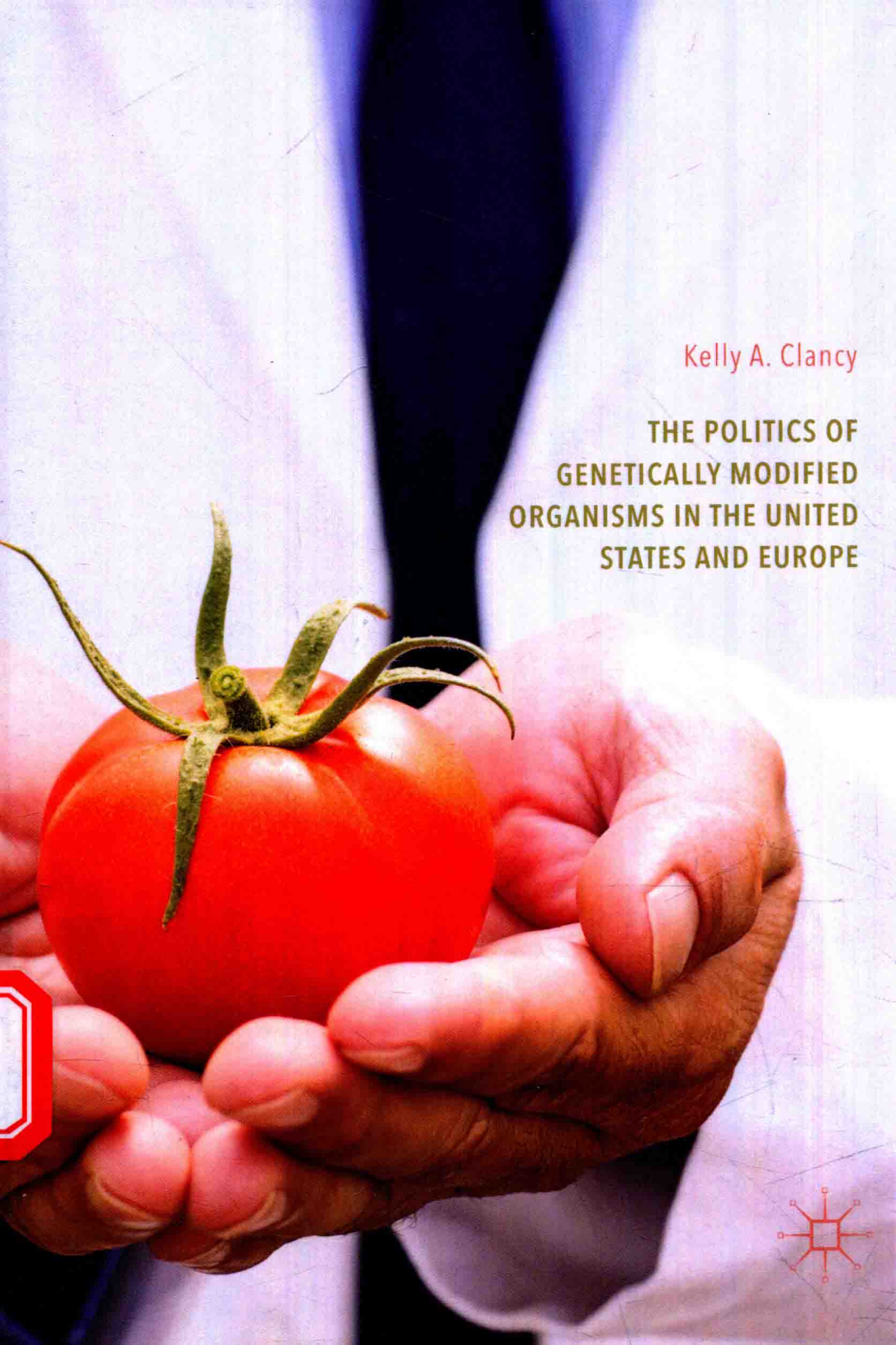

Kelly A. Clancy

THE POLITICS OF GENETICALLY MODIFIED ORGANISMS IN THE UNITED STATES AND EUROPE

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Kelly A. Clancy
Nebraska Wesleyan Unviersity
Lincoln, Nebraska, USA

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For Cyrus, who will live in exciting times.

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CHAPTER 1

Introduction

In November 1999, a Greenpeace protestor stormed the Kellogg headquarters, proclaiming himself to be FrankenTony, a hybrid of Tony the Tiger and Frankenstein. The protest targeted the cereal manufacturer's use of genetically modified (GM) grains, and played on the "Frankenfood" theme popularized by British tabloids. FrankenTony was one of the first high-profile protests of genetically modified organisms (GMOs) in the United States, and foreshadowed the debates that were to follow on both sides of the Atlantic.[1] Indeed, 20 years since GMOs became ubiquitous in American grocery stores and 10 years since the European Union (EU) lifted its moratorium, GMOs continue to engender resistance on both sides of the Atlantic.

An increasingly robust body of scientific literature declares GMOs to be safe for humans, animals, and the environment, and there have been no GMO-linked food safety scandals. This record would support the prediction that public attitudes toward GMOs would moderate over time and that regulation would become increasingly permissive. Indeed, some countries like the United Kingdom follow this pattern. However, GMOs remain objects of contention on both sides of the Atlantic, and resistance to the technology remains high. In the mid-1990s, 85 % of Europeans supported tougher regulations on GM food; the 2005 Eurobarometer found that 27 % of Europeans regarded GM food positively, but the number fell to 23 % by 2010.

What explains the high levels of resistance? To answer this question, this book explains the current status of GMOs in American and European

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public and political life by analyzing the symbolic construction of risk surrounding the *process* of manufacturing, the GM *products* that are produced, and the unknown *implications* of the technology. To do so, I compare the state of the debate over GMOs in the United Kingdom, Germany, Poland, Spain, and the United States. These countries represent the range of cultural orientations and policies toward GMOs. Chapter 2 presents a case study of the history of resistance to GMOs in each country. Chapter 3 examines the strategies adopted by proponents of GMOs to defend the technology in the United States and Europe. Finally, Chapter 4 compares the anti-GMO images that have emerged from each country. This analysis allows for a nuanced understanding of the way GMOs are perceived across national contexts.

There are generally two camps in the debate over GMOs. One group—the skeptics—rail against Monsanto and the evils of the ag-biotech industry. They indict the political economy of knowledge production, attacking the validity of studies financed by Monsanto and big ag-biotech. Additionally, they question the long-term implications of this technology, warning of a tipping point after which it will be impossible to scale back the use of the technology.

The second group of people—the rationalists—posit that GMOs are emblematic of American ignorance. These people are closely aligned with the trend in popular literature to dismiss the concerns of GMO skeptics. On July 15, 2015, William Saletan wrote an article in *Slate* categorically dismissing the "fraud" of the anti-GMO movement; it echoed the work by Michael Spector and others bemoaning the hysteria of GMO opponents. These authors cite studies which find that 75 % of the public believes that products with *genes* should be labeled. The public rejection of GMOs is based on misunderstanding and fear, and thus any attempt to label or regulate GMOs is giving into popular hysteria.

The goal of this book, then, is to facilitate a rapprochement between these two groups. To do so, I argue that understanding the state of GMOs requires bracketing the veracity of the scientific evidence, and instead taking seriously the discursive climate surrounding GMOs. Biologists, agriculturalists, and food scientists on both sides of the Atlantic speak with one (cautious) voice that GMOs are more or less safe. There remain questions, and very good reasons to conduct, fund, and support rigorous, sustained, independent scientific testing. But as of now there is scant *scientific* basis for rejecting the technology of GMOs. Even so, this scientific evidence has not been sufficient to counter the skepticism in the United States and much of Europe, and the politicization of the scientific findings. However, people

on both sides of the debate draw the boundaries around questions of risk and safety: this is both the root of the dispute and what makes GMOs a unique topic. As virulently as proponents and opponents of the technology engage each other, they both believe they can gain political ground by disputing the truth content of the science. Proponents of GMOs argue that there is no genuine distinction to be made between the truth content of the science and the products of the science, whereas opponents of GMOs argue that the truth content of the science itself ought to be indicted.

What do we make of this? Regulated or not, GMOs seem safe. But labeling them seems to moderate public opinion, while not labeling them seems to increase opposition. Ultimately, I argue that the *lack* of labeling of GMO products in the United States allows opponents to create far-fetched images of GMOs that work their ways in to the minds of the public. The way forward out of this seemingly intractable debate is to allow GMOs, once tested, to enter the market without penalty—and then to label them. In this book, I advocate a policy of cautious deregulation in the United States and Europe coupled with a rigorous labeling requirement. I argue that policy makers on both sides of the Atlantic ought to approve GM products as though they are any other product, insuring that they are safe for humans, animals, and the environment. This will streamline the approval process, while allowing greater autonomy for member states and greater incentive for companies to invest in the process. This approach will allow scientific advancements to flourish, while a rigorous labeling process will allow the public to make educated decisions about what they want to purchase—essentially creating a situation under which the producers and manufacturers of GMOs must make an argument to the public about the comparative benefits of GM food. The debate over GMOs is an intensely important one. In this book, I attempt to advance the debate by bracketing the veracity of the scientific questions and instead exploring the implications of the application of GMO technology, particularly the potential benefits of GMOs to humans and the environment. I also argue that labeling would benefit industry in the United States, putting to rest one of the more divisive political battles over the technology and creating a means by which to forge a more productive future. This argument is supported by the analysis throughout the book and explored further in the conclusion.

The remainder of the chapter frames the debate over GMOs in terms of two controversies: the controversy over the science and politics of GMOs and the regulatory politics of GMOs. These provide the background necessary to understand the way the debate takes shape on both sides of the Atlantic.

Controversy One: The Science and Politics of Genetically Modified Organisms

Genetic engineering is a foundational innovation that prompted many people to fundamentally reimagine the relationship between science, politics, and society. Genetic engineering is a phenomenon that is at once political and scientific, thus revealing the intertwined nature of politics and science (Latour 1988). Although politicians and scientists attempt to separate science from politics and portray them as existing in two different realms, genetic engineering uniquely challenges this process. Thus, GMOs—the most visible product of genetic engineering—provide a means to explore the contentious relationship between science, the public, and the state. This section reviews the scientific history and current state of the controversy over the technology of genetic engineering. An analysis of the scientific arguments provides necessary foundation to understand the way the political debate unfolds, particularly in terms of the memes that emerge.

History

The twentieth and twenty-first centuries have been marked by "green" revolutions, as technological innovations have increased agricultural yields, thereby increasing the capacity to feed more people. In the 1930s, the first revolution was driven by an effort to apply Mendel's work on inheritance in plant breeding on a large scale. High-yield hybrid corn was developed, and inexpensive nitrogen fertilizer began to be mass-produced (Bernauer 2003, 5). In the 1960s and 1970s, the Green Revolution brought these green technologies to the developing world. Finally, a third revolution, that of agricultural biotechnology (ag-biotech) began in the 1970s with the discovery of recombinant DNA (rDNA), which gave birth to modern genetic engineering. This process involves splicing the DNA from a plant, animal, or microbe onto the DNA of another plant, animal, or microbe in order to transfer qualities of one organism to another, thereby changing the characteristics of the host plant. As proponents of genetic engineering are quick to point out, the mechanics of this process are not new. Historically, gene splicing was done manually to change the size or color of plants (e.g. the Mendel hybrid experiments). As technology has evolved, genetic engineering now involves complex gene splicing in laboratories to manufacture resistance to drought or pests, improve the color

or size of a product, and to accentuate other positive traits. Most often, the plants are engineered to either produce a pesticide or to be resistant to pesticides used during crop spraying. The process of genetic engineering is part of a larger agricultural struggle to increase yields and create more resilient plants. The controversy is over *both* the unintended health and environmental consequences as well as the political, economic, and social impacts of genetic engineering.

Controversy

Advocates of GMOs argue the dual threat of population explosion and climate change requires technological intervention. Proponents of the technology hold that, despite rigorous scientific studies, risk assessments, and field trials, there has been no evidence of GMO-related harm to people, animals, or the environment.[2] GMO technology has the propensity to reduce hunger, address public health problems (like vitamin A deficiencies), and alleviate environmental stress such as that caused by drought and pests (Bernauer 2003). These innovations also help meet the challenges of the looming population boom by increasing crop yields. As the world's population is predicted to reach 10 billion by 2050, and climate change is likely to increase drought conditions and decrease arable land, GMOs provide the most pragmatic means of addressing the ecological strains. Additionally, GMOs have the potential to address environmental problems by increasing yields, requiring fewer pesticides, and allowing for soil conservation (Bernauer 2003).

Opponents of GMOs assert that the benefits articulated are both nebulous and unrealized, in contrast to the unknown, potentially calamitous risks of the technology. Although proponents of GMOs claim the technologies are critical to preventing starvation, curing vitamin A deficiency, and growing crops that are more resistant to climate change, these global benefits promised by proponents have yet to materialize. Consumers are asked to assume all of the risk by consuming GMOs, but see little benefit. Whereas Roundup Ready (RR) crops,[3] for example, may benefit farmers while producing a profit for ag-biotech companies, the benefits are never passed onto consumers in terms of either quality or cost savings. At the heart of the critique is the fear that the technology "promotes excessive corporate power through patenting of the food chain" (Bernauer 2003, 5).

The critique of GMOs has evolved to emphasize future threats to biodiversity posed by monoculture. Opponents argue that there are myriad

"unknown unknowns" inherent in the technology; even if short-term negative effects have yet to materialize, opponents also warn of medium- to long-term health risks to the environment, including the loss of biodiversity. Cross-pollination of GM crops into conventional or certified organic crops is a continual concern both in the United States and in Europe, which requires all GM crops to be certified, labeled, and traceable. The concern about cross-pollination is not only one of the seeds spreading to conventional fields but also of unpredictable hybrids occurring when cross-breeding occurs, as well as the production of antibiotic resistant crops as a result of cross-breeding pesticides with certain types of pesticide-resistant GMs.

In short, there are different risk assessments based on perception of probability of risk embedded in the process of manufacturing the technology, as well as the end product of GM foods. The way these competing scientific claims are translated to the political debate requires a sophisticated construction of risk and probability. GMOs are, at once, scientific, technological, agricultural, political, economic, commercial, ethical, and personal issues. In a 2014 interview, Michael Pollan argues that the pro-GMO community has successfully, but artificially, limited the debate to one over the veracity of the science, but this is not sufficient to understanding the complexity of the debate over GMOs:

> [We] never escape politics and we never escape economics, even when we are talking about science and technology. Even for science writers who have satisfied themselves on the health and safety of GM, there are other issues—much messier issues—that they need to pay attention to. (2014, n/p)

These messy issues—what cappocia, giovanni, and ziblatt term a "knotty set of factors" (2010, 939)—seep into each other, affecting risk calculi and the way the larger debate is framed.

Controversy Two: Regulatory Politics

The primary approach in the political science literature to the question of GMOs has focused on the subject of regulation, particularly the regulatory gulf on the issue between the United States and Europe and its impact on trade and transatlantic relations.[4]

In the early 1970s, rDNA was discovered, which proved to be the key to genetic engineering. In 1974, foreseeing a potential political backlash against the technology, Paul Berg, the father of genetic engineering,

persuaded molecular biologists working in the field of rDNA to impose a moratorium on their research and assess the potential hazards of their work (Johnson 2013).

In the late 1980s, life sciences corporations began to heavily invest in bringing agricultural biotechnology to the market (Schurman 2004). This led to genetic modification of organisms, and reached the threshold of mass production in the 1990s. By building an infrastructure for seed delivery, securing patents, navigating regulatory regimes, and heavily lobbying governments, it seemed clear that ag-biotech companies would remain global competitors in the emerging market. However, all of that began to change as the market, reacting to the vocal opposition from the European public and the tension between the United States and the European Union, began to turn against GMOs.

The United States and Europe have traded places in terms of the strength of regulation over the past 30 years.[5] Vogel (2012) observes that a regulatory flip-flop occurred around 1990; before 1990, the United States tended to be more risk averse than the European Union, whereas after 1990 the regulation adopted by the European Union tends to be more risk averse.[6] The following sections provide the political and economic context for the dispute over GMOs in the European Union over the past three decades.

When Congress began considering the regulation of biotechnology, genetic engineering was understood as a scientific, not environmental or agricultural, process. This framework has had enormous ramifications for the way in which GM crops are understood and regulated. Monsanto anticipated that there would be regulations placed on GMOs, and so they approached the initial conversations with the US government with the goal of shaping regulation in its favor—both to preempt harsher regulations and so that it could squeeze out competitors unable to afford to comply with a new regulatory schema. However, despite the fact that the ag-biotech industry itself expected some version of GMO-specific regulation, the anti-regulatory sentiment of the Regan era prevailed. In 1985, the Reagan administration unveiled a coordinated framework that regulated biotechnology using the existing bureaucratic mechanisms, rather than creating an independent regulatory agency. During the Reagan administration, a framework for risk assessment was codified that placed faith in "sound science" as an external, neutral arbitrator over conflicts surrounding scientific questions (see Chapter 3; also, Runge et al. 2001; Jasanoff 2011). Confronted with the challenge of regulating GMO crops, the administration set up a regulatory apparatus that fit into the existing regulatory

framework, assigning responsibility to three different executive branches: the Food and Drug Administration (FDA), the United States Department of Agriculture (USDA), and the Environmental Protection Agency (EPA). This framework is still in place in 2015. The FDA determines whether new food is safe, and only conducts risk assessments when there is a question as to whether the product is substantially equivalent to conventional food. The USDA regulates pests, and so has jurisdiction over plants that might increase weeds or vulnerability to pathogens. The EPA regulates pesticides, and so has an important role in approving crops that produce their own pesticides (Kleinman et al. 2009). By employing the same regulatory schema used to administer conventional crops, the United States was able to avoid passing any GM-specific legislation or regulations. Thus, numerous GMO crops were created, grown, and marketed in the United States with little political or public challenge (Pollack and Shaffer 2009).

The Clinton, Bush, and Obama administrations have maintained a relatively consistent regulatory policy. Obama appointed Tom Vilsack, a supporter of the biotech industry, as Secretary of Agriculture. Pollack (2013) provides a succinct summary of the reason why there has been little movement on questions of GMO regulation on the federal legislative level despite broad public support:

> This, in turn, points to the importance of what one might call the political geography of GM regulation in Congress, where support for stricter regulations was concentrated overwhelmingly in the northeast and the west coast, while legislators from rural areas in the Midwest and elsewhere were far more likely to oppose mandatory labelling or other new regulations. Thus, despite the sharp politicization of the issue and the broad public support for labelling in polling, the concentrated interests of farmers and biotech industry groups constituted a significant obstacle to regulatory reform. So did the structure of the American federal system (which left state labelling rules open to legal challenge) and the institutional rules of the US Congress (which effectively required bipartisan agreement in order to pass a divided Congress, and which disproportionately empowered Senators from farm states to block any proposed legislation). These factors did not absolutely preclude new and stricter GMO legislation, but they placed an extraordinarily high hurdle to its adoption in the foreseeable future.

One of the most controversial legislative initiatives regarding GMOs was the dispute over the Monsanto Protection Act. The Farmer Assurance Provision, more commonly referred to as the Monsanto Protection Act, was