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Mediating the GM Foods Debate: Lessons from the Enduring Conflict Framework

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MEDIATING THE GM FOODS DEBATE: LESSONS FROM THE ENDURING CONFLICT FRAMEWORK

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I. INTRODUCTION

Critics of the commercialization of Genetically Modified (GM) foods† in Canada and the United States oppose the economic and political forces that create and approve the technology: the industry[1] that develops it and the governments[2] that approve its use. The conventional narrative pits the concerned public, labeled "anti-GM," against the "pro-GM" interests of industry supported by business-friendly governments.[3] Based on this binary view of the interests and motivations of stakeholders, conflict between government and industry appears minimal and regulatory frameworks for genetically engineered crops look as though they are primarily designed to facilitate those technologies. As the main site of conflict over GM food[4],

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† Cartagena Protocol on Biosafety to the Convention on Biological Diversity art. 3, Jan. 29, 2000, 2226 U.N.T.S. 208. "GM foods" refers to food and agricultural products containing genetically modified organisms, derived from biotechnology, labeled "transgenic" or defined by the Cartagena Protocol on Biosafety (CPB) as living modified organisms. A living modified organism is defined in Article 3 as "any living organism that possesses a novel combination of genetic material obtained through the use of modern biotechnology." *Consumer Info About Food from Genetically Engineered Plants*, FDA (Oct. 19, 2015), http://www.fda.gov/Food/FoodScienceResearch/GEPlants/ucm461805.htm.

1. Jennifer Clapp & Doris Fuchs, *Agrifood Corporations, Global Governance, and Sustainability: A Framework for Analysis*, *in* CORPORATE POWER IN GLOBAL AGRIFOOD GOVERNANCE 1, 1-20 (2009). Clapp defines industry as "multinational, large-scale companies that are often viewed as having power and influence over regulatory processes or systems." However, we also consider the category of industry to contain a group of stakeholders of diverse size and capacity.

2. *See* Cartagena Protocol on Biosafety to the Convention on Biological Diversity, *supra* note 1. "Government" refers to the federal agencies and departments involved in biosafety risk assessments and decision-making processes for GM foods.

3. Ronald J. Herring, *Epistemic Brokerage in the Bio-Property Narrative: Contributions to Explaining Opposition to Transgenic Technologies in Agriculture*, 27 NEW BIOTECHNOLOGY 614, 617 (2010); Marcel Kuntz, *The Postmodern Assault on Science: If All Truths Are Equal, Who Cares What Science Has to Say?*, 13 EMBO REPORTS 885, 886-88 (2012); Alan McHughen, *GM Crops and Foods: What Do Consumers Want to Know?*, 4 GM CROPS & FOOD: BIOTECHNOLOGY IN AGRIC. & THE FOOD CHAIN 172, 172-74 (2013).

4. For simplicity, we employ the term "GM foods" throughout this paper. The WHO defines "GM foods" as those foods derived from genetically modified organisms. *Frequently Asked Questions on Genetically Modified Foods*, WHO (Dec. 08, 2015),

this partnership is interpreted by some scholars to be in constant and disruptive negotiations with the sceptical, often vocal segment of the "non-expert" public.[5]

A lack of education or outreach (by universities and private sectors) is often cited as a major factor in the high profile conflict between the public and government/industry.[6] A less frequently considered, though important, element of current GM food politics points to conflict between government and industry interests in the design and operation of regulatory systems in light of scientific and technological advancements. For example, broader goals for regulating products of biotechnology are further challenged with the advent of new plant breeding techniques.[7] These points of contention create hidden challenges for regulatory systems and may have broader socio-economic impacts in the form of stalled innovation, increased transaction costs, restricted access to useful technologies, and uneven levels of transparency and deliberative elements in decision-making processes. Collectively, these create an environment of mistrust among stakeholders and cultivate misinformation about biotechnology's perceived risks and potential benefits within the food system, negatively impacting all involved.[8] Some have even called for a reframing of the GM debate to overcome negative outcomes associated with the current structure of conflict.[9]

This paper refocuses the current "enduring conflict" in GM food politics as a problem primarily between industry and government, not exclusively between the public and industry/government. Emerging from the dispute resolution field of study, Bernard Mayer uses the idea of "enduring conflict" to develop a framework suited to complex and fluid

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http://www.who.int/foodsafety/areas_work/food-technology/faq-genetically-modified-food/en/.

5. Alan McHughen & Robert Wager, *Popular Misconceptions: Agricultural Biotechnology*, 27 NEW BIOTECHNOLOGY 724, 724 (2010); *UK Government in Cahoots with GM Industry and Manipulating the Media*, MARIAMUIR.COM (Apr. 15, 2014), http://mariamuir.com/uk-government-cahoots-GM-industry/.

6. Camille D. Ryan & Kari Doerksen, *Apathy and Online Activism: An Impetus for Science and Science Communication in Universities?*, 9 INT'L. J. TECH. KNOWLEDGE & SOC'Y 81, 83 (2013).

7. Maria Lusser & Howard V. Davies, Comparative Regulatory Approaches for Groups of New Plant Breeding Techniques, 30 NEW BIOTECHNOLOGY 437, 438 (2013).

8. Grant E. Isaac et al., *International Regulation of Trade in the Products of Biotechnology*, ESTEY CENTRE FOR L. & ECON. IN INT'L TRADE 2, 12 (Mar. 2002), http://law.usask.ca/research/estey-journal/Isaac-Phillipson-Kerr%20-%20Biotechnology%20Regulation%20-%20Executive%20Summary.pdf.

9. Ronald J. Herring, *Opposition to Transgenic Technologies: Ideology, Interests and Collective Action Frames*, 9 NATURE REVS. GENETICS 458, 459 (2008).

conflict dynamics much like those found in the GM foods debate.[10] Consistent with dispute resolution theory, Mayer accepts conflict as inherent in long-term relationships (even those with a mix of commercial and non-commercial values), and reconceptualises it from "problematic" to "potentially value-creating."[11] Mayer normalizes the challenges inside multi-layer systems, where stakeholders with competing interests are bound to continue engaging with each other.[12] His approach, which we label the *Enduring Conflict Framework* (ECF), shifts attention away from the promise of resolution, focusing instead on a structure for sustainable dialogue, deepening levels of understanding to generate progress even in the absence of comprehensive agreements.[13]

In this paper, we employ the ECF to explore the organizational relationships around GM foods and to focus on the less-understood relationship between government and industry. Government-industry conflict can be viewed as insignificant when compared to the larger public acceptance debate, yet government decision-making is influenced by public debate and the social implications of approving technologies that attract public criticism.[14] This undoubtedly creates inefficiencies within decision-making systems, though these inefficiencies are not always easily determined to be a result of public pressure and controversy.[15] The approval of AquaBounty salmon by Environment Canada is a good example of this.[16] A relationship between powerful actors with often-diverging interests, government-industry interactions over GM foods will contain inevitable and multiple points of friction. Our intent is to focus not on the way that tension materializes, either in the media or in regulatory administration (which will continue to shift over time), but on the underlying sources of that tension. We therefore examine how differing interpretations of structure, identity, and values held by government and industry contribute to conflict in the governance of GM foods, and how these interpretations can be used in the ECF to develop strategies for dialogue and mediation. Using the concept of "enduring conflict" to refocus the objective from seeking all-encompassing

10. BERNARD MAYER, STAYING WITH CONFLICT: A STRATEGIC APPROACH TO ONGOING DISPUTES 30-31 (2009).

11. *Id.* at 20.

12. *Id.* at 119-22.

13. *Id.* at 20.

14. Lisa F. Clark & Peter W.B. Phillips, *Bioproduct Approval Regulation: An Analysis of Front-Line Governance Complexity*, 16 J. AGROBIOTECHNOLOGY MGMT. & ECON. 112, 112-13 (2013).

15. *Id.* at 112.

16. *Genetically Modified Salmon Approval Faces Lawsuit*, CBC NEWS (Jan. 22, 2014), http://www.cbc.ca/news/canada/prince-edward-island/genetically-modified-salmon-approval-faces-lawsuit-1.2506248.

outcomes to "disrupting patterns of interaction,"[17] we describe uncertainty in formal and informal interactions. By exploring frames of interaction for government and industry, we aim to open potential sources for dialogue and enhance transparency surrounding the commercialization of GM foods in both Canada and the United States.

The article is structured as follows: Section II explores the theoretical models of the conflict resolution field and explains the value of the ECF to untangling conflicts between government and industry in regulating GM foods. Drawing on examples from the Canadian and American regulatory contexts, section III discusses how, from government and industry perspectives, the regulatory system for GM foods is conceptualized and how different interpretations of its structure and function contribute to conflict. Continuing with the ECF's casting of identity as fundamental to understanding the conflict within the regulatory system, section IV examines how stakeholder identity serves to create barriers for engagement between government and industry. It also discusses how values within regulatory systems cause friction between said stakeholders. Section V synthesizes the previous sections and explores how the ECF can be used to identify spaces for constructive discourse between government and industry.

II. MODELS OF CONFLICT RESOLUTION AND THE ENDURING CONFLICT FRAMEWORK

Scholars have analyzed the socio-economic and political dynamics of GM foods and the decision-making processes that might produce one outcome or another.[18] Curiously, however, there is very little literature generated on what might be called the "dispute resolution perspective" on this topic. The conflict resolution field offers a rich array of theoretical models for explaining what motivates and shapes conflict and for exploring practical processes to address it. Any analysis of an ongoing dispute, whether simple or complex, can benefit if analysts step outside the substantive debate and examine conflict dynamics using a theoretical model, which draws on universal characteristics of conflict and offers principles to

17. *See generally* Howard Gadlin, *Rethinking Intractability: A New Framework for Conflict*, 29 NEGOTIATION J. 99, 101-03 (2013).

18. ERIC MONTPETIT ET AL., THE POLITICS OF BIOTECHNOLOGY IN NORTH AMERICA AND EUROPE 5 (2007); Karen Kastenhofer, *Risk Assessment of Emerging Technologies and Post-Normal Science*, 36 SCI. TECH. & HUM. VALUES 307, 307 (2011); Susanna H. Priest, *The Public Opinion Climate for Gene Technologies in Canada and the United States: Competing Voices, Contrasting Frames*, 15 PUB. UNDERSTANDING SCI. 55, 56 (2006); Gene Rowe & Lynn J. Frewer, *A Typology of Public Engagement Mechanisms*, 30 SCI. TECH. & HUM. VALUES 251, 253 (2005).

guide future interactions between conflicted parties. However, a *traditional* dispute resolution framework (focused on producing a concrete outcome) does not fit the complex and inevitably ongoing processes embedded in the GM foods area.

Even in the closely related field of environmental conflict resolution, the dispute resolution literature assumes one set of resources subject to decisions and one project—or set of projects—to be managed.[19] Conflict is viewed in discrete, identifiable "chunks" open to resolution. Conflict resolution theory allows for the variable factors that may contribute to a resolution: distributive (zero-sum, limited resource) and integrative features (expansive, interest-oriented).[20] Fisher and Ury's definitive *Getting to Yes: Negotiating Agreement Without Giving In* encourages parties to identify their interests to add value to negotiations and uncover potential areas of common ground where "wicked problems" are inherent.[21] Practical models for negotiation or mediation, however, assume parties will move through dialogue in a time-limited way (or time-limited set of relationships) toward one outcome.[22] When resolution is not forthcoming, the conflict is categorized as intractable, with theories turning to how to overcome barriers or intractability.[23] With pervasive, ongoing and multi-layered issues in biotechnology and GM foods, such conclusions are not helpful to those seeking movement towards a system of governance that is more responsive to future challenges and needs. Advocating for new theoretical approaches, Mayer uses the problem of global climate change as an example: "[i]f we get stuck in a mode of thinking that equates progress with solutions and that suggests we have only two choices—to come together in agreement as a world community about how to proceed or to face disaster—then our ability

19. Julia M. Wondolleck, *A Crack in the Foundation? Revisiting ECR's Voluntary Tenet*, 27 CONFLICT RESOL. Q. 321, 324 (2010); Gerald Cormick et al., *Building Consensus for a Sustainable Future: Putting Principles into Practice*, NAT'L ROUND TABLE ON THE ENV'T & THE ECON. 3, 5 (1996), http://warming.apps01.yorku.ca/library/wp-content/uploads/2013/03/NRTEE-Building-Consensus-for-a-Sustainable-Future_Putting-Principles-into-Practice.pdf; *Constructive Engagement Resource Guide: Practical Advice for Dialogue Among Facilities, Workers, Communities and Regulators*, EPA v (1999), http://nepis.epa.gov/Exe/ZyPDF.cgi/20001EF3.PDF?Dockey=20001EF3.PDF.

20. David A. Lax & James K. Sebenius, *Dealcrafting: The Substance of Three-Dimensional Negotiations*, 18 NEGOTIATION J. 5, 6 (2002).

21. ROGER FISHER ET AL., GETTING TO YES: NEGOTIATING AGREEMENT WITHOUT GIVING IN 45, 51 (1st ed. 1981); *see* Kastenhofer, *supra* note 18, at 307-08 (explaining the idea of a wicked problem).

22. *See* FISHER ET AL., *supra* note 21, at 4 (illustrating how traditional methods assume efficient negotiation).

23. *See* Gadlin, *supra* note 17, at 101-02.

to cope creatively with this challenge will be significantly, possibly fatally, impaired."[24]

At the root of Mayer's framework for analyzing enduring conflict is a more expansive question: "[h]ow can we help people prepare to engage with this issue over time?"[25] His approach values patience with conversations that have no end in sight.[26] It aims to motivate the participants of the conflict and any third-party neutrals to be measured and strategic in their responses, to accept incremental changes as necessary and positive, and to use power effectively and less destructively over time.[27] Shifting the objective from resolution to dialogue also minimizes judgement or blame for continued complexity and tension inside a conflict: "[e]nduring conflict is long lasting because of its nature, not because of ineffective or inappropriate efforts to resolve it. Until the roots of the conflict change, the system evolves, or the identity- or value-based elements are profoundly transformed, the conflict will remain, although how it is manifested may vary over time."[28] Yet, Mayer acknowledges, waiting for such an alignment to occur may not be an option.[29] This is a unique paradox with the GM foods debate. With no comprehensive solution in sight, "taking action directed to the comprehensive nature of the problem" is still viewed as critical, even "before we are completely certain of the ramifications of our actions."[30] This is particularly crucial in discussions over the safety and use of innovative technologies like biotechnology that carry potential risk, but also offer some form of benefit to society.

What characterizes an enduring conflict is exactly what distinguishes it from those disputes that fit more easily into outcome-focused conventional models.[31] We view Mayer's adaptive set of considerations as a type of frame, and select the principles that best illuminate the government-industry relationship in the GM foods debate: "[w]e can think of enduring conflicts as those struggles that are embedded in people's lives, relationships, and institutions because they stem from their most deeply held values, their sense of who they are, and the structure of the organizations and communities that they are part of."[32] Drawing from the multiple characteristics Mayer

24. MAYER, *supra* note 10, at 34.
25. *Id.* at 3.
26. Carl Schneider, Book Note, *Staying with Conflict: A Strategic Approach to Ongoing Disputes*, 47 FAM. CT. REV. 737, 737 (2009) (reviewing BERNARD MAYER, STAYING WITH CONFLICT: A STRATEGIC APPROACH TO ONGOING DISPUTES (2009)).
27. *Id.*
28. MAYER, *supra* note 10, at 24; *see* also Schneider, *supra* note 26, at 737-38.
29. MAYER, *supra* note 10, at 34.
30. *Id.*
31. *Id.* at 98.
32. *Id.* at 11.

explores, we argue that enduring conflicts in this setting are rooted in three different grounds: systemic structure, sets of values, and identity. All three are implanted beneath the surface of the GM foods debate.

III. REGULATORY STRUCTURES AS UNDERSTOOD BY GOVERNMENT AND INDUSTRY

A. Structure as Understood in the ECF

Although Mayer does not explicitly define "structure," his application of this idea borrows heavily from a systems approach.[33] It invites examination of the web of relationships among the parties to the conflict that are "deeply embedded in . . . economic and political systems."[34] It also encourages a careful outline of the way these relationships are organized and how a stakeholder's behavior influences another stakeholder's behavior.[35] Key to this analysis is the study of power, which Mayer claims is "fundamental to the struggle itself. Enduring conflict almost always involves efforts [*either direct or indirect*] by individuals or groups to secure a more favorable long-term power position."[36] Systemic structure and the power dynamics within it are best understood by looking at decision-making processes in the GM foods regulatory regime.

B. Government

The regulatory system for agricultural biotechnology products is unique among decision-making systems, as it deals with food safety, environmental safety (biosafety),[37] innovation, science and technology, and the safe use of technologies within the food system.[38] The regulatory system has a mediating role between the behaviors and interests of market actors and the citizenry.[39] The safe use of GM foods meant for human consumption is determined by conducting a number of tests on the plant that is under

33. *Id.* at 30.
34. MAYER, *supra* note 10, at 30.
35. *See id.* at 162.
36. *Id.* at 31.
37. Environmental safety assessment is distinct and different from food safety, but we include it here as it inevitably becomes part of the "conflict-based conversation."
38. Luis Acosta, *Restrictions on Genetically Modified Organisms: United States*, LIBR. OF CONG. (Mar. 2014), http://www.loc.gov/law/help/restrictions-on-GMos/usa.php.
39. *Id.*

regulatory review.[40] Testing is not conducted by the government, but is the responsibility of the applicant.[41] The regulatory system for GM foods is built upon the evidence-based model of risk assessment, itself a component of the broader regulatory state.[42]

The regulatory system must also act as the gatekeeper to the commercialization of GM crops and foods determined to be "as safe as," based on comparable foods or crops currently available and established scientific thresholds.[43] Essentially, the role of the regulatory system is to focus on the distinctive differences of new GM crop varieties and determine how those characteristics affect safety.[44] The system attempts to reduce uncertainties by making information on the risk assessment and decision-making process accessible to industrial stakeholders as well as the public.[45] The most pertinent information required by industry stakeholders includes clearly established rules, requirements, and procedures in the decision-making process and a broader regulatory system to guide applicants.[46]

Traditionally, the decision-making systems for GM foods in Canada and the United States have been based on the guidelines of the *Risk Analysis Framework* (RAF).[47] The RAF is based on manuals published by the U.S.-based National Research Council on "how to best assess and manage products or processes that carry a degree of risk, and how to best communicate those risks to the public . . . ."[48] Innovative technologies, like genetic engineering or new breeding techniques[49], present unique challenges to this successful method of safety assessment.[50] For example, Phillips argues that because the RAF frames all technologies as similarly hazardous,

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40. *Id.*
41. *Id.*
42. *Id.*
43. Acosta, *supra* note 38.
44. MONTPETIT ET AL., *supra* note 18, at 68.
45. Clark & Phillips, *supra* note 14, at 121.
46. *See id.* at 112.
47. Lisa F. Clark et al., *Maintaining Scientific Integrity in Canadian Regulatory Protocols: Using Strategic Thinking to Facilitate Innovation and Enhance Engagement and Transparency*, GENOME CAN. 4 (May 2015), http://www.genomecanada.ca/medias/pdf/en/Genome_GPS_10_English.pdf. The USDA does not formally use the RAF to assess risk, given that it has a different mandate under its specific statutes.
48. *Id.*
49. These new plant breeding techniques include: zinc finger nuclease, cisgenesis and intragenesis and others. See: Lusser, M.C. Parisi, D. Plan and E. Rodriguez-Cerezo. *New plant breeding techniques: State-of-the-art and prospects for commercial development.* (JRC Scientific and Technical Reports, Institute for Health and Consumer Protection, 2011).
50. *Id.*

it can contribute to negative perceptions of some technologies as equally "risky" compared to others that have gone through the RAF, despite the fact that product use may not carry the same degree of hazard.[51] Further, "[t]he framework also faces some difficulty because of its lack of flexibility to accommodate the possibility that as new information emerges [about how the technology interacts with its environment, as well as other technologies,] the definition of the problem in need of solving may change."[52] Evolving problems can have significant implications for how a regulatory system is designed, how it functions, and what evidentiary requirements it demands.[53] Although the "most recent RAF manual stresses the importance of deliberation amongst stakeholders to determine how uncertainties can be collectively addressed within the risk assessment processes, this has not fully dealt with some concerns stakeholders have over the transparency of . . . information [and how it] is used [and evaluated] in the [decision-making] process."[54]

In the United States and Canada, multiple agencies and departments are involved in the process of conducting assessments for innovative foods and any new processes involved in food production.[55] Depending upon the product that is entering the decision-making process and what type of change it has undergone, members of various agencies engage with industry applicants throughout the decision-making process to collect information (e.g., results from lab tests or field trials) to make a formal decision.[56] The proponent (industrial stakeholders or public sector developers) is required to supply data on various aspects of the product under review.[57] Each agency or ministry has its own specific mandate, but must work with other agencies to rigorously assess the risk associated with proposed GM foods and animal feed.[58] In Canada, regulatory agencies like Health Canada (HC) and the

51. *Id.*
52. *Id.*
53. Clark et al., *supra* note 47, at 3.
54. *Id.* at 4.
55. *See Biotechnology Frequently Asked Questions*, USDA, http://www.usda.gov/wps/portal/usda/usdahome?navid=AGRICULTURE&contentid=BiotechnologyFAQs.xml (last updated May 14, 2015); Tariq Ahmad, *Restrictions on Genetically Modified Organisms: Canada*, LIBR. OF CONG. (Mar. 2014), http://www.loc.gov/law/help/restrictions-on-GMos/canada.php.
56. *See, e.g.*, *Consultation Procedures Under FDA's 1992 Statement of Policy – Foods Derived from New Plant Varieties*, FDA, http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/Biotechnology/ucm096126.htm (last updated Apr. 13, 2015) [hereinafter *Consultation Procedures*].
57. *Id.*
58. Ahmad, *supra* note 54.

Canadian Food Inspection Agency (CFIA) work in a horizontally integrated system of decision-making to assess GM foods and animal feed for commercialization and environmental release.[59] In the United States, the Food and Drug Administration (FDA) and the Environmental Protection Agency (EPA) collectively assess the risks and safety of GM foods sold in the United States and GM crops cultivated on U.S. soil.[60] In both contexts, multiple concerns regarding the safety of GM foods are addressed by having proponents provide information about how it will be commercialized, its safety as food or feed, and its impacts on the environment.[61] The structure of the regulatory system from the government's perspective is designed to evaluate the safety of GM crops or foods.[62] It is worth noting that agencies, like the FDA, do not formally "approve" a given GMGM crop or food; rather, the agencies complete a "review."[63] The regulatory process is voluntary, unless there is a material change in the food or feed.[64]

C. Industry

In the past, some industry stakeholders and public sector developers have considered the regulatory frameworks in Canada and the United States as conducive to the timely processing of applications for assessment.[65] Credit, in this historical context, is given to these regulatory systems for communicating clear sets of guidelines to aid applicants through the process and avoiding the entry of an application that will not meet biosafety standards and protocols later on in the decision-making process.[66] Other observers, however, suggest that systems in North America are lagging

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59. *See Information for the General Public*, CAN. FOOD INSPECTION AGENCY, http://www.inspection.gc.ca/plants/plants-with-novel-traits/general-public/eng/1337380923340/1337384231869 (last modified Apr. 27, 2015).

60. Stuart J. Smyth & Alan McHughen, *Regulation of Genetically Modified Crops in USA and Canada: American Overview*, *in* REGULATION OF AGRICULTURAL BIOTECHNOLOGY: THE UNITED STATES AND CANADA 35, 47-51 (Chris A. Wozniak & Alan McHughen eds., 2012) (The USDA does not conduct food safety assessments, but relies upon FDA to make such assessments).

61. *Consultation Procedures*, *supra* note 55.

62. *Id.*

63. David A. Kessler, *Statement of Policy – Foods Derived from New Plant Varieties*, FDA (Apr. 2, 1992), http://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/Biotechnology/ucm096095.htm.

64. *Id.*

65. Donald J. MacKenzie, *International Comparison of Regulatory Frameworks for Food Products of Biotechnology*, CAN. BIOTECHNOLOGY ADVISORY COMM. 37-39 (Dec. 2000), http://www.argenbio.org/adc/uploads/pdf/regulacion.pdf.

66. *Id.* at 39.

behind others in the world.[67] The time required to engage in and meet obligations in terms of registration and regulation has increased more than forty-four percent since 2002.[68] Additionally, some industry stakeholders are critical of the uniform treatment of all applications as inherently equally risky.[69] Firms of medium or smaller size, or even alternate organizational forms or product submissions within regulatory structures in Canada and the United States, find the "one-size-fits-all" model for assessment at times prohibitively costly, both in time and finances.[70] Critics of the current regulatory structure claim that larger firms are more familiar with the current regulatory requirements and can afford the time and finances necessary to enter the assessment process for applications to navigate the system because of accumulated experience engaging with regulators and policy.[71] In an effort to "level the playing field," while assuring high levels of safety and rigorous testing of GM foods and plants within the regulatory process, conflict is generated for some stakeholders within the system as they interpret the "one-size-fits-all" model for risk assessment as burdensome and difficult to navigate.[72]

D. Interpretation of Structure and Contributions to Conflict

There are many areas of overlap between government and industry's interpretation of the structure of the regulatory framework for GM foods and its purpose.[73] Both are committed to rigorous evidence-based evaluation of safety.[74] But there are some aspects that contribute to conflict in interactions

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67. *See* Gregory Jaffe, *Withering on the Vine: Will Agricultural Biotech's Promises Bear Fruit?*, CTR. FOR SCI. IN THE PUB. INT. 4-5 (Feb. 2, 2005), http://www.cspinet.org/new/pdf/withering_on_the_vine.pdf.

68. Phillips McDougall, *The Cost and Time Involved in the Discovery, Development and Authorisation of a New Plant Biotechnology Derived Trait*, CROP LIFE INT'L 14 (Sept. 2011), http://croplife.org/wp-content/uploads/2014/04/Getting-a-Biotech-Crop-to-Market-Phillips-McDougall-Study.pdf.

69. PETER W.B. PHILLIPS, THE KALEIDOSCOPE OF RISK ANALYSIS: THE STATE OF THE ART 25 YEARS AFTER THE RED BOOK 12-13 (2009).

70. Nicholas Kalaitzandonakes et al., *Compliance Costs for Regulatory Approval of New Biotech Crops*, 25 NAT. BIOTECHNOLOGY 509, 509 (2007).

71. Paul Heisey & David Schimmelpfennig, *Regulation and the Structure of Biotechnology Industries*, *in* REGULATING AGRICULTURAL BIOTECHNOLOGY: ECONOMICS AND POLICY 421, 421-24 (Richard E. Just et al. eds., 2006).

72. Kalaitzandonakes et al., *supra* note 69, at 509-10.

73. *Food from Genetically Engineered Plants*, FDA, http://www.fda.gov/Food/FoodScienceResearch/GEPlants/default.htm (last updated Nov. 19, 2015).

74. *Id.*

and have implications for future innovation in agricultural biotechnology.[75] As previously outlined, the "one-size-fits-all" model regulating the safety of GM foods is argued to create difficulties for firms that do not have previous experience with the decision-making process.[76] Challenges in navigating the regulatory system can also contribute to a consolidation of the industry, as smaller firms are bought out by larger corporations that already have experience with how the regulatory system works, as demonstrated in both the United States and Canada.[77] This has important implications for power dynamics within the regulatory system, as consolidated ownership quite often translates into consolidated voices in dialogue and discussion over policy issues.

Another type of conflict arises because governments are pulled in different, and sometimes opposing, obligatory directions. The regulatory decision-making process is tasked with assessing applications based on scientific evidence.[78] Decisions are made without consideration of commercial benefit to stakeholders or otherwise.[79] But other departments and agencies are responsible for supporting economic growth and innovation within their respective countries by having open and fair dealings with the industry.[80] The objectives of other agencies that may be associated with innovation in the food system may be perceived as more integrated into decision-making processes for GM foods than they are in reality. But the primary objective of the regulatory system for food is to reduce possible risk to the health and safety of humans, animals, and the environment, not commercial potential.[81]

Debates surrounding uncertainty in commercializing GM foods can be understood as conflicts between mitigating Type 1 and Type 2 errors.[82] A Type 1 error is when an unsafe product is approved and causes harm, for example, the livestock feeding practices that led to the BSE crisis in Europe

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75. Heisey & Schimmelpfennig, *supra* note 70.

76. *Id.*

77. Terttu Luukkonen, *Variability in Forms of Organisation in Biotechnology Firms*, RES. INST. OF THE FINNISH ECON. 2 (Oct. 21, 2003), http://www.etla.fi/wp-content/uploads/2012/09/dp872.pdf.

78. *Food from Genetically Engineered Plants*, *supra* note 72.

79. *Id.*

80. Memorandum from John P. Holdren, Dir., Off. of Sci. & Tech. Pol'y, to Heads of FDA, EPA, and Dep't of Agric. (July 2, 2015), *available at* https://www.whitehouse.gov/sites/default/files/microsites/ostp/modernizing_the_reg_system_for_biotech_products_memo_final.pdf.

81. *Food from Genetically Engineered Plants*, *supra* note 72.

82. K. L. Wuensch, *Evaluating the Relative Seriousness of Type I Versus Type II Errors in Classical Hypothesis Testing*, *in* DISSEMINATIONS OF THE INTERNATIONAL STATISTICAL APPLICATIONS INSTITUTE 76, 76 (3d ed. 1994).

in the 1990s.[83] A Type 2 error is when a safe product is rejected, which may cause loss of access to innovation and benefits (in statistical terms, a "false negative").[84] An example of this is the banned use of rBST in Canada's dairy industry (an input into a final food product), though it was approved for use in dairy cows in the United States.[85] Though Type 2 errors may be costly in a number of ways, particularly to industry and potential users of the technology (lost potential of innovations), Type 1 errors are far more costly, as they result in undue harm to human and/or environmental health and safety.[86] From a liability perspective, Type 1 errors are much more costly in terms of possible damages, such as human deaths, possible lawsuits, and a potential loss of trust in the regulatory system.[87] For this reason, decision-making over the commercialization and environmental release of GM foods must prioritize the safety of substances and products over other considerations, including economic and social potential of innovation, which itself can contribute to conflict with the industry. The central question in the government/industry conflict over structure is: what evidence and interests are considered in the decision-making process for GM foods?

IV. VALUES AND IDENTITY AS UNDERSTOOD BY GOVERNMENT AND INDUSTRY

A. The Importance of Values and Identity to the ECF

Values are often tied to a person, group or organization's proclaimed or perceived role.[88] They also invite a deeper inquiry of a "theory of self."[89] Values originating in deeply held community or social beliefs can determine conceptions of identity, and the engagement of social, political, and professional identities tends to compound barriers inside a conflict.[90] The need for self-integrity can make individuals or groups more likely to defend

83. *Id.*

84. *Id.* at 77.

85. LISA NICOLE MILLS, SCIENCE AND SOCIAL CONTEXT: THE REGULATION OF RECOMBINANT BOVINE GROWTH HORMONE IN NORTH AMERICA 3 (2002).

86. STUART SMYTH ET AL., REGULATING THE LIABILITIES OF AGRICULTURAL BIOTECHNOLOGY 59-60 (2004).

87. *Id.*

88. LAURIE S. COLTRI, ALTERNATIVE DISPUTE RESOLUTION: A CONFLICT DIAGNOSIS APPROACH 17 (2d ed. 2010).

89. *Id.*; JENNIFER NEDELSKY, LAW'S RELATIONS: A RELATIONAL THEORY OF SELF, AUTONOMY, AND LAW 3 (2011).

90. *See* COLTRI, *supra* note 87.

against external threats to established identities,[91] which contributes to the appearance of intractability in value or identity-based conflict.[92] Although values and identity can be difficult to pinpoint in the GM foods debate, Mayer's focus on the conflict narrative provides clarity.[93] Narratives offer clues about "disputants' understandings, assumptions, values, and fears, as well as the social and cultural context of the dispute" and often feature the adoption or assignment of key dramatic roles (the victim, hero, or villain).[94] They are often "remarkably impervious to change."[95]

Beneath the visible concerns and priorities that surface when we examine GM food regulatory structures, there are less conspicuous interests at the root of the debate. The ECF considers values influencing the structures that house decision-making practices and attempts to unwrap how values factor into identity cultivation and preservation.[96] At its heart, the regulatory system is a way to manage resources and implement policy in the face of future uncertainties.[97] Such an environment of constantly negotiating potential benefits with potential risk will create instability unless guided by strong values, reflecting both the interests and objectives of the stakeholder, which can be labeled *identity*.[98]

B. Government

Pinpointing the values and singular identity of a regulatory system that includes multiple agencies and departments is difficult. Generally, regulatory systems governing the commercialization of GM foods in Canada and the United States are based on scientific values; evaluation and decision-making are based on rigorous collection and assessment of reproducible scientific evidence, though this does not always occur in the most time or cost efficient way.[99] The central value entrenched in the regulatory system is that anything approved for environmental release into the Canadian or American environment is as safe for use as food, feed, and release into the

91. Geoffrey L. Cohen et al., *Bridging the Partisan Divide: Self-Affirmation Reduces Ideological Closed-Mindedness and Inflexibility in Negotiation*, 93 J. PERS. & SOC. PSYCHOL. 415, 415 (2007).

92. CHESTER A. CROCKER ET AL., TAMING INTRACTABLE CONFLICTS: MEDIATION IN THE HARDEST CASES 3 (2004).

93. *See generally* MAYER, *supra* note 10, at 87-119.

94. *Id.* at 87.

95. *Id.*

96. *Id.* at 27-30.

97. *See generally* Colin Scott, *Private Regulation of the Public Sector: A Neglected Facet of Contemporary Governance*, 29 J. L. SOC'Y 56, 57 (2002).

98. *See* MAYER, *supra* note 10, at 27-30.

99. *See* Clark & Phillips, *supra* note 14, at 112, 123.

environment as other conventional plant varieties already being grown.[100] Both the United States and Canada base their regulatory decisions over GM foods on the principle that if the GM food is proven to be safe, then it should gain approval.[101] This is referred to as the "prevention principle."[102]

The prevention principle is something that is applied to almost every product that is subject to regulatory oversight.[103] It is a central rationale in regulating GM foods, in both the United States and Canada, generally defined as "preventing the creation of risk at the source, rather than trying to counteract its effects at the point of impact."[104] Though the prevention principle seeks to mitigate some types of uncertainties, it is not included in regulatory frameworks to manage values and conceptions of uncertainty.[105] Whether commercializing a technology is perceived as "good" or "bad" for particular stakeholders in terms of socio-economic impacts is not considered in the scope of the prevention principle.[106] A "scientific evidence-based" decision-making model is used to assess the safety of the technology, not the socio-economic impacts of a new technology on industrial sectors or employment relationships.[107] Those who are in charge of changing policy, such as elected officials, in response to concerns of citizens are not included in decision-making processes for GM foods.[108] Socio-economic concerns are factored in during the drafting process for regulations, as with other types of policies.[109] Socio-economic impacts are also difficult to measure during

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100. *See generally* NAT'L ACAD. OF SCIS., INTRODUCTION OF RECOMBINANT DNA-ENGINEERED ORGANISMS INTO THE ENVIRONMENT: KEY ISSUES 18-19 (1987); *Plants with Novel Traits (PNTs) – Approved Confined Research Field Trials: Terms and Conditions*, CAN. FOOD INSPECTION AGENCY, http://www.inspection.gc.ca/plants/plants-with-novel-traits/approved-under-review/field-trials/eng/1313872595333/1313873672306 (last modified Apr. 2, 2015).

101. Lisa F. Clark, *Framing the Uncertainty of Risk: Models of Governance for Genetically Modified Foods*, 40 SCI. & PUBLIC POL'Y 479, 482-83 (2013).

102. *Id.*

103. Joyce Tait & Les Levidow, *Proactive and Reactive Approaches to Risk Regulation: The Case of Biotechnology* 24 FUTURES 219, 222 (1992).

104. *Id.* at 221-22.

105. *Id.* at 222.

106. SHEILA JASANOFF, DESIGNS ON NATURE: SCIENCE AND DEMOCRACY IN EUROPE AND THE UNITED STATES 129 (2005).

107. *The Role of Science and Technology in Society and Governance*, WORLD CONF. ON SCI., http://www.unesco.org/science/wcs/meetings/eur_alberta_98_e.htm (last visited Nov. 24, 2015).

108. Kimberly Danek Pinkson, *Lack of Labeling on GMO Food is a Vote Against Democracy*, 9NEWS.COM (Nov. 1, 2015), http://health.abc4.com/provider_article.php?ar=1131&pr=0&geo=den.

109. Georgina Catacora-Vargas, *Socio-Economic Considerations in GMO Decision-Making*, GENØK-CENTRE FOR BIOSAFETY 2 (Sept. 2012), http://www.ensser.org/fileadmin/files/1.3-Catacora-paper.pdf.

the decision-making process for GM foods in terms of impacts on individuals or groups.[110] While the prevention principle may address some forms of uncertainty, its current use in regulatory frameworks does not extend to other, non-scientifically measurable uncertainties, and thus, is unlikely to be flexible in response to dissenting views in the governance of the food system.

C. Industry

The value chain in agriculture and food production is comprised of diverse actors, with differentiated and complex interactions with, and expectations of, government regulatory processes.[111] Since industry is *not* necessarily a homogenous group of like-minded or structured organizations and companies, it stands to reason that views on what constitutes "identity" diverge as well.[112] Industry-based articulated values and identities are often communicated through public relations strategies, as part of an over-arching mandate to improve company performance, to build brand equity, and to penetrate new markets.[113] Identity is synonymous with "organizational nomenclature, logos, company [mandates,] and visual identification."[114] However, because corporate environments have evolved over the past several decades, governance models and, subsequently, corporate identities have also changed.[115]

In the context of regulation, industry promotes its identity to government by practicing "issue legitimation."[116] Dutton and Dukerich state that perceptions held by managers or decision makers within a company are framed by an enduring corporate identity, which can influence interpretations of strategic issues.[117] Thus, when social issues become integrated into corporate identity (i.e., a commitment to "community" or "being green"), it makes those issues difficult to ignore.[118] Decision makers

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110. *Id.*

111. *See* Clark et al., *supra* note 47, at 1-2.

112. *See* Cees B.M. van Riel & John M.T. Balmer, *Corporate Identity: The Concept, its Measurement and Management*, 31 EUR. J. MKTG. 340, 340 (1997).

113. *Id.* at 350.

114. *Id.* at 340.

115. ROGER L. MARTIN, FIXING THE GAME: BUBBLES, CRASHES, AND WHAT CAPITALISM CAN LEARN FROM THE NFL 34-41 (2011); *see also* Steven Pearlstein, *Social Capital, Corporate Purpose and the Revival of American Capitalism*, CTR. FOR EFFECTIVE PUB. MGMT. 11, 19 (Jan. 2014), http://www.brookings.edu/~/media/research/files/papers/2014/01/10-social-capital-corporate-purpose-pearlstein/brookingspearlsteinv5_revised-feb-2014.pdf.

116. Jane E. Dutton & Janet M. Dukerich, *Keeping an Eye on the Mirror: Image and Identity in Organizational Adaptation*, 34 ACAD. MGMT. J. 517, 547 (1991).

117. *Id.* at 517.

118. *Id.*

within the company need to channel resources and actions into that identified legitimated issue.

It is less clear how corporate identity, with legitimated issues as part of the mandate, may be presented and promoted in the context of the agricultural biotechnology industry. As environmental and human safety issues in the food system become more politically prominent, corporations need to navigate how best to address the public's concerns, which may not necessarily be reflective of the realities of how industry assesses safety and risk. If a company wishes to be viewed as an environmental leader, for example, legitimating "social value" theoretically creates beneficial "positive emotional associations" in negotiations or exchanges with government, rather than risk-averse behaviors.[119]

From a corporate perspective, building identity based on a broader social responsibility focus has both economic and reputational value, which can serve to address some concerns held by stakeholders.[120] Identifying with, or acknowledging the legitimacy of environmental concerns regarding the potential impacts of GM crops on biodiversity, is helpful to industry relations with government, considering the important responsive role government's elected officials have to the citizenry.[121] As Dutton and Dukerich suggest, "issue legitimation" is one way of accomplishing this in a negotiation process, as it provides a frame of reference that influences the "ways that an organization [company] becomes meaningful . . . in particular ways and at particular times."[122]

Corporate identity can be a reflection of corporate values.[123] The social and economic context that agricultural biotechnology operates within has changed over the past two decades.[124] Issues, and agriculture-related dialogues, have conflated and now involve not only topics around farming and food production, but also issues regarding human and animal health, the

119. Sanjay Sharma, *Managerial Interpretations and Organizational Context as Predictors of Corporate Choice of Environmental Strategy*, 43 ACAD. MGMT. J. 681, 684 (2000).

120. Archie B. Carroll, *Corporate Social Responsibility*, *in* SAGE BRIEF GUIDE TO CORPORATE SOCIAL RESPONSIBILITY 2, 2 (2012), *available at* https://us.sagepub.com/sites/default/files/upm-binaries/41167_1.pdf.

121. Emily Glass, *The Environmental Impact of GMOs*, ONE GREEN PLANET (Aug. 2, 2013), http://www.onegreenplanet.org/animalsandnature/the-environmental-impact-of-GMos/.

122. *See* Dutton & Dukerich, *supra* note 115.

123. *The Importance of Corporate Identity*, RIDIVI, http://knowledge.ridivi.com/the-importance-of-corporate-identity/850 (last visited Nov. 24, 2015).

124. *What is Agricultural Biotechnology?*, U.S. AGENCY FOR INT'L DEV. 2 (2004), http://absp2.cornell.edu/resources/briefs/documents/warp_briefs_eng_scr.pdf.

environment, climate change, and applications of science and technology.[125] Actors in the seed industry, for example, find themselves fully entrenched in the "food business," engaging with a whole new set of downstream stakeholders, including the end consumer.[126] They must be cognizant of the interests of others along the value chain when fashioning and communicating company mission statements, which ultimately tie into the corporate identity represented to government.[127] Lack of information regarding the inner workings of the approval system can, perhaps, cause confusion for stakeholders seeking to understand the system better, so they can engage with it more effectively. Further, it can create conflict because a lack of information can cost proponents time and economic resources in addition to anticipated expenditures related to the decision-making process. Agencies and departments are sometimes criticized as functioning as operational silos, where information is fragmented and communications are interrupted or non-existent.[128] Information crucial to the decision-making process can be unevenly distributed among individuals or agencies that have inconsistent network connections.

V. IDENTIFYING SPACES FOR CONSTRUCTIVE ENGAGEMENT USING THE ECF

A better understanding of how government and industry perceive the purpose and function of structures in the regulatory system for GM foods and their own identities and values is the groundwork for an ECF approach. The framework also offers strategies for refocusing attention from the search for a singular conflict inside a complex system, to the development of capacity and resilience inside long-term relationships. For progress in long-term conflict, Mayer emphasizes the importance of framing the dialogue at the right level.[129] He suggests two strategies: (1) "articulate the conflict in a way that is broad enough to encompass disputants' core concerns without

125. Jacqui Dibden et al., *Framing GM Crops as a Food Security Solution*, 29 J. RURAL STUD. 59, 62 (2013); Mary C. Jalonick, *Defined by Critics, Big Ag Restarts Conversation*, ASSOCIATED PRESS (Dec. 29, 2013), http://bigstory.ap.org/article/defined-critics-big-ag-restarts-conversation.

126. Jalonick, *supra* note 124.

127. ROBERT L. ZIMDAHL, AGRICULTURE'S ETHICAL HORIZON 209 (2006); Camille D. Ryan, *Biotechnology Communications, Mythmaking and the Media*, *in* HANDBOOK ON AGRICULTURE, BIOTECHNOLOGY AND DEVELOPMENT 550, 550 (Stuart J. Smyth et al. eds., 2014). With the switch in focus to biotechnology and enhanced crop varieties in the 1990s, agro-chemical companies repositioned and/or re-branded themselves first as crop protection companies and then eventually as "life science" companies in the 1990s.

128. Ryan & Doerksen, *supra* note 6.

129. *See* MAYER, *supra* note 10, at 39.

trivializing them but not so broad as to make it impossible to take a meaningful approach to those concerns" and (2) "frame the conflict in terms of the core needs that drive it, without going so deep . . . that people become immobilized."[130] Where long-term conflicted parties tend to "dig in," this will involve thoughtful and sometimes gradual reframing. A focus on structure, values, and identity helps recast the conflict and opens up areas for dialogue and potential common ground. Such a reframing requires a different philosophical and psychological orientation, as well, by inviting parties to "sit with" temporary discomforts and focus on short-term gains.

A. Structure

Instead of focusing on the question, "how efficient or inefficient is the regulatory system for GM foods?," the ECF approach would seek to bolster dialogue with transparency, keeping in mind those aspects of the regulatory system for GM foods cannot and should not be changed, namely, the prioritization of health and safety above all other factors related to approvals. To open dialogue between government and industry, an ECF approach might reframe the question as follows: what structural mechanisms could protect a scientific approach and leave room to balance commercial and human safety objectives? A new discourse would make room for explicit discussions about uncertainty and what it means to each stakeholder in terms of their relationship to structure, their own identity, and values. This does not mean that all forms of uncertainty experienced by government and industry can or should be addressed through the regulatory system in the form of policy change. Yet, the presence of uncertainty cannot be viewed as a barrier to debate and decision-making, nor should it be ignored as a significant, and potentially mutual, concern among all stakeholders. Though Hibbert and Clark develop a "third option" for democratic engagement in the regulatory system for GM foods, concerning the interactions of government and the public,[131] the basis of the "experiential precaution" model can be easily incorporated into the ECF's focus on relationships between industry and government. The experiential precaution model

> links a procedural precautionary principle with an ex post trial and error approach to risk regulation, synthesizing elements of the two dominant risk management strategies and incorporating

130. *See id.*

131. Neil Hibbert & Lisa F. Clark, *Democratic Legitimacy, Risk Governance, and GM Food*, 30 SOC. PHIL. TODAY 29, 40 (2014).

> disputes over uncertainty and authority into risk assessment . . . . It treats the idea of precaution as an "evidence-informed" process-principle for ongoing reasoning in cases of uncertainty, or contested certainty, with no necessary policy implications in particular cases.[132]

At the center of this approach is a focus on how risk, uncertainty, and authority can reveal sources of disagreement and conflict, reduce friction between the stakeholders in the future, and contribute to a more reflexive regulatory system that can accommodate new information and innovations. An implication of enduring conflict as a reflexive process is the need to "live with uncertainty," and Mayer points out that stakeholders need to accept the dilemma of uncertainty "without sacrificing their commitment, involvement, or energy" for engaging in conflict dialogue.[133] By elevating uncertainty as a constant and inevitable factor in all decision-making structures, the groundwork for future negotiation and dialogue between stakeholders can be established and built into existing regulatory systems.

B. Values and Identity

The conventional understanding of how identity and values are shaped and expressed typically casts stakeholders as rational actors.[134] The logic of the rational actor model revolves around the notion that stakeholders participate within systems in order to advance their interests,[135] clearly a recipe for conflict within multi-stakeholder environments. But the ECF reframes the rational actor assumption by shifting from focusing on "who gets what" to examining "how stakeholders can authentically articulate values in a way that deepens understanding and validates common ground."[136] This is a significant shift from the rational actor model understanding of values and identity, and instead, zeros in on stakeholders communicating to other stakeholders their values and their interpretations of identity within the regulatory system.[137] The goal of this approach is to

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132. *Id.*
133. *See* MAYER, *supra* note 10, at 37.
134. Jurgen Scheffran, *Tools for Stakeholder Assessment and Interaction*, *in* STAKEHOLDER DIALOGUES IN NATURAL RESOURCES MANAGEMENT: THEORY AND PRACTICE 153, 162 (Susanne Stoll-Kleeman & Martin Welp eds., 2006).
135. *Id.*
136. MAYER, *supra* note 10, at 196.
137. *See id.*

identify common or overlapping values and use them as a source for future dialogue.[138]

Being able to talk with integrity about underlying values and identities also facilitates sustainable conversation in long-term conflict.[139] Perhaps not surprisingly, the values motivating government and commercial actors in the GM foods debate differ and, yet, also reveal a point of intersection. Both actors espouse, at least on the surface, a participatory and transparent design of regulatory processes.[140] These and other values warrant discussion as a potential source of common ground. Any real and effective discussion of values requires at least incremental openness, authenticity, and congruency (of words and action) for genuine understanding and effective communication to evolve.[141] The ECF's practical concern is how to prepare stakeholders to engage constructively in a conflict over time.[142] It focuses on improving the dialogue, "to alter patterns, not outcomes," recognizing that conflict and peace can coexist.[143]

VI. CONCLUSION

This paper has argued that the ECF, modified from Mayer's work, can be a useful source for re-organizing the dialogue between government and industry in the regulatory system for GM foods. Critically examining how stakeholders interpret the structure of the regulatory system, as well as their own identities and values, is a way to move the discourse forward. By focusing on what brings stakeholders together, as opposed to what divides them, government and industry can draw lessons from engaging with each other and apply new techniques to interactions with other stakeholders, such as the public.

Advancing a conflict dialogue against a backdrop of uncertainty is uncomfortable at different levels. It may produce identity confusion, when parties deeply aligned with their values have to live with substantive ambiguity. But what must be emphasized is that all stakeholders deal with uncertainty in some way. Government must deal with the uncertainty pertaining to potential risks that may be identified concerning GM foods it approves. Industry must consider costs—research, development, and time—

138. *Id.*
139. *Id.*
140. *See generally* FOOD SAFETY GOVERNANCE 1-4 (Ortwin Renn & Marion Dreyer eds., 2009) (discussing transparent and participatory decision-making procedures).
141. BERNARD MAYER, BEYOND NEUTRALITY: CONFRONTING THE CRISIS IN CONFLICT RESOLUTION 191-93 (2004).
142. *See* Gadlin, *supra* note 17, at 110-11.
143. *Id.*

that regulatory systems require and determine whether eventual benefits justify those costs. Industry also must deal with the uncertainty in terms of how long regulatory agencies will take to make decisions. Mayer points out that a commitment to dialogue in an ongoing conflict is best served when views are, to some degree, open to influence, rather than being "locked into a rigid stance."[144] He posits that dialogue stagnation is rarely acceptable: "the more complex and important the issue, the more likely it is that we will have to act without having all the information we would like and without complete intellectual clarity."[145] Dialogue is improved when participants can openly acknowledge these discomforts in non-positional ways. Stakeholders, even if unaccustomed, must be willing to openly discuss aspects of their relationship and interactions with one another. That is the first step both government and industry must take in the GM foods debate to move towards managing enduring conflict.

144. *See* MAYER, *supra* note 10, at 37.
145. *Id.*