

The Great Transformation of the GMO Labeling Debate in the Era of New Plant Breeding Techniques

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Abstract

Current biosafety regulations and the principles they rely on need to be reconceptualised in light of the transformative technological shift in the genetic modification of agricultural crops and animals. Genome editing systems, also known as New Breeding Technologies (NBTs), promise more powerful and efficient genetic manipulation, enabling us to discuss the importance of embeddedness between economic and non-economic processes. NBTs create non-transgenic new plant and animal varieties that fall outside the definition of GMOs because they lack foreign DNA, thus leaving open the question of regulatory and biosafety oversight. Targeted cellular repair mechanisms induce genetic mutations giving rise to Non-GMO genetically edited organisms that express desired characteristics such as disease resistance or herbicide tolerance. Domestic regulatory systems and global legal regimes governing GMOs were institutional responses to the potentially devastating effects of commodifying nature whilst providing a framework for their free transboundary movement as well as their unchecked commercial release. However, these measures were mostly aimed at large economic actors and conventional farmers at the expense of organic and southern farmers, consumers and the rural poor. In addition, by framing the need for GM agriculture in terms of socially “acceptable risk,” economic actors imposed ideological boundaries to the debate and concealed food and environmental justice claims. Hence, the underlying “social acceptability frames” surrounding GM agriculture currently expressed in labeling debates in North America constitute failed attempts to promote the re-embeddness of biotech crops into the social economy.

Therefore, we contend that these powerful technoscientific breakthroughs, which promise to increase the possibilities of plant and animal biotechnology by expanding the speed, scope and scale of genetic alteration, exemplify Polanyi's idea of the double movement, whereby patterns of extension of the global market for biotechnological crops facilitated through scientific marketization in the context of the free-market bioeconomy go hand in hand with efforts to limit impacts on “fictitious commodities” (namely organisms and seed), in this case through biosafety regulations, intellectual property rights on living organisms as well as legal measures to label GMOs. However, Genetically edited organisms, by evading existing biosafety regulations and labeling systems for GM foods, not only reveal the inadequacy of GMO governance two decades on but they also raise questions about the need for extra-scientific assessments as conditions for embeddedness. North America's product-based regulatory system means foods derived from gene editing might very well meet the criteria of organics, thus neutralising the debate over labeling, further masking the presence of human-engineered organisms in the food system and eroding the possibilities for negotiating “social acceptability.” The GMO labeling debate in North America, in the context of NBTs provides a framework for analysing the impact of technology on the governance of the food system as well as the environment. More broadly, this will enable us to rethink Polanyi's notions of embeddedness as well as the ways in which the double movement might make visible the revolutionary changes brought upon by genome editing technologies in agriculture, and under which conditions.

Keywords: GMOs, gene editing, biosafety, labeling, embeddedness, double movement, triple movement, social acceptability, New Plant Breeding Techniques, social acceptability, EU, North America.

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Introduction

The challenges posed by the biotechnology industry to the food system and the environment are multiple and complex, ranging from seed market concentration and control to heightened debt for some farmers and erosion of agrobiodiversity. Negative societal responses to the use of food biotechnology are symptomatic of a deep structural crisis of capitalism that can be analyzed in light of Karl Polanyi's 1944 thesis in *The Great Transformation* (Carroll, 2015). In this paper we contend that recent biotechnological innovations, specifically new plant breeding techniques (NPBTs) also known as genome editing techniques, have been developed partly in order to allay public biosafety concerns over GM foods. Public resistance to agbiotech, mostly in the form of debates about social acceptability and labeling of GM products offer a point of departure for discussing the idea of the double movement while at the same time exposing the limits of Polanyi's approach since the status and visibility of crops developed using NPBTs remains ambiguous, from a scientific and legal standpoint and pose new questions about civil society's capacity to mobilize against them.

Indeed, crops obtained via NPBTs represent new types of GMOs that do not use genetic modification technology to combine DNA from different species and/or unrelated varieties and as such, fall outside the definition of "transgenic" or traditional GM crops. Debates focus on whether NPBT crops fall outside the scope of GM law in the EU and/or North American (NA) GM regulatory frameworks. Because gene edited crops evade most regulatory systems devised for traditional GMOs as well as the basic definition of what constitutes a GMO, they are rendered invisible in jurisdictions like the EU. In North America, where the trend has been towards voluntary labels and deregulation of GM foods, crops obtained via NPBT would require no special oversight since they fall under the widely defined category of Plants with Novel Traits, which does not consider the method of production during health and environmental safety assessment. In spite of this, the development of genome edited plants seriously undermines the ability for social actors to engage in negotiations over levels of "acceptable risk" as these are new and largely untested and add a level of risk complexity not addressed by current regulatory systems, which have been criticized for being scientifically inadequate and narrowly defined.

In particular, issues related to the labeling of traditional GMOs provide some interesting insight into what might be expected in terms of the capacity of social movement actors to engage in battles over biosafety risk, science and politics as gene-edited crops and foods begin to enter the market. Debates around GMO labeling provide interesting examples of how risk acceptability might be negotiated in the midst of efforts to deregulate and/or redefine GMOs and their potential risks in light of oncoming gene edited crops. Using Polanyi's and Fraser's (2013) insights into market-centered ideology, we seek to examine the role of multinationals and the State in promoting corporate agriculture in light of struggles to protect livelihoods and ecologies (Mulvaney and Zivian, 2013). This paper will ask some fundamental questions about the control of the food system through various aspects of commodification of living organisms as well contrasting biotechnology regulatory mechanisms, in the EU and NA, put in place to contain and define biosafety risk. Finally, we will discuss the ways in which Polanyi's work might inform these debates using and expanding his concepts of the double movement, fictitious commodities and disembeddedness as well as Fraser's (2013) concepts of the triple movement and emancipation.

Fictitious commodities and social acceptability from a post-Polanyian perspective

In his 1944 monograph *The great transformation*, Karl Polanyi analyses the emergence of the market as a dominant and mandatory social institution in Western civilization. Through ethnographic and historic evidence, he shows that markets have a secondary role in traditional economies, and that the markets were disembedded from society through coercion at the onset of the Industrial Revolution. This was done through the enclosure and privatization of common land and spaces and the criminalization of landless unemployed people, forcing them into selling their labour for a living, turning labour and land into commodities that buyers and sellers exchange on markets. This created the conditions for the creation of a large proletariat whose labour fueled the Industrial Revolution as well as a class of rich landowners and industry owners. Money too became commodified as it took on an exchange value of its own and financial markets emerged. However, according to Polanyi, land, labour and money are "fictitious commodities" because, although they are treated as commodities, they are not and cannot be made to be bought and sold: labour is commodified human activity, land is commodified nature, and financial capital is commodified money. The commodification of these elements in order to fuel the Industrial revolution and progress caused poverty, misery, disease and environmental degradation, inflicting important damage to society, individual lives and communities.

According to Polanyi, this expansion of the market, understood as a central institution regulating social life and economic production, was met by societal resistance, creating what he calls „the double movement“ and expressed in the historical period Polanyi covers (from the mid 19th century to the second world war) in the movement for social protection and the Welfare state in Europe. He writes,

“For a century the dynamics of modern society was governed by a double movement: the market expanded continuously but this movement was met by a countermovement checking the expansion in definite directions. Vital though such a

countermovement was for the protection of society, in the last analysis it was incompatible with the self-regulation of the market system itself. [...] Yet simultaneously a countermovement was on foot. This was more than the usual defensive behaviour of a society faced with change; it was a reaction against a dislocation which attacked the fabric of society, and which would have destroyed the very organization of production that the market has called into being.” (Polanyi, 1944, p.130).

Disembedded markets in the aftermath of World War II: The triple movement

Although Polanyi predicted that the second World War would be the ultimate crisis which would destroy market fundamentalism, the 1980s and 1990s have seen a new wave of market expansion and liberal ideology, as politicians like Margaret Thatcher in the UK and Ronald Reagan in the USA rose to power and the Cold War ended, creating favourable conditions for hardline and hitherto marginal liberal economic theories such as those of Milton Friedman to influence macroeconomic policy. This triggered a new era of privatizations, market deregulations and heightened financial, social and environmental crisis, as well as erosion of labour rights and welfare state services. While some analysts rightly compare some aspects of the current crises to the crisis of the 1930s, addressed in *The great transformation*, Fraser (2013) nuances this by pointing out that despite structural similarities, the political context and response are very different. She highlights that social protection and welfare were born in the 1930s and in the post-war era from a large-scale societal understanding that the market needed to be politically regulated in order to limit negative impacts on society and environment. She writes: “Today, however, no such consensus exists. [...] Political elites are explicitly or implicitly neoliberal [...]. Committed first and foremost to protecting investors, virtually all of them—including self-professed social democrats—demand ‘austerity’ and ‘deficit reduction’, despite the threats such policies pose to economy, society and nature. [...] Progressive social movements are longer-lived and better institutionalized, to be sure; but they suffer from fragmentation and have not united in a coherent counter-project to neoliberalism.” This is the basis for her statement that “we lack a double movement in Polanyi’s sense.”

Fraser cites multiple reasons for this divergence between present-era crises and the 1930s. One important reason is that labour unions' bargaining power have fallen due to financialization of the economy: fewer transactions than ever rely on actual production, manufacturing is delocalized and (financial) risk is commodified. Unions are often seen as privileged institutions, defending the rights of a minority of workers with stable jobs against the majority of precarious, isolated workers.

Furthermore, the present crises are global in scale and need to be framed outside of the nation-state. According to Fraser, “What is at stake, specifically, is the shift from a 20th-century crisis scenario that was framed in national terms, as requiring action by territorial states, to a 21st-century scenario, which has destabilized the national frame without yet generating a plausible replacement. [...] The upshot is that the project of social protection can no longer be envisioned in the national frame. With no alternative on the horizon to replace it, the project seems to lose its credibility. We therefore lack another crucial presupposition of the double movement.”

Addressing post-war era social movements such as the anti-war movement, the second wave feminist movement, the early environmental movement, the civil rights movement, the decolonization and independence movement and the gay rights movement, Fraser highlights both their crucial importance and their lack of reliance on classical and unified appeals to social protections which characterized Polanyi's double movement. She explains that these movements' claims, far from “fit[ting] either pole of the double movement [...] espoused a third political project, which [I] shall call emancipation. Occulted by Polanyi's figure, this project needs to be given a central place in our efforts to clarify the grammar of social struggle in the 21st century.” She calls this new frame of analysis the triple movement and explains that “it delineates a three-sided conflict among proponents of marketization, adherents of social protection and partisans of emancipation. The aim here is not simply greater inclusiveness, however. It is rather to capture the shifting relations among those three sets of political forces, whose projects intersect and collide. The triple movement foregrounds the fact that each can ally, in principle, with either of the other two poles against the third.” Even though it makes struggles against market supremacy more difficult, Fraser considers the emergence of the triple movement as a net advance, for it means that “there is no going back to hierarchical, exclusionary, communitarian understandings of social protection, whose innocence has been forever shattered, and justly so. Henceforth, no protection without emancipation.”

The commodification of knowledge

Our post-Cold war economy is often qualified a “knowledge economy”, as knowledge, information and data have become central to production, value and market organization, through for example intellectual property rights, the uses of the internet in finance, communications, marketing, the job market and the media, and computer-controlled automation in certain productive industries. Therefore, in a post-Polanyian perspective, it makes sense to think through the links between knowledge and “fictitious commodities” (Polanyi, 1944), and whether knowledge as a commodified factor of production gives rise to a double or triple movement.

Jessop (2007) claims that knowledge, in contemporary capitalism, has acquired all characteristics of a fictitious

commodity. Seen as a major site of competitiveness, knowledge is “detached from manual labour, and disentangled from material products to acquire independent form”: it is disembedded from its social roots and context and allocated through profit-oriented markets, such as the job market for scientists, engineers and designers or the buying and selling of patents. Intellectual workers are paid to produce patentable knowledge whose main function is not to fulfill a need or solve a problem, but to bring profits to its owners. However, like land (nature), labour (human activity) and financial capital (money), knowledge is a *fictional* commodity: it can be treated as a commodity and even produced for profit, but new, patentable knowledge is often built upon the “intellectual commons” that is the knowledge created by generations of people outside of market relations. Seen as “a collective, cumulative resource”, it is also understood as the knowledge created through relations of reciprocity (such as traditional seed breeding and exchanges in pre-Green Revolution agriculture and present-day agroecology), householding (knowledge that springs from a specific need to solve a problem in one's immediate environment, such as traditional knowledge on plants' medicinal properties) and redistribution (such as research financed through public funds whose findings go into processes patented by private companies). Although commodified knowledge can lead to some positive effects, such as important medical advances if they are perceived as profitable, treating knowledge as a commodity therefore results in intellectual enclosures and gaps in access to vital forms of knowledge, because the sole criteria for production and access is driven by the profit motive.

Social acceptability

While acceptable risks linked to specific techniques used to be negotiated behind close doors between industry and states (the two poles of Polanyi's double movement), scientific controversies and decrease in states' legitimacy as regulatory agents have resulted in a shift in this power balance (Otway and Von Winterfeld, 1982).

As the emergence of complex, sometime unpredictable technologies accelerates that can potentially change social organization, several movements, consumer groups and political parties that are critical of these technologies (on political, ethical or religious grounds for example) have emerged in opposition to specific aspects/applications of techniques or sets of techniques such as nanotechnologies, genetic engineering in agriculture, large-scale data collection, storage and analysis by governments and private companies, biometric chips in official identification, drones in warfare or civilian nuclear technology.

The notion of social acceptability has emerged from the demands of groups for more transparency, independent research and citizen involvement (through direct participation or public hearings) in the public choices that are made to develop specific techniques and allocation of their ownership and the profits they produce. This can be likened to the third pole of Fraser's (2013) triple movement. In social acceptability, social scientists and market agents work together not to increase transparency and leave a well-informed public with a meaningful choice to refuse certain techniques or their applications, but to understand and anticipate where certain techniques could generate resistance, and work on individual perceptions to make consumers feel attached to new techniques and reassured about potential risks. The notion of social acceptability thus relies not on real democratic participation in technological choices, but on easing consumer discomfort in order to prevent resistance to the large-scale commercialization of pre-determined, profit-generated techniques (Bicaïs, 2007). It amounts to a kind of pre-market testing in order to neutralize public concerns but also as a forum for the social conditioning of publics to readily accept new technologies.

The case of GMOs in agriculture

GM regulations

In North America GMOs are organisms that have been genetically modified using any method, including conventional breeding. The term GMO is defined by article 2(2) of the EU Directive 2001/18/EC as “an organism, with the exception of human beings, in which the genetic material has been altered in a way that does not occur naturally by mating and/or natural recombination.” The question for EU policy makers is whether NPBTs fall under EU GMO legislation. This has been a difficult issue to resolve as the developers of edited plants and foods argue that new breeding techniques fall outside the EU definition of GMOs because no foreign DNA is introduced in their genome. The EU has yet to provide clear guidelines on how to best regulate NPBTs as these do not comply with the definition of GMOs. It appears that the Juncker Commission during its assessment of NPBTs recommended strict testing and regulatory procedures for these new plants but that the status of NPBTs might be put on hold in light of upcoming trade negotiations around agreements such as TPP and CETA.

Genetically modified organisms are regulated in most countries. For all countries that are signatories to the Cartagena Protocol on Biosafety, an environmental risk assessment is required for the regulatory approval of GMOs. The principles upon which these regulatory systems are based differ, as do definitions of GMOs. While the EU considers the process of genetic engineering as a potential source of risk in its biosafety assessment, North American regulations focus exclusively on the final product i.e. the novel trait + the conventional plant which is considered familiar hence safe. As a result, crops obtained via traditional breeding and/or recombinant DNA techniques are given similar

consideration in the North American system since only the newly introduced trait is assessed. This stands in contrast to the EU, which uses a more precautionary approach before approving GM crops for deliberate release. In both systems, a case-by-case approach is used in a stepwise fashion that considers the various levels of scientific uncertainty and unintended ecological effects from the laboratory to the field. Both EU and NA regulatory frameworks use narrow definitions of environmental risk to assess the safety of GM crops, based on the OECD derived principle of substantial equivalence. Substantial equivalence is established by the developers of GM plants who must provide scientific evidence to regulators showing that their GM plant is 'as safe as' its conventional counterpart. Both regulatory systems have been severely criticized on the basis of the weakness of the scientific assessment process which is generally confidential and which remains the responsibility of GM developers. In spite of differences in regulatory approaches, European and North American resistance to GMOs has been consistent, being played out over decades in a variety of different contexts with uneven results. Europeans have had labeling laws since 1997, in response to consumer demands and despite the lifting of a *de facto* moratorium on the import of GM grains and foods, the EU has managed to control GMOs entering its food system while importing and allowing the cultivation of some GM feed crops in some member countries. Since 1997, mandatory labeling policies have been implemented throughout the world, including in some developing countries. However, countries such as Canada and the United States opted for a voluntary labeling system, which means that only in cases where safety concerns exist are foods required to be labeled. Since GMOs in the NA food system are considered to pose no safety risk, no labels are necessary. In the US and Canada, pro-labeling campaigns have met with limited success due to the enormous lobbying by food manufacturers and pro-biotechnology industrial actors. In the EU, in spite of mandatory labels, GMOs remain contentious, as member countries are divided and continue to ban their cultivation at the national level. While some GM food products have been approved for sale in the EU, the majority of GM crops imported from the US and South America are used in animal feed. Several GM maize varieties have been approved for cultivation in the EU. Labeling controversies include the fact that organic products exclude GMOS or products produced from or by GMOs during the production process (IFOAM, 2015). NPBTs are therefore not compatible with organics but because they work at the sub-cellular and genomic level they might fall outside the scope of the EU's GM legislation, severely threatening the organic sector in terms of the traceability and labeling of crops obtained via NPBTs. The same holds true in NA as no method currently exist to trace these techniques in the final product (IFOAM, 2015).

What are NPBTs?

These are new techniques that are different from conventional breeding and transgenic GM developments. The European Commission identified 8 new techniques that fall under the NPBTs, these are: oligodirected mutagenesis, cisgenesis/intragenesis, site directed nucleases (SDN) including zinc finger nucleases such as Talen or CrisprCas9, RNA dependent DNA methylation, grafting, reverse breeding, agro-infiltration and synthetic biology. These new techniques can give rise to novel products that fall outside current regulations because genetic modification uses the plant's natural repair mechanisms to modify the genome without introducing DNA from other species. These NPBTs challenge current regulatory frameworks and risk management approaches, they potentially introduce new levels of uncertainty and biosafety concerns since little is known about their unintended consequences once in the field and the food system. The new risks posed by these techniques remain scientifically unknown and the lack of specifically designed risk assessment frameworks mean that ecological impacts may be difficult to predict and anticipate, even if current GMO laws are applied. As such, untargeted effects might have serious consequences for species and ecosystems and our inability to distinguish between artificially created and/or natural targeted genetic modifications may test the limits of our already weak regulatory systems. Industries see these techniques as a means of accelerating "natural processes" by more precise targeting of genomes, however, the lack of scientific studies regarding the health and ecological impacts of genome edited organisms creates an important knowledge gap in particular, on the impacts of these modifications on organisms over the long term as well over multiple generations. Because these organisms fall outside of traditional regulatory and legal oversight at the national and international levels, the Precautionary principle might not be applied.

The importance of the labeling debate

If these plants were to elude GMO law in the EU and any type of regulatory oversight in other jurisdictions such as North America, this implies that no risk assessment would be required before authorizing their commercial release. It would also render GM labels as well as post-commercial monitoring unnecessary. As we have seen North American regulations only consider the final product, leaving open the process by which the plant is derived. This means that no additional oversight may be required beyond what is already in place. This would jeopardize the traceability of food and food ingredients. In terms of GMO labels, NPBTs eliminate the need to label since they are excluded from the definition of GMOs and hence, at least in the EU. This would eliminate any kind of transparency in the marketplace, and remove consumers' right to choose. Worse yet, these new organisms may actually fit the definition of organics, according to organic standards since their development does not involve the introduction of foreign genetic material and works by editing genes that are already part of a plant's genome.

While GMO labeling does not tell the whole story of GM resistance nor does it deal with contamination issues in

regions where transgenic agriculture is concentrated, it represents an interesting way to discuss the relevance of Polanyi's work decades on. The importance of food labels is that they provide the possibility, however limited, for market actors to make informed choices about the food they eat. Depending on the type of information appearing on labels, including a list of ingredients, nutrition as well as production method, they also represent a direct way that consumers express not only their food preferences but also their health and environmental values. As such, they are a valuable tool for understanding how choice and trust in the marketplace is constructed in light of undemocratic flawed regulatory systems within a liberal context, but more importantly, GMO labeling can be seen as an individualistic form of passive political resistance to an industry and/or a food production technique considered socially and environmentally unacceptable.

Discussion

Given that resistance to traditional GMOs has been widespread in many parts of the world, that the promise of genetic modification has not materialized and that the actual gains from GMO crops remain scientifically contested and publicly controversial, genetically edited GMOs create new levels of biosafety concerns and allow us to expand on Polanyi's notion of fictitious commodities (Jessop, 2014) as well as Fraser's (2013) triple movement. Despite the adoption of these new plant-breeding techniques by agbiotech firms (e.g. Monsanto), techniques such as CRISPR/Cas9 exacerbate the debate surrounding traditional GMOs regarding the policy frames used to determine or engineer social acceptability.

GMOs are commodified seeds, as they are obtained through the use of commodified biological knowledge and allow their company that owns their breeders' patent to legally (through criminalization of unpaid use) and biologically (through sterilization of seeds) restrict their use to market actors. In the pro-GM academic literature, citizen resistance to GM agriculture is often framed as irrational and backwards, anti-science or the product of misinformation (Aerni, 2013; Lucht, 2015; Lusser et al., 2012). In the same line of thinking, gene editing techniques are praised by pro-GM authors as a promising new way of making consumers accept GM technologies in agriculture (Nagamangala Kanchiswamy et al, 2014; Ricrich and Hénard-Damave, 2016 ; Lusser et al., 2012 ; Arachi and Ishii, 2015). Genetically edited seeds are technical objects that are different in kind from non-engineered seeds, and the use of technology is made to mediate and breakdown of popular opposition so as to facilitate a technology's social acceptance by countering arguments that structure resistance movements and creating new types of GMO objects that are framed and represented as free from perceived and undesired characteristics of *transgenic* crops, since NPBTs use so-called "naturally occurring" genome repair mechanisms.

Bain and Dandachi (2014) explain that in the US "90% of all corn soybeans and sugar beets are genetically engineered and 80% of all processed food includes at least one ingredient derived from a genetically engineered crop". Since a federal ban on GMOs at the federal level before they were introduced to the US market in 1990s proved impossible, movements focused their campaigns on individual states to pass legislations enforcing mandatory labeling. Over \$100 million USD were spent in lobbying by agri-food corporations in order to defeat ballots (California, Oregon, etc). Vermont passed a mandatory labeling law, which was later nullified by a federal law that stipulates that US consumers can obtain information concerning GM ingredients or products in foods by scanning "QR codes". In other words, a compromise was reached between GM promoters and the federal government, even organic products can now be labeled as non-GMO some anti-GM activists feel betrayed. This has given rise to organizations such as the "Non GMO Project" which provides product verification for products and brands that do not contain GMOs via a labeling program (recognized by its Monarch butterfly). What is emphasized here are "individualist concerns about choice, right to know and transparency" and not a structural critique of the food system or of the commodification of seeds, including a concerted opposition to GMOs in food products. The result of this individualization of activism is that "if political consumers feel that they can fulfill their social and ethical values by making good choices in the marketplace for themselves and their families then there is little incentive for them to act on broader structural changes that could lead to an agri-food system that is more socially and environmentally just for everyone" (Bain and Dandachi, 2014).

This is in line with Fraser's (2013) argument that the present era lacks a double movement in the Polanyian sense and must be analysed under the lens of the triple movement. Any two poles of the triple movement (the market, social protection and emancipation) can unite against the third one. In this case, emancipation allies with the market against social protection even though some anti-GM activist groups (e.g. Monsanto Trials) express solidarity with affected farmers in the global south as well as freedom of choice for citizens). This results in either ineffective or voluntary GM labeling policies across the board, driven by powerful biotech lobbies concerned that GMO labels heighten already existing consumer anxieties. Also, shifting the debate from societal opposition to GM technologies in agriculture or the necessity to use public institutions as a space for regulation of the GM industry to a debate about labeling and which companies choose to label GM-based foods as part of their business model has been a successful strategy for industrial actors and governments alike. Moreover, social acceptability as a social technique using insights from the social sciences and marketing psychology is itself an extension of lobbying practices that the biotechnology industry uses on technocratic institutions such as the European commission and elected officials in Europe and North America. This has

a double advantage for industry as it shuts down citizen engagement in anti-GM activism and refrains citizens from demanding accountability and transparency from their elected officials. It also ensures that GM products will be “accepted” by consumers.

Conclusion

Debates over NPBTs reveal how democratic choices often get sidelined by scientific and legal complexities as well as socially constructed categories of what counts as natural or artificial hence safe or risky. With the advent of gene editing techniques, their ambiguous regulatory and legal status might serve as a strategy for overcoming consumer resistance by eliminating the need for risk assessment and mandatory labeling. Besides representing a real threat to the organics sector, there is a real possibility that requirements for GMO labeling will be eliminated in jurisdictions where labeling is mandatory and make pro-labeling activism ineffective in North America, where transgenic organisms are already part of the food system. Therefore, gene editing techniques and their strategic use act as levers for social acceptability of GM plants by biotechnology corporations. NPBTs have the potential to profoundly alter the GMO labeling debate and alter the capacity of social actors to mobilize against this type of agriculture.

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